Natura Impact Statement

Castlemartyr WwTP Upgrade

October 2022

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Thorne Ecology

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Introduction

Irish Water are seeking planning permission to upgrade Castlemartyr Waste Water Treatment Plant (WwTP) in Co. Cork, in order to increase capacity and provide improved treatment ('the Project'). The purpose of this report is to provide information to assist the competent authority, in this case Cork Co.Co., to carry out an Appropriate Assessment (AA) of the proposed Project.

Castlemartyr village lies within an agricultural landscape on the N25 ca. 8km east of Midleton. The WwTP site is to the south of the village off the R632, immediately adjacent to the entrance into the Castlemartyr Estate hotel grounds. The existing site is within a wooded area at the northern end of Mitchells Wood, part of the Castlemartyr Woodway, a Coillte forest and recreation area. The Womanagh River (also known as the Kiltha River) flows southwards to the west of the site. The adjacent estate includes further woodlands associated with the Woodway (Pigeons Wood), open parkland and a golf courses.

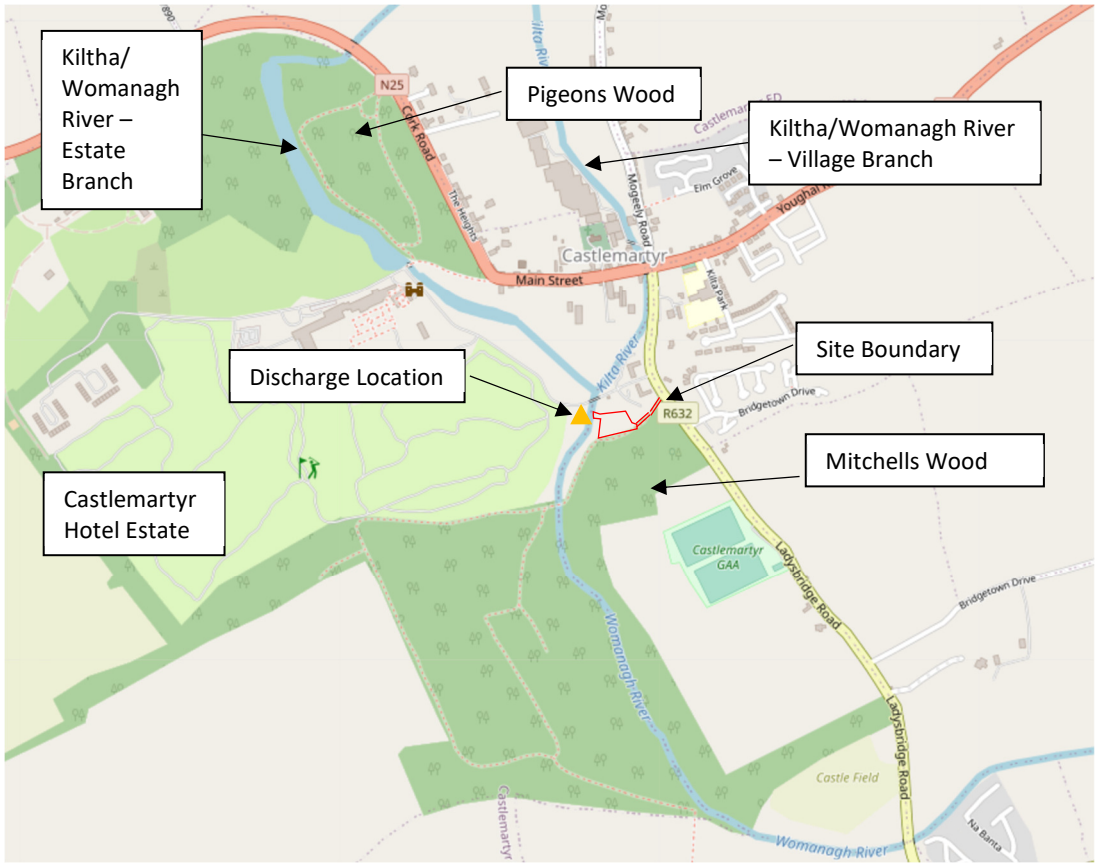

Figure 1 Site Location (© OpenStreetMap contributors)

Legislative Context

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 sites, known as European Sites, are Special Areas of Conservation ('SAC') designated under the Habitats Directive (92/43/EEC) and Special Protection Areas ('SPA') designated under the Birds Directive (79/409/ECC).

AA Screening for Projects is required pursuant to Article 6(3) of the Habitats Directive 92/43/EEC and Part XAB of the Planning and Development Act 2000 (as amended), transposed into Irish Law by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Article 6(3) of the Habitats Directive states that:

> *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(3) provides for a two-stage process. The first stage, AA Screening, appraises whether a plan or project is likely to have significant effects on any European Site in view of best scientific knowledge and the conservation objectives of the site(s). If the competent authority determines that AA is required, the second stage is to carry out the Appropriate Assessment, informed by a Natura Impact Statement (NIS), which assesses whether the project shall adversely effect the integrity of any European Sites.

Article 6(4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan or project will adversely affect a European site. Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures need to be addressed in this case.

Appropriate Assessment Screening

The Screening for AA report (Appendix A) concluded that the likelihood of significant effects on Ballymacoda SAC and Ballymacoda Bay SPA, alone and in-combination with other projects, could not be excluded due to the following:

- Construction stage impacts to water quality and spread of invasive species which, via the Womanagh River pathway, could potentially affect the qualifying interests of these European Sites, triggering the need for protective measures.
- Operational stage impacts to water quality, including cumulative impacts with the adjacent hotel pump station, which require assessment in the context of the attributes and targets of the qualifying interests of these European Sites in order to have certainty with regard to the adequacy of the proposed treatment standards.

This report comprises the NIS to inform the Appropriate Assessment of the competent authority.

Statement of Authority

This assessment was completed by Kate Harrington MSc MCIEEM, an Ecologist who has 18 years' experience in undertaking ecological surveys and assessments in Ireland and abroad. Ms Harrington's experience includes the preparation of AA Screening, NIS, Ecological Impact Assessments, biodiversity studies and water quality studies for a range of infrastructure projects. She has extensive experience of reviewing and undertaking ecological assessments for Irish Water projects and activities as well as developing guidance documents and advising consultant engineers and ecologists regarding best practice. She currently works as a freelance ecologist and is pursuing a PhD in woodland ecology.

Methodology

Guidance Followed

- Office of the Planning Regulator (OPR). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. (OPR, 2021)

- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government, (DoEHLG, 2010).

- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg, (EC, 2018).

- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2021).

- Annex to the Commission notice to the Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC: Examples of practices, case studies, methods and national guidance. Office for Official Publications of the European Communities, Brussels (EC, 2021).

- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission. Office for Official Publications of the European Communities, Luxembourg, (EC, 2007).

- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).

Appropriate Assessment

The AA assesses whether the project will adversely affect the integrity of a European Site (s) either individually or in-combination with other plans and projects in view of the site's conservation objectives.

The AA should:

- Identify the conservation objectives of the European Sites affected by the plan or project;
- Identify and assess the likely significant effects of the plan or project (as identified at Screening stage) against the sites' conservation objectives, considering cumulative effects with other plans and projects; and
- Apply mitigation measures to avoid these impacts or reduce them to a level where they will no longer adversely affect the integrity of the site.

The **integrity** of the site can be defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.

Site-level **conservation objectives** are a set of targets that define the desired **conservation condition** of qualifying habitats and/or species in order for the site to achieve favourable conservation status.

Favourable conservation status of a habitat is achieved when:

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

Desk Study

The sources of available desktop information used to inform the assessment included:

- The National Parks and Wildlife Service (NPWS) natural heritage database (www.npws.ie) was consulted for designated sites of nature conservation interest in the study area;
- The National Biodiversity Data Centre (NBDC) species database (http://www.biodiversityireland.ie/) and BSBI database https://database.bsbi.org/ were consulted to obtain species records in the study area. Searches for desktop records of relevance focused on the 2km square around the site. The site lies within the top left section of monad (1 km square) W9672 which also includes the eastern half of Mitchells Wood. Adjacent monads are

W9673 (Castlemartyr Village), W9573 (Castlemartyr estate and Pigeons wood) and W9572 (Castlemartyr estate and western half of Michell's Wood).

- The Environmental Protection Agency mapping system (https://gis.epa.ie/EPAMaps/), and www.catchments.ie website for data related to water quality;
- The Inland Fisheries Ireland (IFI) website and www.wfdfish.ie website for fisheries data;
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie/;
- Geological Survey Ireland (GSI) data and maps https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx ; and
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland https://birdwatchireland.ie/birds-of-conservation-concern-in-ireland/

Field Study

A multi-disciplinary ecological survey (Extended Phase 1 Habitat Survey) was carried out by the author on January 19th and 20th 2022. The vegetation on the site was identified and habitats on site were classified in accordance with The Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000)[1] and the Annex I interpretation manual. [2] Habitats were then mapped in accordance with the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011)[3]. In terms of fauna, the site and surrounding lands were walked and any sights or signs of mammals, birds, amphibians or invertebrates recorded. Further specialist bat and bird surveys were undertaken over the summer of 2022. These are appended to the EcIA for this Project.

In the context of Appropriate Assessment, particular attention was paid to identifying the presence of, or potential for, qualifying habitats or species (including ex-situ populations) using the site and surrounding area, as well as potential pathways for effects to European Sites.

The EPA monitoring biological water quality upstream at Castlemartyr village bridge however there is no comparable downstream monitoring point. The river was therefore sampled at the woodland footbridge ca. 210m downstream of the discharge point (Figure 2). The assessment involved kick sampling for macroinvertebrates and subsequent application of the EPA Q-rating scheme (Toner et al, 2003)[4]. The Q rating scheme involves assigning a water quality rating considering the relative abundance of pollution tolerant and pollution sensitive species (Groups A to E), along with other biotic and physio-chemical indicators. The river in the vicinity of the discharge and downstream was also visually assessed for any indicators of pollution.

[1] https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf
[2] Interpretation Manual of European Union Habitats – EUR28 https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf
[3]https://www.heritagecouncil.ie/content/files/best_practice_guidance_habitat_survey_mapping_onscreen_version_2011_8mb.pdf
[4] Toner, P., Bowman, K., Clabby, G., Lucey, J., McGarrigle, M, Concannon, C., Clenaghan, C., Cunningham, P., Delaney, J., O'Boyle, S., MaCarthaigh, M., Craig, M., and Quinn, R. (2005). Water Quality in Ireland 2001-2003. Environmental Protection Agency, Wexford.

Figure 2 Site Survey Area (Google Maps Imagery © 2022 CNES/Airbus, Maxar Technologies, Map data © 2022)

Consultation

INIS Environmental Consultants undertook consultation with the DAU and IFI in 2020 on behalf of Irish Water. No response was received from the DAU. IFI noted the following:

"(…) *Inland Fisheries Ireland welcomes the proposed upgrade to Castlemartyr waste water treatment facilities given the likely resulting improvements in effluent quality discharging to the receiving Kiltha river. The Kiltha river provides a recreational angling resource to local residents and holds stocks of Brown trout and has a modest run of Atlantic salmon. Other fish species present in the catchment include Yellow eel, and Stoneloach, and Lamprey spp. Inland Fisheries Ireland would stress the importance of protecting receiving surface waters from deleterious discharges during the proposed works. This may be achieved via the employment of relevant site mitigations during construction, also in scheduling activity to allow for the maintenance of treatment capacity during same or alternatively to arrange the export of effluent from the plant during any period of unavoidable interruption to the plant capacity as a consequence of the works*. (…)".

Description of Project & Receiving Environment

Description of the Proposed Development

The development will consist of the expansion and upgrade of the existing Castlemartyr WwTP to facilitate an increased treatment capacity and capability. The proposed works will comprise of:

- Provision of c.32m of below ground inlet sewer;
- An emergency stormwater overflow chamber;
- Upgrade of the existing inlet works including 2 no. fine screens and grit removal;
- A 19m³ forward feed pumping station; secondary / biological treatment facilities (include: 1 no. anoxic / aeration tank and 2 no. 8m diameter settlement tanks;
- Tertiary treatment for phosphorus removal comprising chemical dosing and filtration comprising 1 no. disc filter;
- Sludge management system including the re-purpose of the existing clarifier tank to new picket fence thickener; above-ground storm tank with 255m³ storage,
- Provision of c.15m of below ground outfall pipeline to discharge flows to the existing outfall location at the River Kiltha;
- New treated effluent outfall headwall to River Kiltha – discharging to existing outfall location;
- A new ESB sub-station building (c.21sq.m.);
- A new control building (c.80.6sq.m.); a new permanent generator and fuel tank (c.8m³);
- Upgrade of the existing access road within the WwTP boundary;
- Boundary fencing and treatments; and
- All associated site development works above and below ground on a site of c.0.34 hectares.

The proposed layout and a hydraulic profile drawing is provided in Appendix B.

Construction stage

The proposed works will require clearance of trees and vegetation, including invasive species, within the Project site fenceline. The deepest tank excavation is estimated to be 3.3m below ground level, while the deepest sewer excavation will be 1.3m below ground level. Works are required to the entrance laneway to provide pedestrian access and to lay a watermain, but no tree-felling will be required in this area. Tracked excavators and rigid lorries will be used for works. Minor excavations may be carried out using smaller excavators and 6t dumpers. The proposed outfall sewer will be laid from the final effluent manhole to the existing discharge location using an open-cut method. The new headwall will be installed at the riverbank edge and existing discharge location. The outfall headwall will be a pre-cast unit. This will be lowered into place from the landward side of the works by a suitably sized excavator. This element of the works on the river bank, including installing the new headwall, will take no more than 8 days to complete. Works are expected to commence in January 2023, starting with vegetation clearance and tree-felling, and be completed by January 2025.

Operational stage

The current discharge licence specifies ELV's of BOD 15mg/l, COD 125mg/l, SS 35mg/l, pH 6-9 pH units, Ammonia 0.5mg/l and Orthophosphate 0.5mg/l. Considering flow data, assimilative capacity, treatment capabilities, and increased capacity, the proposed scheme has been designed to achieve ELV's of BOD 6.63mg/l, Ammonia 0.68mg/l and Orthophosphate 0.22mgl while ensuring adequate assimilative capacity remains for downstream inputs. These ELV's ensure Good status water chemistry requirements under the WFD are met.

The results presented below consider the average background water quality (capturing upstream pressures), the notionally clean background water quality (considering the impact of the WwTP alone), the low river flow estimate of 0.09422m3/sec, and a PE of 3400 discharging a load of 225l/day (per PE). The upstream data is a mean figure of data from EPA monitoring at Castlemartyr Bridge (RS19W011000) from Sept 2018 to Sept 2021. They demonstrate that compared with the Surface Water Regulations standards (EQS) Good status conditions are maintained downstream at the maximum PE in low flow conditions.

Table 1: Assimilative Capacity Calculations

Parameter	Background		WWDL ELV	Predicted D/S Concentration	SW Regs EQS
BOD	Actual	1.511	6.63	1.950	≤2.6 (good) ≤2.2 (high)
	Notionally Clean	0.260		0.807	
Ortho-phosphate	Actual	0.041	0.22	0.056	≤0.075 (good) ≤0.045 (high)
	Notionally Clean	0.005		0.023	
Ammonia	Actual	0.051	0.68	0.105	≤0.14 (good) ≤0.090 (high)
	Notionally Clean	0.008		0.065	

Overview of the Receiving Environment

Hydrology & Hydrogeology

The WwTP discharges to the Womanagh/Kiltha River. This reach of the river is within the Womanagh_020 waterbody which is currently assigned Moderate WFD status (2013-2018). The Moderate status is driven by Moderate Phytobenthos or Potential, and Moderate Nitrate conditions. Upstream of Castlemartyr the Womanagh_010 waterbody is assigned Good WFD status. The river splits just upstream of Castlemartyr village, with a branch flowing through Castlemartyr estate and a branch continuing through the village (Refer to Figure 1). The estate branch is wide and slow flowing creating lake-like conditions due to being impounded behind a weir. Both branches re-join ca. 70m upstream of the WwTP discharge point. Approximately 1km downstream of the discharge point, the Dower stream joins the Womanagh River. The River then continues 9km via the unassigned Womanagh_030 waterbody,

to the unassigned Womanagh estuary waterbody, before entering the Irish Sea in Youghal Bay which is assigned Moderate status (due to Moderate oxygenation conditions).

The EPA monitoring biological water quality at station RS19W011000 (Br in Castlemartyr), ca. 400m upstream of the WwTP discharge point, which was assigned a rating of Q4 in 2020 indicating Good status water quality conditions. There are no recent EPA biological water quality monitoring locations within the Womanagh River downstream of this point. A macroinvertebrate sample was therefore taken ca. 210m downstream of the WwTP adjacent to the woodland footbridge and assessed bankside using the DAFOR scale to provide an indication of water quality. The sample contained abundant Heptageniidae mayfly, frequent *Baetis* spp mayfly, *Gammarus deubeni* shrimp, and Chrironmid fly larvae. The snail *Potamopyrgus antipodarum*, water louse *Asellus aquaticus* and Simuliidae fly larvae were occasional, while Cased caddis Sericostomatiidae, caseless caddis *Hydropsyche* sp, leech and riffle beetles were rare. The assemblage of taxa, and particularly the abundance of pollution-sensitive mayfly, means this site would warrant a Q4 rating in accordance with EPA criteria indicating Good water quality.

Water chemistry is monitored by Cork Co. Co./EPA upstream and downstream of the WwTP discharge. The upstream monitoring point is station RS19W011000 (Br in Castlemartyr), while the downstream monitoring point is station RS19W011040 (ambient d/s TPEFF0500D0134SW001) where the macroinvertebrate sample was taken. Results were compared with the Environmental Quality Standards specified in the Surface Waters Regulations 2009 (as amended) with exceedances highlighted in bold. Generally Good status conditions are met upstream and downstream of the discharge with occasional exceedances.

Castlemartyr is listed as the only significant pressure on Womanagh_020 waterbody. Ladysbridge WwTP also discharges to the Womanagh_020 ca. 1.6km downstream of Castlemartyr WwTP but is not considered a significant pressure. Downstream, significant pressures on the Womanagh_030 waterbody are pasture and arable agriculture, while unknown anthropogenic pressures listed as significant for the Womanagh Estuary. Agriculture is the sole significant pressure on Youghal Bay.

The proposed WWTP exists within the Middleton - IE_SW_G_058 groundwater body. The geology of the site is limestone bedrock overlain with sandstone derived till subsoils. Soil is indicated as sandstone sands and gravel - shallow well drained acidic mineral soil. The bedrock aquifer is regionally important karstified (diffuse). Groundwater vulnerability is classed as Moderate.

Table 2: Womanagh River Water Quality Monitoring Results 2021

Sample Date	Ammonia-Total (as N) mg/l	BOD mg/l	DO %SAT	pH	ortho-Phosphate (as P) mg/l	SS mg/l
SW Regs EQS's	95%ile: ≤0.14 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)	95%ile: ≤2.6 (good) ≤2.2 (high)	95%ile: 80-120%	4.5< pH < 9.0	95%ile: ≤0.075 (good) ≤0.045 (high) Mean: ≤0.035 (good) ≤0.025 (high)	
RS19W011000 Br in Castlemartyr (Village Branch)						
13/01/2021	0.037	0.5	102	7.7	0.041	
03/02/2021	0.136	2.3	96.8	7.7	0.039	12
03/02/2021	0.11	1.1	97	7.5	0.042	
17/02/2021	0.076	1.4	96.4	7.9	0.037	7
03/03/2021	0.021	0.5	99	7.8	0.028	
03/03/2021	0.023	1.1	100.4	8	0.034	4
08/04/2021	0.01	0.5	105	8	0.026	
14/04/2021	0.024	1.9	96.1	8	0.018	5
12/05/2021	0.013	0.5	107.2	8.1	0.027	6
19/05/2021	0.14	1.7	105	7.9	0.041	
02/06/2021	0.008	1.3	99	7.8	0.025	7
16/06/2021	0.01	0.5	100	7.9	0.031	1.25
07/07/2021	0.059	0.5	103.4	7.9	0.056	
08/07/2021	0.027	0.5	101	7.8	0.055	
04/08/2021	0.016	1.3	104.4	8.1	0.047	7
19/08/2021	0.023	1.3	109	8.4	0.056	
01/09/2021	0.017	1.3	98.7	7.9	0.049	1.25
16/09/2021	0.01	1	106	8.1	0.073	
06/10/2021	0.01	0.5	98	8.1	0.048	
20/10/2021	0.05	**5.4**	97.8	7.7	**0.134**	102
03/11/2021	0.019	1.1	101.2	7.7	0.033	3
04/11/2021	0.01	0.5	109	7.6	0.033	
09/12/2021	0.11	0.5	102	7.6	0.068	
RS19W011040 ambient d/s TPEFF0500D0134SW001 (Woodland Footbridge)						
03/02/2021	0.108	2.2	93.6	7.8	0.037	9
17/02/2021	0.09	1.2	99.4	7.9	0.033	5
03/03/2021	0.02	1.8	86.2	8	0.015	3
14/04/2021	0.019	1.5	100.6	8	0.035	8
12/05/2021	0.005	1.3	102.4	7.9	0.031	4
02/06/2021	0.033	1.4	98.1	7.7	0.025	6
28/06/2021			93.1			
07/07/2021	**0.494**	1.7	101.8	7.8	0.056	1.25
26/07/2021			100.7			
04/08/2021	0.086	**5.8**	104.7	7.7	**0.229**	84
01/09/2021	0.013	2.1	86.6	7.6	0.033	5
20/10/2021	0.089	**7.4**	97.2	7.5	**0.166**	85
03/11/2021	0.026	1.1	97.7	7.7	0.053	6

Ecological Desktop & Field Survey

The permanent and temporary works areas are within mixed broadleaved woodland habitat (WD1) and wet woodland habitat (WN6). Much of the WD1 habitat is infested with cherry laurel *Prunus laurocerasus*, and there are also a number of *Rhododendron* plants. The WN6 habitat appears to have formed as a result of local drainage conditions rather than connection to the river, with the latter being a feature of Annex I alluvial forest habitat. To the south and east of the site, there is a sitka spruce plantation (WD4) known Mitchells Wood and owned by Coillte.

The Womangh/Kiltha River runs southwards to the west of the site. Giant Hogweed *Heracleum mantegazzianum* was identified on the river bank in close proximity to the site, while the invasive species water fern *Azolla filiculoides* was found upstream of the WwTP site, and there are also records of Canadian pondweed *Elodea canaden*sis from the river. The instream river vegetation has affinities to the Annex I Floating River Vegetation [3260] as described in the EU Interpretation manual, however it is the common and widespread form dominated by water crowfoot which is considered to have low conservation value and indicate damage (NPWS, 2019)[5], as opposed to the rarer subtypes for SAC's are designated.

There are numerous past records of otter from the area and otter prints were identified in muds adjacent to the Womanagh River in close proximity to the site during the field survey. On the river bank ca. 160m downstream of the Project site (at its closest point) evidence of a mammal resting site was identified under undergrowth and fallen tree trunks. Judging by the nature of mammal paths entering and exiting toward the river, is most likely that of the invasive mink *Neovision vision*, for which prints were also identified upstream, but also could be considered a potential otter holt. Evidence of squirrel, likely red, was found in the adjacent conifer woodland. There are also past records native and invasive species including badger Meles meles, bank vole *Myodes glareolus*, mink *Neovision vision*, fox *Vulpes vulpes*, rabbit *Oryctolagus cuniculus*, ferret *Mustela furo* and Irish hare *Lepus timidus hibernicus* within 2km of the site.

The site has high suitability for foraging and commuting bats based on its location within a wider woodland network and the adjacent river/impounded river and parkland habitats. Bats recorded during foraging or commuting during the survey were primarily pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, with faint and distant calls of brown long-eared bat *Plecotus auratus* and lesser noctule *Nyctalus leisleri* also recorded. Roosting potential in trees on the site ranged from low to moderate, with negligible potential in any existing infrastructure. An emergence and re-entry survey confirmed the absence of roosting bats in the structures and trees within the site at the time of survey.

The wooded and riparian habitats within and around the site provide suitable nesting, roosting and foraging habitat for breeding and wintering birds. Likewise the proximity of open parkland and lakes means a variety of bird species, including wintering waterbirds, use the surrounding area. Reviewing the bird records in the NBDC database for the 2km area around the Project site, records exist for monad W9573 which includes the Castlemartyr estate river/lake habitats and monad W962 which includes the Project site and Mitchell's wood. Birds of conservation concern[6] recorded in the vicinity of the Project site, and those listed on Annex I of the Birds Directive, are highlighted below.

[5] NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill
https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol2_Habitats_Article17.pdf
[6] https://birdwatchireland.ie/birds-of-conservation-concern-in-ireland/

Table 3: Bird Records

Bird	Monad	Date	Conservation Status
Common Wood Pigeon (*Columba palumbus*)	W9573 W9672	28/02/2021 23/05/2015	
Eurasian Wigeon (*Anas penelope*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Gadwall (*Anas strepera*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Great Cormorant (*Phalacrocorax carbo*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Little Egret (*Egretta garzetta*)	W9573 W9672	06/05/2021 31/12/2001	Annex I Birds Directive.
Mallard (*Anas platyrhynchos*)	W9573 W9672	06/05/2021 31/12/2001	
Mute Swan (*Cygnus olor*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Black-headed Gull (*Larus ridibundus*)	W9672	31/12/2001	Red List
Common Kingfisher (*Alcedo atthis*)	W9672	25/05/2015	Annex I Birds Directive Amber List
Eurasian Curlew (*Numenius arquata*)	W9672	31/12/2001	Red List
Little Grebe (*Tachybaptus ruficollis*)	W9672	31/12/2001	Amber List
Mew Gull (*Larus canus*)	W9672	31/12/2001	Amber List
Northern Lapwing (*Vanellus vanellus*)	W9672	31/12/2001	Red List
Northern Shoveler (*Anas clypeata*)	W9672	31/12/2001	Red List
Tufted Duck (*Aythya fuligula*)	W9672	31/12/2001	Amber List

Of note recorded during field surveys are mallard which is amber-listed for its breeding and wintering populations, little egret and kingfisher which are species listed on Annex I of the Birds Directive, and grey wagtail and swift which are red-listed breeding species.

The woodland and riverside habitats are likely to support a diverse range of invertebrates, frog and newt, with past records of the latter upstream of the site. Based on desktop and field findings, the river supports lamprey, yellow eel, salmon and trout.

Photo 1 Impounded Womanagh River (Estate Branch)

Photo 2 Womanagh River adjacent to Project site

Photo 3 Primary Discharge

Photo 4 Woodland within Project site

Photo 5 Entrance to existing WwTP

Photo 6 Ballymacoda Bay

Appropriate Assessment

European Sites and Qualifying Interests

As identified by the AA Screening, Ballymacoda (Clonpriest and Pillmore) SAC (000077) and Ballymacoda Bay SPA (004023), located ca. 12km to east of the Project via Womanagh River surface water pathway, are likely to be significantly affected by the Project in the absence of protective/mitigation measures. These European Sites and their qualifying interests are described below.

Ballymacoda (Clonpriest and Pillmore) SAC[7]

This coastal site stretches north-east from Ballymacoda to within about 6 km of Youghal, Co. Cork. Though moderate in size, it has a good diversity of coastal habitats, including several listed on Annex I of the E.U. Habitats Directive.

The site comprises the estuary of the Womanagh River, a substantial river which drains a large agricultural catchment. Part of the tidal section of the river is included in the site and on the seaward side the boundary extends to the low tide mark. The inner part of the estuary is well sheltered by a stabilised sandy peninsula (Ring peninsula). Intertidal mudflats and sandflats, which form part of the overall estuarine habitat, are well represented. The sediment types vary from muds to muddy sands in the inner part, to fine rippled sands in the outer exposed part. In the more sheltered areas the intertidal flats are colonised by mats of green algae (mostly *Enteromorpha* spp.), with brown seaweeds occurring on the rocky shores of the shingle spits.

The main channel is flanked by saltmarshes and wet fields, much of the latter being improved for agriculture. The saltmarshes are mainly classified as Atlantic salt meadows, with such species as Sea Purslane (*Halimione portulacoides*), Lax-flowered Sea Lavender (*Limonium humile*) and Sea Milkwort (*Glaux maritima).* A large area of Mediterranean salt meadows is found on the island at Clonpriest East. This saltmarsh is well-established and has a well-developed topography with a highly representative vegetation cover. A similar community is also found in the established saltmarsh along the west side of The Duck. A rarer sub-type of Mediterranean salt meadow with Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) as an indicator species is present at this site. This is a very notable population of this rare species, which is listed on the Flora (Protection) Order, 2015 and is also listed in the Red Data book.

Ballymacoda is a fine example of an estuarine complex, with intertidal flats well represented. The site is of high conservation importance because several of the habitats present are listed on Annex I of the E.U. Habitats Directive. However, there is also considerable ornithological interest; Ballymacoda is one of the most important bird sites in the country and supports a higher number of waders than any other Co. Cork estuary of its size. It also contains important numbers of Golden Plover and Bar-tailed Godwit, two E.U. Birds Directive Annex I species, an internationally important population of Black-tailed Godwit, and nationally important numbers of a further 13 bird species.

[7] Extracted from NPWS site synopsis dated 10.12.2015

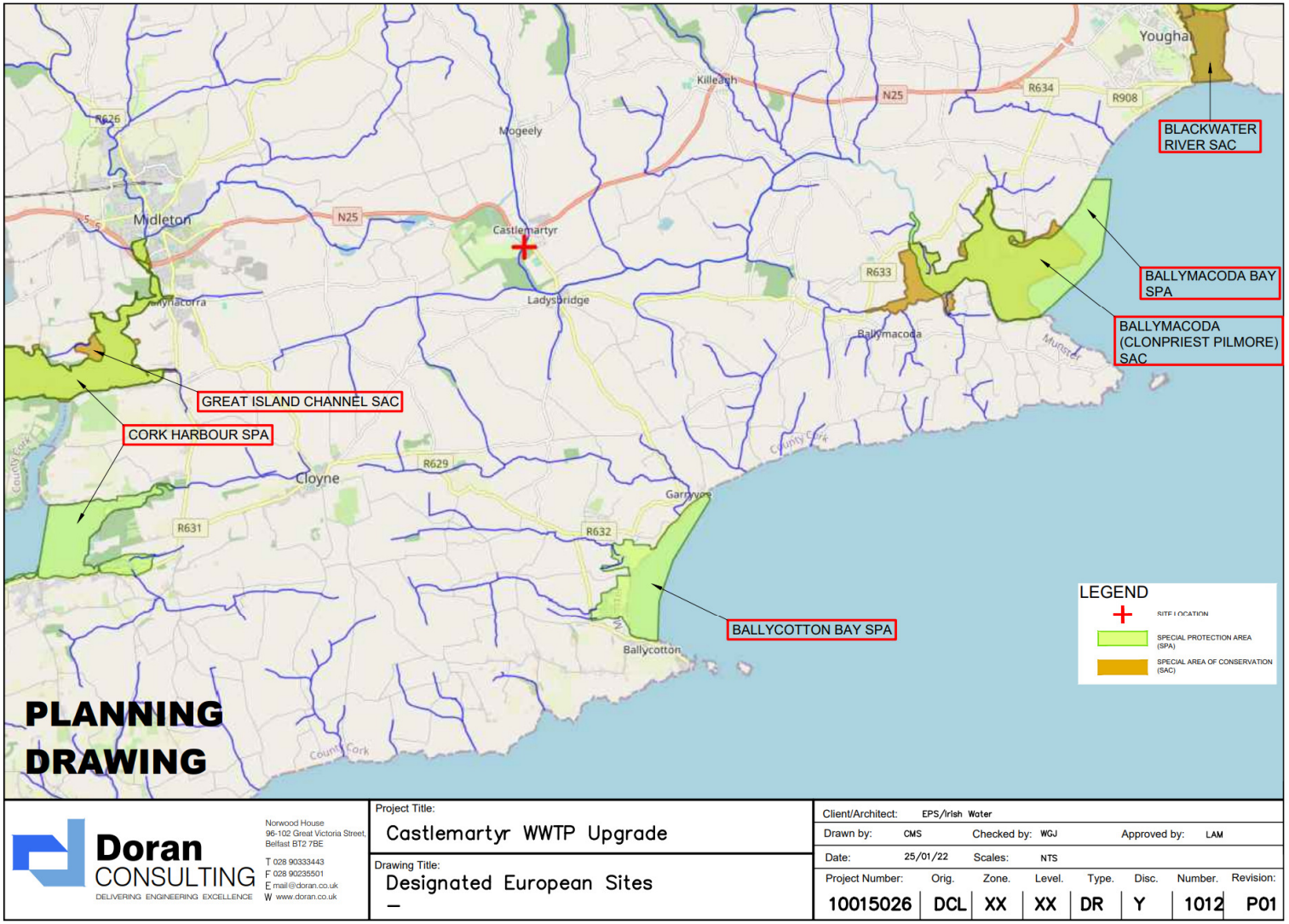

Figure 3 European Sites

Description of the Conservation Interests of the SAC

Annex I Habitats:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Mediterranean salt meadows (Juncetalia maritimi) [1410]

Ballymacoda (Clonpriest and Pillmore) SAC is located 12km via the Womanagh River to the southeast of the Project site. NPWS (2015)[8] identify that the Mudflats and Sandflats habitat occurs throughout the SAC with the outer coastal areas dominated by 'Sand with polychaetes and bivalves' community complex, and the inner transitional areas by 'Sandy mud with *Hediste diversicolor* and *Tubificoides benedii'* community. The Estuaries and Saltmarsh/meadows habitats (Atlantic salt meadows, Mediterranean salt meadows and Salicornia habitats) associated with the SAC occur within the inner transitional waterbody of the SAC.

At a national level, marine pollution from a range of sources (residential, recreational, agriculture, aquaculture) is identified as a pressure for Estuaries and Mudflats and Sandflats (NPWS, 2019[9]). In particular, nutrient enrichment of enclosed bays has been highlighted as an issue, resulting from nutrient sources relating to agriculture, forestry and wastewater discharges. The overall national assessment of conservation status for both Estuaries and Tidal Mudflats and Sandflats is Inadequate (*Deteriorating*).

Saltmarshes are stands of vegetation that occur along sheltered coasts, mainly on mud or sand, and are flooded periodically by the sea. They are restricted to the area between mid neap tide level and high water spring tide level. Key pressures identified in NPWS (2019) related to grazing, recreational use and hydrological/coastline modifications. The overall national assessment of conservation status for both saltmarsh habitats is Inadequate (*Deteriorating*), while Salicornia mud habitat is Favourable (*Stable*).

Site specific threats and pressures identified on the Natura 2000 data form[10] that are ranked as medium or higher are fertilisation, grazing, invasive species (Spartina) and several threats related to human disturbance such as fishing, hunting and recreational activities.

Ballymacoda Bay SPA

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Wigeon, Teal, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull and Lesser Black-backed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. Ballymacoda Bay is of high ornithological importance for supporting an excellent diversity and large number of wintering waterbirds – it is of international

[8] NPWS (2015) Conservation Objectives: Ballymacoda (Clonpriest and Pillmore) SAC 000077. Version 2. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
[9] NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill
[10] https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000077.pdf

importance because it regularly supports an assemblage of over 20,000 birds. The site provides both feeding and roosting areas for the birds. Furthermore, both Golden Plover (10,920) and Black-tailed Godwit (765) occur here in internationally important numbers (all counts given are mean peaks for the five year period 1995/96- 1999/2000). A further eleven species of waders and ducks occur here in nationally important numbers, i.e. Wigeon (907), Teal (887), Ringed Plover (153), Grey Plover (535), Lapwing (4,063), Sanderling (98), Dunlin (3,192), Bar-tailed Godwit (581), Curlew (1,145), Redshank (357) and Turnstone (137). The site is also notable for supporting nationally important populations of some gull species in autumn and winter: Black-headed Gull (1,560), Common Gull (1,120) and Lesser Black-backed Gull (5,051). A total of 107 species were recorded from the site between 1971 and 1988. Ballymacoda Bay SPA is one of the most important sites in the country for wintering waterfowl. It qualifies for international importance on the basis of regularly exceeding 20,000 wintering birds but also for its Golden Plover and Black-tailed Godwit populations. In addition, it supports nationally important populations of a further fourteen species. Two of the species which occur, Golden Plover and Bar-tailed Godwit, are listed on Annex I of the E.U. Birds Directive. Ballymacoda Bay is also a Ramsar Convention site.

Description of the Conservation Interests of the SPA

- Wigeon (Anas penelope) [A050]
- Teal (Anas crecca) [A052]
- Ringed Plover (Charadrius hiaticula) [A137]
- Golden Plover (Pluvialis apricaria) [A140]
- Grey Plover (Pluvialis squatarola) [A141]
- Lapwing (Vanellus vanellus) [A142]
- Sanderling (Calidris alba) [A144]
- Dunlin (Calidris alpina) [A149]
- Black-tailed Godwit (Limosa limosa) [A156]
- Bar-tailed Godwit (Limosa lapponica) [A157]
- Curlew (Numenius arquata) [A160]
- Redshank (Tringa totanus) [A162]
- Turnstone (Arenaria interpres) [A169]
- Black-headed Gull (Chroicocephalus ridibundus) [A179]
- Common Gull (Larus canus) [A182]
- Lesser Black-backed Gull (Larus fuscus) [A183]
- Wetland and Waterbirds [A999]

NPWS (2014)[11] identify that 6 species are currently considered as Highly Unfavourable (Lapwing, Dunlin, Curlew, Black-headed Gull, Common Gull and Lesser Black-backed Gull); 1 species is currently considered as Unfavourable (Golden Plover); 3 species are currently considered as Intermediate Unfavourable (Wigeon, Ringed Plover and Grey Plover); and 6 species are currently considered as Favourable (Teal, Sanderling, Black-tailed Godwit, Bar-tailed Godwit, Redshank and Turnstone). The mean iWeBS data for the period 2008/09 – 2017/18[12] indicates that Golden Plover, Dunlin, Black-tailed Godwit and Bar-tailed Godwit maintain on average numbers of national importance, with no species associated with this SPA maintaining numbers of international importance. Counts of other birds species have been highly variable in recent years.

[11] NPWS (2014) Ballymacoda Bay SPA 004023. Conservation objectives supporting document Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
[12] https://birdwatchireland.ie/our-work/surveys-research/research-surveys/irish-wetland-bird-survey/

All species feed in the intertidal mud and sand flats, with the gulls additionally feeding in the sheltered and shallow subtidal areas of the inner estuary and outer bay. With the exception of Wigeon all species have wide foraging/prey requirements. The possibility that supporting habitats could be at risk from any potential water quality impacts arising from the Project requires consideration.

Site-specific threats and pressures identified on the Natura 2000 data form[13] that are ranked as medium or higher are fertilisation, grazing and invasive species (Spartina).

Assessment of Potential Adverse Effects

The likely significant effects identified during the AA Screening assessment related to:

- The potential for water quality pollution and the spread of invasive species arising during the construction stage of the development to affect the conservation objectives of the SAC and SPA; and
- The potential for the treated discharge to affect the conservation objectives of the SAC and SPA.

The potential for adverse effects on the qualifying habitats of Ballymacoda (Clonpriest and Pillmore) SAC and the qualifying species of Ballymacoda SPA are assessed against their site-specific conservation objectives below.

Site specific conservation objectives and associated details have been extracted from:

- NPWS (2015) Conservation Objectives: Ballymacoda (Clonpriest and Pillmore) SAC 000077. Version 2. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Ballymacoda (Clonpriest and Pillmore) SAC 000077. Conservation objectives supporting document – coastal habitats. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2015) Ballymacoda (Clonpriest and Pillmore) SAC 000077. Conservation objectives supporting document – marine habitats. Version 2. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Conservation Objectives: Ballymacoda Bay SPA 004023. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Ballymacoda Bay SPA 004023. Conservation objectives supporting document Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

[13] https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004023.pdf

Table 4 Conservation Objectives

Qualifying Interest & Conservation Objective	Conservation Objective Attributes & Targets
Ballymacoda SAC	
Estuaries **To <u>maintain</u> the favourable conservation condition of Estuaries in Ballymacoda (Clonpriest and Pillmore) SAC**	Attribute: Habitat Area; Target: Permanent habitat area stable or increasing subject to natural processes. Attribute: Community Distribution; Target: Conserve the following community types in a natural condition – Sandy mud with Hediste diversicolor and Tubificoides benedii community; Sand with polychaetes and bivalves community complex.
Mudflats and sandflats not covered by seawater at low tide **To <u>maintain</u> the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Ballymacoda (Clonpriest and Pillmore) SAC**	Attribute: Habitat Area; Target: Permanent habitat area stable or increasing subject to natural processes. Attribute: Community Distribution; Target: Conserve the following community types in a natural condition – Sandy mud with Hediste diversicolor and Tubificoides benedii community; Sand with polychaetes and bivalves community complex.
Salicornia and other annuals colonising mud and sand **To <u>restore</u> the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in Ballymacoda (Clonpriest and Pillmore) SAC**	Attribute: Habitat Area; Target: Area stable or increasing subject to natural processes, including erosion and succession. For sub-sites mapped Ballymacoda 1.57ha. Attribute: Habitat Distribution; Target: No decline, or change in habitat distribution, subject to natural processes. Attribute: Physical structure-sediment supply; Target: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions. Attribute: Physical structure – creeks and pans; Target: Maintain creek and pan structure, subject to natural processes including erosion and succession. Attribute: Physical structure-flooding regime; Target: Maintain natural tidal regime. Attribute: Vegetation structure - zonation; Target: Maintain the range of coastal habitats including transition zones, subject to natural processes including erosion and succession. Attribute: Vegetation structure – vegetation height; Target: Maintain structural vegetation within sward. Attribute: Vegetation structure – vegetation cover; Target: Maintain more than 90% of area outside creeks vegetated. Attribute: Vegetation composition – typical species and sub-communities; Target: Maintain the presence of species-poor communities listed in Saltmarsh Monitoring Project report. Attribute: Vegetation structure – negative indicator species – *Spartina anglica*; Target: No significant expansion of common cordgrass (*Spartina anglica*), with annual spread of less than 1%.

Atlantic Salt Meadows **To <u>maintain</u> the favourable conservation condition of Atlantic salt meadows (Glauco-Puccinellietalia maritimae) in Ballymacoda (Clonpriest and Pillmore) SAC** *Note: there are no site-specific conservation objectives provided for Mediterranean salt meadows however the attributes and targets would be similar to those for Atlantic salt meadows and therefore these two habitats are assessed together on the basis of these attributes and targets*	Attribute: Habitat Area; Target: The permanent habitat area is stable or increasing subject to natural processes including erosion and succession. For sub-site mapped Ballymacoda 28.3ha. Attribute: Habitat Distribution; Target: No decline or change in habitat distribution, subject to natural processes. Attribute: Physical structure (Sediment supply)– Physical Barriers; Target: Maintain the natural circulation of sediments and organic matter without any physical obstructions. Attribute: Physical structure (Creeks & Pans); Target: Maintain/Restore creek and pan structure, subject to natural processes, including erosion and succession. Attribute: Physical structure – flooding regime; Target: Maintain natural tidal regime. Attribute: Vegetation structure – Zonation; Target: Maintain range of coastal habitat including transitional zones, subject to natural processes including erosion and succession. Attribute: Vegetation structure – Vegetation height; Target: Maintain structural vegetation within sward. Attribute: Vegetation structure – Vegetation cover; Target: Maintain more than 90% of area outside creeks vegetated. Attribute: Vegetation composition – Typical species and sub-communities; Target: Maintain range of sub-communities with typical species listed in the Saltmarsh Monitoring Project (McCorry and Ryle, 2009). Attribute: Vegetation composition – Negative Indicator species – *Spartina anglica*; Target: No significant expansion of common cordgrass (*Spartina anglica*), with annual spread of less than 1%.
Ballymacoda SPA	
For all qualifying interests: **To <u>maintain</u> the favourable conservation condition of the QI's in Ballymacoda Bay SPA, which is defined by the following list of attributes and targets:**	Attribute: Population trend; Target: Long term population trend stable or increasing. Attribute: Distribution Target: There should be no significant decrease in the range, timing or intensity of use of areas by the QI, other than that occurring from natural patterns of variation.
To <u>maintain</u> the favourable conservation condition of the wetland habitat in Ballymacoda Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:	Attribute: Wetland habitat; Target: The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 602ha, other than that occurring from natural patterns of variation.

Adverse effects on the qualifying habitats of Ballymacoda (Clonpriest and Pillmore) SAC

Construction Stage

Given the distance from the WwTP Site and the sediment rich nature of these habitats, the potential releases of any large quantities of sediments are not expected to adversely affect any of the conservation objective targets listed, however if other contaminants such as oils, fuels or sewage residues, are mixed in with site run-off, these could adversely effect the targets for maintaining habitat area , community/habitat distribution, vegetation communities and vegetation structure. Likewise direct spillages of fuels, oils of chemicals would similarly interfere with these targets. Mitigation measures are therefore specified to avoid these impacts arising.

Given the estuarine nature of the habitats being considered, the potential spread of the high-impact invasive species identified on-site (Rhododendron, Giant Hogweed, Water Fern and Canadian Waterweed) is not predicted to adversely effect the conservation objectives of Estuaries, Mudflats and Sandflats or Salicornia Muds. The upper saltmarsh habitats however could sustain terrestrial flora, and therefore Rhododendron and Giant Hogweed pose a risk to the conservation objective targets relating to habitat area , habitat distribution, vegetation communities and vegetation structure. Mitigation measures are therefore specified to avoid these impacts arising.

Operational Stage

The upgraded discharge will comply with WFD requirements, meeting the Surface Water Regulation standards downstream of the discharge ensuring Good status, while ensuring assimilative capacity remains downstream of the discharge for further inputs. The biological water quality monitoring also suggests that, for the current (pre-upgrade) discharge, that despite occasional exceedances of downstream water chemistry parameters, there have been no long term effects to the benthic fauna relative to upstream monitoring results. Together this would indicate that an improved quality discharge will not threaten water quality status within the Womanagh River. The conservation objective for the estuarine habitats in question do not specify particular water quality targets. That said eutrophication impacts, typically characterised by algal blooms in these environments, could affect targets for habitat area , habitat distribution, vegetation communities and vegetation structure. The supporting documentation and Natura data form do not identify pollution as a threat or pressure to this site. While Salicornia muds are not achieving favourable conservation condition, this us due to the Spartina infestation., and the other habitats maintain favourable conservation condition in the Site. The WFD data indicates Youghal Bay has Moderate status and that Agriculture is the sole significant pressure. Despite this, eutrophication impacts are not reported to negatively affecting the designated habitats. In this context, the high quality of the proposed discharge ensures that no additional nutrient impact will adversely affect the maintenance or restoration of the favourable conservation condition of these habitats.

Adverse effects on the qualifying bird species of Ballymacoda SPA

Construction Stage

There are no prescribed conservation objectives relating to water quality for the qualifying interests of the SPA's, though there could be indirect relationships between water quality conditions and other objectives (distribution, extent of wetland habitat). Following the analysis for qualifying habitats above,

which largely overlap with the wetland habitats designated as part of the SPA, the potential release of pollutants would be expected to interfere with the conservation objective targets for species distribution by disrupting natural patterns of variation or damaging wetland habitat area and quality. Mitigation measures are therefore specified to avoid these impacts arising.

Operational Stage

Following the analysis presented for qualifying habitats of the SAC, the upgraded discharge will not contribute to eutrophication impacts and poses no risk to the conservation objective targets for the wetland habitats supporting the SPA species, or any direct risk to bird species.

Cumulative or In-combination Adverse Effects

In-combination effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018). Different types of actions can cause cumulative impacts and effects. As such, these types of impacts may be characterised as:

- Additive/incremental – in which multiple activities/projects (each with potentially insignificant effects) add together to contribute to a significant effect due to their proximity in time and space (CIEEM, 2018).
- Associated/connected – a Development activity 'enables' another Development activity e.g. phased Development as part of separate planning applications. Associated Developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process (CIEEM, 2018).

In-combination effects were considered at Screening for Appropriate Assessment Stage, where the potential for cumulative effects with Plans, and Projects seeking or recently granted consent, was excluded.

The potential for cumulative operational stage effects of the Project combined with the hotel pump station infrastructure (currently in disrepair) could not be excluded at Screening stage based on the need to further analyse the adequacy of treatment standards in the context of the conservation objective targets for the SAC and SPA. Based on this analysis as described above the discharge does not pose a risk to the conservation objective targets 'alone'. This accounts for cumulative upstream pressures as the WAC analysis capture these inputs through use of background wate quality data. Furthermore biological water quality monitoring indicates the Womanagh River downstream of the hotel pump station maintains good-status water quality. Furthermore the sensitivity of the qualifying habitats to eutrophication impacts is low as outlined in the assessment above. In this context, cumulative adverse effects are not predicted to arise with the Projects treated discharge and the hotel pump station.

Summary of Potential Adverse Effects on Site Integrity

In the absence of mitigation this assessment finds that there is potential for the following adverse effects:

- Adverse effects on the qualifying interests of Ballymacoda (Clonpriest and Pillmore) SAC and Ballymacoda Bay SPA from the Project alone arising from construction stage pollution and spread of invasive species; and

In the absence of mitigation these could affect the integrity of the European Sites. Mitigation measures are prescribed below which will avoid these impacts arising.

Mitigation

Mitigation measures to avoid the potential for adverse effects of the Project on European have been specified below. Where relevant, measures are shown on the Construction Plan (Appendix E). These measures, together with any related planning conditions, will form part of the Employers Requirements for the Contractor undertaking the scheme and will be fully incorporated (with wording exactly as detailed below) within the Contractors CEMP. The input and supervision from an Ecological Clerk of Works (ECoW) is required for elements of the Project as detailed below.

General Project Mitigation

- The works area, shall be kept to the minimum area required to carry out the proposed works. No vegetation clearance will be undertaken outside of the red-line boundary which includes all temporary works areas. In order to protect adjacent habitats and vegetation, and screen the site from external ecological receptors, hoarding should be erected around the main site perimeter. It is not recommended that hoarding is erected along the route of the outfall as works in this area will be short-term in duration (ca. 1 week) and the ground is wet and liable to be damaged by the fencing, however this area should be clearly marked out and no access permitted to banksides outside of the red-line boundary.
- To minimise the risk of fresh concrete contaminating waterbodies, best practice in bulk liquid concrete management shall be employed addressing pouring and handling, secure shuttering, adequate curing times etc. On-site manholes will be precast, constructed of precast base ring and covers, reducing the requirement for wet concrete for constructing these elements. In addition:
    - On-site concrete batching and mixing activities will not be allowed and will be specifically prohibited in the contract documents;
    - Washing out of concrete lorries will not be permitted on site and will only take place at the batching plant (or other appropriate facility designated by the manufacturer).
- A 24 hour Emergency Incident Response Plan will be established to deal with incidents or accidents during construction that may give rise to pollution within any watercourses. This will include means of containment in the event of accidental spillage of hydrocarbons or other pollutants (including oil booms, soakage pads etc.).
- All fuels, lubricants and hydraulic fluids shall be kept in secure bunded areas at least 50m from the watercourse. The bunded area shall accommodate 110% of the total capacity of the containers within it. Containers shall be properly secured to prevent unauthorised access and misuse. An effective spillage procedure shall be put in place with all staff properly briefed. Any waste oils or hydraulic fluids shall be collected, stored in appropriate containers and disposed of offsite in an appropriate manner.
- Refuelling of machinery will be carried out off site or in a contained bunded area on site, over 50m from a watercourse. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.

- All plant and machinery shall be regularly maintained and serviced to minimise release of hydrocarbons. Spill kits shall be present in all plant machinery.
- Toolbox talks will be provided to all staff for (but not limited to) working in proximity to sensitive habitats and watercourses, use of spill kits, use of sediment control measures and biosecurity requirements on site. Training and awareness of personnel will continue throughout the construction phase and refresher training will be provided as required.

Mitigation for Protection of Watercourses

While instream construction works are not proposed the bankside works will require instream mitigation and therefore the following is required:

- The construction works are required to conform to the Inland Fisheries Ireland guidance on protection of fisheries during development works and Section 3 of the Local Government (Water Pollution) Act, 1977.
- All works along the riverbank must be agreed with IFI at least 6 weeks in advance of commencing works.
- Works will be undertaken between June and September, outside of the fisheries close season.
- Sandbags and/or a silt curtain will be placed along the river edge (on the river substrate) to contain earth that may collapse toward the river channel in the installation of the headwall. The exact nature and location of this protective measure will be agreed with the ECoW and IFI.
- Lamprey could be present in the silts at the edge of the bank adjacent to the proposed headwall. The ECoW under license from NPWS will need to check for and relocate juvenile lamprey within a 2m zone of the headwall construction and mitigation area.

A Surface water management system will be put in place prior to works commencing which will include the following:

- Residual groundwater and surface water seepage / leakage into the excavation area can be expected and therefore submersible dewatering pumps will be required during the construction phase. These pumped flows will be contaminated with silt and will require treatment before being returned to the Womanagh River. The contractor will not be permitted to pump water from the excavation area directly to the Womanagh River. All flows arising from dewatering of the works area shall undergo de-siltation treatment via a Water Management System (Appropriately sized series of ponds, siltbusters or settlement tanks) before discharge back to the River. A discharge of <25mg/l SS shall be achieved by the contractor as per IFI requirement for rivers hosting salmonids. Daily turbidity monitoring using a probe shall be undertaken within final tanks and the discharge as an indicator for SS levels. Where the discharge exceeds 50 NTU, SS should be sampled and checked in the discharge and upstream and downstream in the river.

- The contractor shall undertake all necessary works to ensure the volume of surface and groundwater seepage / leakage into the works area is minimised as far as is practically possible in order to reduce dewatering requirements. Cut-off drains will be provided on the upslope side of excavations where appropriate to channel runoff flows to the specified area where it can flow or be pumped into the settlement tanks. Hay bales, as an absorbent material, can be strategically placed, and silt fencing or sandbags can be used to direct water in a controlled way to designated areas.

- Appropriately-sited silt fences will be installed as determined by the ECoW along the western site boundary and wherever else required to intercept flow paths particularly from sloping or waterlogged areas.
    - Silt fences shall be constructed using a permeable filter fabric (Hy-Tex Terrastop Premium silt fence or similar) and not a mesh. Silt fencing must be installed as per the manufacture's guidelines. If there is any ambiguity reference to the manufactures guidelines must be sought.
    - The vegetated sod should be peeled back without detaching from the ground, geotextile inserted, and sod restored to hold the base in place.
    - Multiple rows of silt fencing should be considered as appropriate.

- The suspended solids/silt collected within the settlement areas or behind silt fences will be removed and disposed off-site to an appropriate licenced facility as necessary to ensure the system continues to function optimally.

- Daily visual inspections of the surface drainage and sediment control measures and the watercourses will be undertaken by the contractor and these inspections shall be recorded.

- The works programme will take account of weather forecasts and predicted rainfall in particular. Works to install the headwall and associated sewer must only be undertaken in dry weather, with works planned to ensure they are completed during a continuous period of dry weather.

- Works in the main site involving excavations and movements of soil or vegetation clearance should be postponed if heavy rain is forecast as follows:
    - >10 mm/hr (i.e. high intensity local rainfall events); or
    - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, half monthly average rainfall in any 7 days.

- Weekly site meetings will include scheduling of works according to weather forecast.

- The time period over which excavations are left open will be reduced insofar as is reasonably practicable.

- While stockpiling on-site is not anticipated, should the need arise stockpiles shall be sited over 50m from any surface water feature or drainage channels. Areas of bare soil shall be covered, seeded or covered with vegetated sods, if not required in the short-term. A silt fence or sandbags will surround any stored material to prevent silt laden waters running off the stockpiles and entering the surface water system.

- The outfall sewer will be an open trench excavation requiring short-term storage of excavated soils adjacent to the trench. This work will be completed in summer during a period of forecast dry weather. Excavated sods should be stored on geotextile adjacent to the excavation and replaced once the sewer works are complete.

- Upon completion of the site works, all plant and machinery will be removed. Revegetation or reinstatement of the site will be undertaken as soon as feasible to stabilise any bare soil and reduce the potential for soil erosion and consequential suspended solids. Silt fences will only be removed once the ground has revegetated.

Mitigation Measures to Prevent the spread of invasive species

The spread and/or introduction of new invasive alien plant species (IAPS) must be avoided. An ISMP has been developed to address risks from invasive species. Removal and treatment of invasive species as per this ISMP must be carried out by a qualified invasive species specialist, under the supervision of the Contractor and ECoW. The ISMP requires that Rhododendron is removed separately in advance of the wider vegetation clearance works so that the IAPS can be clearly separated for disposal.

The site must be resurveyed by an Ecologist prior to works commencing and the ISMP updated accordingly. It is noted that the Giant Hogweed infestation would not have been fully apparent in January 2022 and more plants may occur particularly within red-line boundary. The survey could be carried out by the Contractors ECoW if the contract has commenced. Otherwise it will be carried out under a separate contract by Irish Water.

For 3rd schedule species (Rhododendron and potentially Giant Hogweed), a licence from NPWS will be required to transport the contaminated plant material and soil 'off-site' for disposal. The Contractor's invasive species specialist will be responsible for confirming volumes and securing this licence in advance of works commencing.

As detailed in the ISMP biosecurity measures are required to prevent the spread of invasive species from the site, or the importation of invasive species to the site. These include:

- Access will be restricted to authorised personnel only.
- A decontamination zone will be established and used to ensure vehicles, equipment and PPE are clean and free of IAPS before leaving the site.
- Signage and training will be provided to inform site personnel of the risks.
- The ECoW will approve oversee the implementation of biosecurity measures and continue to monitor the site for invasive species.

Conclusion

Based on the assessment herein it has been concluded that there will be no adverse effects on the integrity of Ballymacoda (Clonpriest and Pillmore) SAC, Ballymacoda Bay SPA or any European Site, in view of these site's conservation objectives, and that the conservation status of the qualifying habitats and species, will not be compromised by the Castlemartyr WwTP Upgrade Project either directly, indirectly or cumulatively.

APPENDIX A

AA SCREENING

Appropriate Assessment Screening

Castlemartyr WwTP Upgrade

October 2022

Report By:

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Thorne Ecology

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APPENDIX A SITE LAYOUT AND HYDRAULIC PROFILE

Introduction

Irish Water are seeking planning permission to upgrade Castlemartyr Waste Water Treatment Plant (WwTP) in Co. Cork, in order to increase capacity and provide improved treatment ('the Project'). The purpose of this report is to provide information to assist the competent authority, in this case Cork Co.Co., to carry out an Appropriate Assessment (AA) Screening determination with respect to the proposed Project.

Castlemartyr village lies within an agricultural landscape on the N25 ca. 8km east of Midleton. The WwTP site is to the south of the village off the R632, immediately adjacent to the entrance into the Castlemartyr Estate hotel grounds. The existing site is within a wooded area at the northern end of Mitchells Wood, part of the Castlemartyr Woodway, a Coillte forest and recreation area. The Womanagh River (also known as the Kiltha River) flows southwards to the west of the site. The adjacent estate includes further woodlands associated with the Woodway (Pigeons Wood), open parkland and a golf courses.

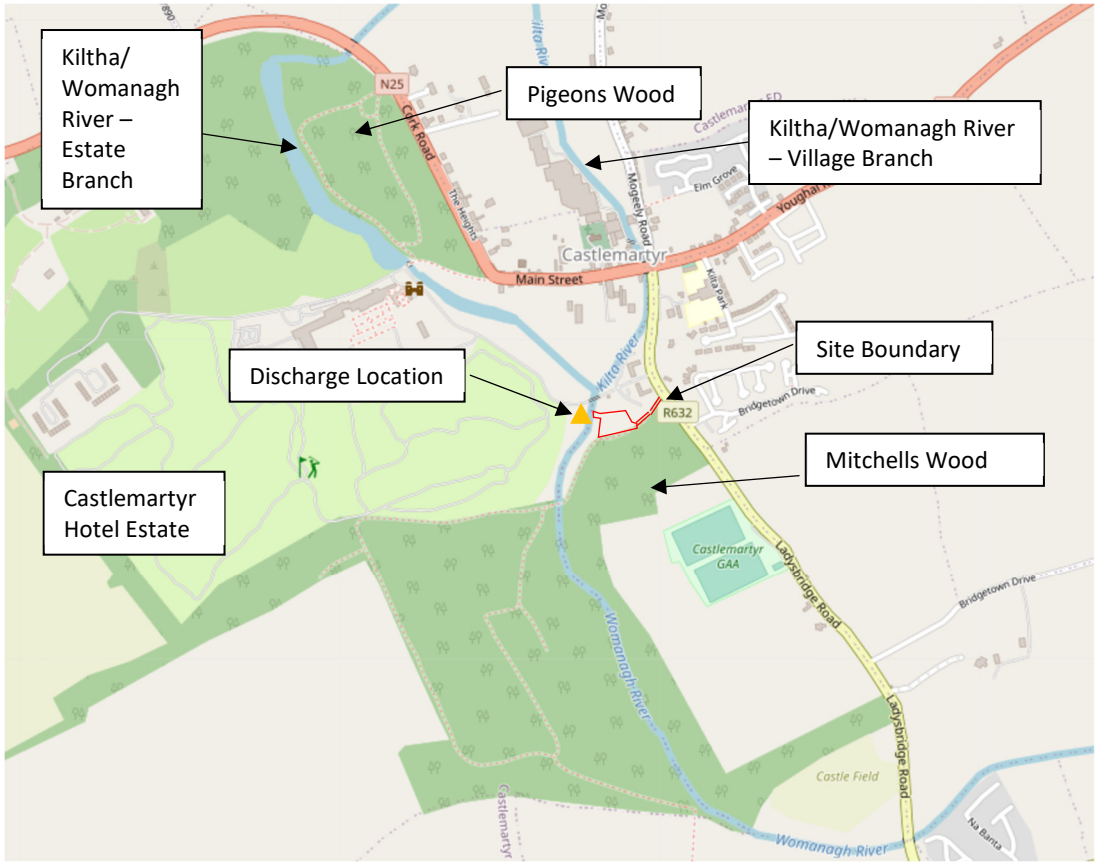


Figure 1 Site Location (© OpenStreetMap contributors)

Legislative Context

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 sites, known as European Sites, are Special Areas of Conservation ('SAC') designated under the Habitats Directive (92/43/EEC) and Special Protection Areas ('SPA') designated under the Birds Directive (79/409/ECC).

AA Screening for Projects is required pursuant to Article 6(3) of the Habitats Directive 92/43/EEC and Part XAB of the Planning and Development Act 2000 (as amended), transposed into Irish Law by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Article 6(3) of the Habitats Directive states that:

> *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(3) provides for a two-stage process. The first stage, AA Screening, appraises whether a plan or project is likely to have significant effects on any European Site in view of best scientific knowledge and the conservation objectives of the site(s). If the competent authority determines that AA is required, the second stage is to carry out the Appropriate Assessment, informed by a Natura Impact Statement (NIS), which assesses whether the project shall adversely effect the integrity of any European Sites.

Article 6 (4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan or project will adversely affect a European site. Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures need to be addressed in this case.

Statement of Authority

This assessment was completed by Kate Harrington MSc MCIEEM, an Ecologist who has 18 years' experience in undertaking ecological surveys and assessments in Ireland and abroad. Ms Harrington's experience includes the preparation of AA Screening, NIS, Ecological Impact Assessments, biodiversity studies and water quality studies for a range of infrastructure projects. She has extensive experience of reviewing and undertaking ecological assessments for Irish Water projects and activities as well as developing guidance documents and advising consultant engineers and ecologists regarding best practice. She currently works as a freelance ecologist and is pursuing a PhD in woodland ecology.

Methodology

Guidance Followed

- Office of the Planning Regulator (OPR). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. (OPR, 2021)

- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government, (DoEHLG, 2010).

- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg, (EC, 2018).

- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2021).

- Annex to the Commission notice to the Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC: Examples of practices, case studies, methods and national guidance. Office for Official Publications of the European Communities, Brussels (EC, 2021).

- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission. Office for Official Publications of the European Communities, Luxembourg, (EC, 2007).

- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).

AA Screening Approach

This AA Screening has been structured as a stage by stage process as follows:

1. Description of the Project and Receiving environment;
2. Identification of European Sites within the Zone of Influence of the Project and the qualifying interest that could be affected by the Project;
3. Identification and description of impacts likely to result from the Project;
4. Assessment of the likely significance of any effects on the conservation objectives of the European Sites, alone and in-combination with other Plans or Projects;
5. Screening conclusion.

Following the above-referenced legislation and guidelines this assessment is based on the following understanding:

- The **Zone of Influence** (ZoI) is determined by identifying whether a **source-pathway-receptor** connection existing between the Project and a European Site. If a European Site is within the ZoI it does not lead to an automatic conclusion of likely significant effects which will depend on the specific characteristics of the source, pathway and receptor including factors such as: the magnitude, type, extent, duration, intensity, timing and probability of the impact; the nature and extent of the pathway; the vulnerability of the habitats and species concerned; and the presence of potential in-combination impacts. The ZoI should not be established on the basis of arbitrary distances (e.g. 15km buffer).

- A **likely significant effect** is, any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the Qualifying Interest (QI) habitats and/or the QI/Special Conservation Interest (SCI) species of a European site(s).. If there is any scientific uncertainty as to the absence of significant effects, the project must be screened in for AA (i.e. the **precautionary principle** must be followed).

- The screening decision should provide some guidance on the scope of the AA that is to follow and on likely significant impacts to be studied.

- The assessment of in-combination effects should include:
    - Projects completed;
    - Projects approved but not started or uncompleted;
    - Projects proposed, i.e. for which an application for approval or consent has been made, including refusals subject to appeal and not yet determined;
    - Proposals in adopted plans; and
    - Proposals in finalised draft plans formally published or submitted for consultation or adoption.

- Any measure or feature of the development that is wholly or partially included in order to avoid or reduce impacts to European sites cannot be considered for the purposes of screening out the need for appropriate assessment. This AA Screening assessment places no reliance on any such measures or features.

Desk Study

The sources of available desktop information used to inform the assessment included:

- The National Parks and Wildlife Service (NPWS) natural heritage database (www.npws.ie) was consulted for designated sites of nature conservation interest in the study area;
- The National Biodiversity Data Centre (NBDC) species database (http://www.biodiversityireland.ie/) and BSBI database https://database.bsbi.org/ were consulted to obtain species records in the study area. Searches for desktop records of relevance focused on the 2km square around the site. The site lies within the top left section of monad (1 km square) W9672 which also includes the eastern half of Mitchells Wood. Adjacent monads are W9673 (Castlemartyr Village), W9573 (Castlemartyr estate and Pigeons wood) and W9572 (Castlemartyr estate and western half of Michell's Wood).
- The Environmental Protection Agency mapping system (https://gis.epa.ie/EPAMaps/), and www.catchments.ie website for data related to water quality;
- The Inland Fisheries Ireland (IFI) website and www.wfdfish.ie website for fisheries data;
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie/;
- Geological Survey Ireland (GSI) data and maps https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx ; and
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland https://birdwatchireland.ie/birds-of-conservation-concern-in-ireland/

Field Study

A multi-disciplinary ecological survey (Extended Phase 1 Habitat Survey) was carried out by the author on January 19th and 20th 2022. The vegetation on the site was identified and habitats on site were classified in accordance with The Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000)[1] and the Annex I interpretation manual. [2] Habitats were then mapped in accordance with the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011)[3]. In terms of fauna, the site and surrounding lands were walked and any sights or signs of mammals, birds, amphibians or invertebrates recorded. Further specialist bat and bird surveys were undertaken over the summer of 2022. These are appended to the EcIA for this Project.

In the context of AA Screening, particular attention was paid to identifying the presence of, or potential for, qualifying habitats or species (including ex-situ populations) using the site and surrounding area, as well as potential pathways for effects to European Sites.

The EPA monitoring biological water quality upstream at Castlemartyr village bridge however there is no comparable downstream monitoring point. The river was therefore sampled at the woodland footbridge ca. 210m downstream of the discharge point (Figure 2). The assessment involved kick sampling for

[1] https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf
[2] Interpretation Manual of European Union Habitats – EUR28
https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf
[3]https://www.heritagecouncil.ie/content/files/best_practice_guidance_habitat_survey_mapping_onscreen_version_2011_8mb.pdf

macroinvertebrates and subsequent application of the EPA Q-rating scheme (Toner et al, 2003)[4]. The Q rating scheme involves assigning a water quality rating considering the relative abundance of pollution tolerant and pollution sensitive species (Groups A to E), along with other biotic and physio-chemical indicators. The river in the vicinity of the discharge and downstream was also visually assessed for any indicators of pollution.

Figure 2 Site Survey Area (Google Maps Imagery © 2022 CNES/Airbus, Maxar Technologies, Map data © 2022)

[4] Toner, P., Bowman, K., Clabby, G., Lucey, J., McGarrigle, M, Concannon, C., Clenaghan, C., Cunningham, P., Delaney, J., O'Boyle, S., MaCarthaigh, M., Craig, M., and Quinn, R. (2005). Water Quality in Ireland 2001-2003. Environmental Protection Agency, Wexford.

Consultation

INIS Environmental Consultants undertook consultation with the DAU and IFI in 2020 on behalf of Irish Water. No response was received from the DAU. IFI noted the following:

"(…) *Inland Fisheries Ireland welcomes the proposed upgrade to Castlemartyr waste water treatment facilities given the likely resulting improvements in effluent quality discharging to the receiving Kiltha river. The Kiltha river provides a recreational angling resource to local residents and holds stocks of Brown trout and has a modest run of Atlantic salmon. Other fish species present in the catchment include Yellow eel, and Stoneloach, and Lamprey spp. Inland Fisheries Ireland would stress the importance of protecting receiving surface waters from deleterious discharges during the proposed works. This may be achieved via the employment of relevant site mitigations during construction, also in scheduling activity to allow for the maintenance of treatment capacity during same or alternatively to arrange the export of effluent from the plant during any period of unavoidable interruption to the plant capacity as a consequence of the works*. (…)".

Description of Project & Receiving Environment

Description of the Proposed Development

The development will consist of the expansion and upgrade of the existing Castlemartyr WwTP to facilitate an increased treatment capacity and capability. The proposed works will comprise of:

- Provision of c.32m of below ground inlet sewer;
- An emergency stormwater overflow chamber;
- Upgrade of the existing inlet works including 2 no. fine screens and grit removal;
- A 19m³ forward feed pumping station; secondary / biological treatment facilities (include: 1 no. anoxic / aeration tank and 2 no. 8m diameter settlement tanks;
- Tertiary treatment for phosphorus removal comprising chemical dosing and filtration including 1 no. disc filter;
- Sludge management system including the re-purpose of the existing clarifier tank to new picket fence thickener; above-ground storm tank with 255m³ storage,
- Provision of c.15m of below ground outfall pipeline to discharge flows to the existing outfall location at the River Kiltha;
- New treated effluent outfall headwall to River Kiltha – discharging to existing outfall location;
- A new ESB sub-station building (c.21sq.m.);
- A new control building (c.80.6sq.m.); a new permanent generator and fuel tank (c.8m³);
- Upgrade of the existing access road within the WwTP boundary;
- Boundary fencing and treatments; and
- All associated site development works above and below ground on a site of c.0.34 hectares.

The proposed layout and a hydraulic profile drawing is provided in Appendix A.

Construction stage

The proposed works will require clearance of trees and vegetation, including invasive species, within the Project site fenceline. The deepest tank excavation is estimated to be 3.3m below ground level, while the deepest sewer excavation will be 1.3m below ground level. Works are required to the entrance laneway to provide pedestrian access and to lay a watermain, but no tree-felling will be required in this area. Tracked excavators and rigid lorries will be used for works. Minor excavations may be carried out using smaller excavators and 6t dumpers. The proposed outfall sewer will be laid from the final effluent manhole to the existing discharge location using an open-cut method. The new headwall will be installed at the riverbank edge and existing discharge location. The outfall headwall will be a pre-cast unit. This will be lowered into place from the landward side of the works by a suitably sized excavator. This element of the works on the river bank, including installing the new headwall, will take no more than 8 days to complete. Works are expected to commence in January 2023, starting with vegetation clearance and tree-felling, and be completed by January 2025.

Operational stage

The current discharge licence specifies ELV's of BOD 15mg/l, COD 125mg/l, SS 35mg/l, pH 6-9 pH units, Ammonia 0.5mg/l and Orthophosphate 0.5mg/l. Considering flow data, assimilative capacity, treatment capabilities, and increased capacity, the proposed scheme has been designed to achieve ELV's of BOD 6.63mg/l, Ammonia 0.68mg/l and Orthophosphate 0.22mgl while ensuring adequate assimilative capacity remains for downstream inputs. These ELV's ensure Good status water chemistry requirements under the WFD are met.

The results presented below consider the average background water quality (capturing upstream pressures), the notionally clean background water quality (considering the impact of the WwTP alone), the low river flow estimate of 0.09422m3/sec, and a PE of 3400 discharging a load of 225l/day (per PE). The upstream data is a mean figure of data from EPA monitoring at Castlemartyr Bridge (RS19W011000) from Sept 2018 to Sept 2021. They demonstrate that compared with the Surface Water Regulations standards (EQS) Good status conditions are maintained downstream at the maximum PE in low flow conditions.

Table 1: Assimilative Capacity Calculations

Parameter	Background		WWDL ELV	Predicted D/S Concentration	SW Regs EQS
BOD	Actual	1.511	6.63	1.950	≤2.6 (good) ≤2.2 (high)
	Notionally Clean	0.260		0.807	
Ortho-phosphate	Actual	0.041	0.22	0.056	≤0.075 (good) ≤0.045 (high)
	Notionally Clean	0.005		0.023	
Ammonia	Actual	0.051	0.68	0.105	≤0.14 (good) ≤0.090 (high)
	Notionally Clean	0.008		0.065	

Overview of the Receiving Environment

Hydrology & Hydrogeology

The WwTP discharges to the Womanagh/Kiltha River. This reach of the river is within the Womanagh_020 waterbody which is currently assigned Moderate WFD status (2013-2018). The Moderate status is driven by Moderate Phytobenthos or Potential, and Moderate Nitrate conditions. Upstream of Castlemartyr the Womanagh_010 waterbody is assigned Good WFD status. The river splits just upstream of Castlemartyr village, with a branch flowing through Castlemartyr estate and a branch continuing through the village (Refer to Figure 1). The estate branch is wide and slow flowing creating lake-like conditions due to being impounded behind a weir. Both branches re-join ca. 70m upstream of the WwTP discharge point. Approximately 1km downstream of the discharge point, the Dower stream joins the Womanagh River. The River then continues 9km via the unassigned Womanagh_030 waterbody, to the unassigned Womanagh estuary waterbody, before entering the Irish Sea in Youghal Bay which is assigned Moderate status (due to Moderate oxygenation conditions).

The EPA monitoring biological water quality at station RS19W011000 (Br in Castlemartyr), ca. 400m upstream of the WwTP discharge point, which was assigned a rating of Q4 in 2020 indicating Good status water quality conditions. There are no recent EPA biological water quality monitoring locations within the Womanagh River downstream of this point. A macroinvertebrate sample was therefore taken ca. 210m downstream of the WwTP adjacent to the woodland footbridge and assessed bankside using the DAFOR scale to provide an indication of water quality. The sample contained abundant Heptageniidae mayfly, frequent *Baetis* spp mayfly, *Gammarus deubeni* shrimp, and Chrironmid fly larvae. The snail *Potamopyrgus antipodarum*, water louse *Asellus aquaticus* and Simuliidae fly larvae were occasional, while Cased caddis Sericostomatiidae, caseless caddis *Hydropsyche* sp, leech and riffle beetles were rare. The assemblage of taxa, and particularly the abundance of pollution-sensitive mayfly, means this site would warrant a Q4 rating in accordance with EPA criteria indicating Good water quality.

Water chemistry is monitored by Cork Co. Co./EPA upstream and downstream of the WwTP discharge. The upstream monitoring point is station RS19W011000 (Br in Castlemartyr), while the downstream monitoring point is station RS19W011040 (ambient d/s TPEFF0500D0134SW001) where the macroinvertebrate sample was taken. Results (Table 2.0) were compared with the Environmental Quality Standards specified in the Surface Waters Regulations 2009 (as amended) with exceedances highlighted in bold. Generally Good status conditions are met upstream and downstream of the discharge with occasional exceedances.

Castlemartyr WwTP is listed as the only significant pressure on Womanagh_020 waterbody. Ladysbridge WwTP also discharges to the Womanagh_020 ca. 1.6km downstream of Castlemartyr WwTP but is not considered a significant pressure. Downstream, significant pressures on the Womanagh_030 waterbody are pasture and arable agriculture, while unknown anthropogenic pressures listed as significant for the Womanagh Estuary. Agriculture is the sole significant pressure on Youghal Bay.

The proposed WWTP exists within the Middleton - IE_SW_G_058 groundwater body. The geology of the site is limestone bedrock overlain with sandstone derived till subsoils. Soil is indicated as sandstone sands and gravel - shallow well drained acidic mineral soil. The bedrock aquifer is regionally important karstified (diffuse). Groundwater vulnerability is classed as Moderate.

Table 2: Womanagh River Water Quality Monitoring Results 2021

Sample Date	Ammonia-Total (as N) mg/l	BOD mg/l	DO %SAT	pH	ortho-Phosphate (as P) mg/l	SS mg/l
SW Regs EQS's	95%ile: ≤0.14 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)	95%ile: ≤2.6 (good) ≤2.2 (high)	95%ile: 80-120%	4.5< pH < 9.0	95%ile: ≤0.075 (good) ≤0.045 (high) Mean: ≤0.035 (good) ≤0.025 (high)	
RS19W011000 Br in Castlemartyr (Village Branch)						
13/01/2021	0.037	0.5	102	7.7	0.041	
03/02/2021	0.136	2.3	96.8	7.7	0.039	12
03/02/2021	0.11	1.1	97	7.5	0.042	
17/02/2021	0.076	1.4	96.4	7.9	0.037	7
03/03/2021	0.021	0.5	99	7.8	0.028	
03/03/2021	0.023	1.1	100.4	8	0.034	4
08/04/2021	0.01	0.5	105	8	0.026	
14/04/2021	0.024	1.9	96.1	8	0.018	5
12/05/2021	0.013	0.5	107.2	8.1	0.027	6
19/05/2021	0.14	1.7	105	7.9	0.041	
02/06/2021	0.008	1.3	99	7.8	0.025	7
16/06/2021	0.01	0.5	100	7.9	0.031	1.25
07/07/2021	0.059	0.5	103.4	7.9	0.056	
08/07/2021	0.027	0.5	101	7.8	0.055	
04/08/2021	0.016	1.3	104.4	8.1	0.047	7
19/08/2021	0.023	1.3	109	8.4	0.056	
01/09/2021	0.017	1.3	98.7	7.9	0.049	1.25
16/09/2021	0.01	1	106	8.1	0.073	
06/10/2021	0.01	0.5	98	8.1	0.048	
20/10/2021	0.05	**5.4**	97.8	7.7	**0.134**	102
03/11/2021	0.019	1.1	101.2	7.7	0.033	3
04/11/2021	0.01	0.5	109	7.6	0.033	
09/12/2021	0.11	0.5	102	7.6	0.068	
RS19W011040 ambient d/s TPEFF0500D0134SW001 (Woodland Footbridge)						
03/02/2021	0.108	2.2	93.6	7.8	0.037	9
17/02/2021	0.09	1.2	99.4	7.9	0.033	5
03/03/2021	0.02	1.8	86.2	8	0.015	3
14/04/2021	0.019	1.5	100.6	8	0.035	8
12/05/2021	0.005	1.3	102.4	7.9	0.031	4
02/06/2021	0.033	1.4	98.1	7.7	0.025	6
28/06/2021			93.1			
07/07/2021	**0.494**	1.7	101.8	7.8	0.056	1.25
26/07/2021			100.7			
04/08/2021	0.086	**5.8**	104.7	7.7	**0.229**	84
01/09/2021	0.013	2.1	86.6	7.6	0.033	5
20/10/2021	0.089	**7.4**	97.2	7.5	**0.166**	85
03/11/2021	0.026	1.1	97.7	7.7	0.053	6

Ecological Desktop & Field Survey

The permanent and temporary works areas are within mixed broadleaved woodland habitat (WD1) and wet woodland habitat (WN6). Much of the WD1 habitat is infested with cherry laurel *Prunus laurocerasus*, and there are also a number of *Rhododendron* plants. The WN6 habitat appears to have formed as a result of local drainage conditions rather than connection to the river, with the latter being a feature of Annex I alluvial forest habitat. To the south and east of the site, there is a sitka spruce plantation (WD4) known Mitchells Wood and owned by Coillte.

The Womangh/Kiltha River runs southwards to the west of the site. Giant Hogweed *Heracleum mantegazzianum* was identified on the river bank in close proximity to the site, while the invasive species water fern *Azolla filiculoides* was found upstream of the WwTP site, and there are also records of Canadian pondweed *Elodea canaden*sis from the river. The instream river vegetation has affinities to the Annex I Floating River Vegetation [3260] as described in the EU Interpretation manual, however it is the common and widespread form dominated by water crowfoot which is considered to have low conservation value and indicate damage (NPWS, 2019)[5], as opposed to the rarer subtypes for SAC's are designated.

There are numerous past records of otter from the area and otter prints were identified in muds adjacent to the Womanagh River in close proximity to the site during the field survey. On the river bank ca. 160m downstream of the Project site (at its closest point) evidence of a mammal resting site was identified under undergrowth and fallen tree trunks. Judging by the nature of mammal paths entering and exiting toward the river, is most likely that of the invasive mink *Neovision vision*, for which prints were also identified upstream, but also could be considered a potential otter holt. Evidence of squirrel, likely red, was found in the adjacent conifer woodland. There are also past records native and invasive species including badger Meles meles, bank vole *Myodes glareolus*, mink *Neovision vision*, fox *Vulpes vulpes*, rabbit *Oryctolagus cuniculus*, ferret *Mustela furo* and Irish hare *Lepus timidus hibernicus* within 2km of the site.

The site has high suitability for foraging and commuting bats based on its location within a wider woodland network and the adjacent river/impounded river and parkland habitats.. Bats recorded during foraging or commuting during the survey were primarily pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, with faint and distant calls of brown long-eared bat *Plecotus auratus* and lesser noctule *Nyctalus leisleri* also recorded. Roosting potential in trees on the site ranged from low to moderate, with negligible potential in any existing infrastructure. An emergence and re-entry survey confirmed the absence of roosting bats in the structures and trees within the site at the time of survey.

The wooded and riparian habitats within and around the site provide suitable nesting, roosting and foraging habitat for breeding and wintering birds. Likewise the proximity of open parkland and lakes means a variety of bird species, including wintering waterbirds, use the surrounding area. Reviewing the bird records in the NBDC database for the 2km area around the Project site, records exist for monad W9573 which includes the Castlemartyr estate river/lake habitats and monad W962 which includes the

[5] NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill
https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol2_Habitats_Article17.pdf

Project site and Mitchell's wood. Birds of conservation concern[6] recorded in the vicinity of the Project site, and those listed on Annex I of the Birds Directive, are highlighted below.

Table 3: Bird Records

Bird	Monad	Date	Conservation Status
Common Wood Pigeon (*Columba palumbus*)	W9573 W9672	28/02/2021 23/05/2015	
Eurasian Wigeon (*Anas penelope*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Gadwall (*Anas strepera*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Great Cormorant (*Phalacrocorax carbo*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Little Egret (*Egretta garzetta*)	W9573 W9672	06/05/2021 31/12/2001	Annex I Birds Directive.
Mallard (*Anas platyrhynchos*)	W9573 W9672	06/05/2021 31/12/2001	
Mute Swan (*Cygnus olor*)	W9573 W9672	28/02/2021 31/12/2001	Amber List
Black-headed Gull (*Larus ridibundus*)	W9672	31/12/2001	Red List
Common Kingfisher (*Alcedo atthis*)	W9672	25/05/2015	Annex I Birds Directive Amber List
Eurasian Curlew (*Numenius arquata*)	W9672	31/12/2001	Red List
Little Grebe (*Tachybaptus ruficollis*)	W9672	31/12/2001	Amber List
Mew Gull (*Larus canus*)	W9672	31/12/2001	Amber List
Northern Lapwing (*Vanellus vanellus*)	W9672	31/12/2001	Red List
Northern Shoveler (*Anas clypeata*)	W9672	31/12/2001	Red List
Tufted Duck (*Aythya fuligula*)	W9672	31/12/2001	Amber List

Of note recorded during field surveys are mallard which is amber-listed for its breeding and wintering populations, little egret and kingfisher which are species listed on Annex I of the Birds Directive, and grey wagtail and swift which are red-listed breeding species.

The woodland and riverside habitats are likely to support a diverse range of invertebrates, frog and newt, with past records of the latter upstream of the site. Based on desktop and field findings, the river supports lamprey, yellow eel, salmon and trout.

[6] https://birdwatchireland.ie/birds-of-conservation-concern-in-ireland/

Photo 1 Impounded Womanagh River (Estate Branch)

Photo 2 Womanagh River adjacent to Project site

Photo 3 Primary Discharge

Photo 4 Woodland within Project site

Photo 5 Entrance to existing WwTP

Photo 6 Ballymacoda Bay

European Sites

The Project site and existing WwTP are not located within any SAC or SPA. In the first instance it is necessary to review the European Sites in the wider region, in the context of the nature, scale and extent of the Project, and consider the potential pathways for indirect damage or disturbance to their qualifying interests in order to define the potential zone of influence of the Project. The Sites listed in Table 4 were those considered in defining the potential zone of influence of the Project. These include European Sites within any potential dilution/dispersion zone for any pollutants entering surface or groundwater, or those with mobile species for which any ex-situ effects must be considered. The relevant sites are shown in Figure 3.

Table 4: European Sites considered in defining the potential zone of influence

Site Name & Code	Qualifying Interests	Pathway and Distance
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410]	12km to east via Womanagh River surface water pathway
Ballymacoda Bay SPA (004023),	Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Ringed Plover (Charadrius hiaticula) [A137] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162]	12km to east via Womanagh River surface water pathway and potential for ex-situ birds associated with SPA to use habitats around Castlemartyr

	Turnstone (Arenaria interpres) [A169] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182] Lesser Black-backed Gull (Larus fuscus) [A183] Wetland and Waterbirds [A999]	
Cork Harbour SPA (004030)	Little Grebe (Tachybaptus ruficollis) [A004] Great Crested Grebe (Podiceps cristatus) [A005] Cormorant (Phalacrocorax carbo) [A017] Grey Heron (Ardea cinerea) [A028] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Red-breasted Merganser (Mergus serrator) [A069] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182]	7.6km west via hydrogeological pathway (same bedrock aquifer as Project site) and potential for ex-situ birds associated with SPA to use habitats around Castlemartyr

	Lesser Black-backed Gull (Larus fuscus) [A183] Common Tern (Sterna hirundo) [A193] Wetland and Waterbirds [A999]	
Great Island Channel SAC (001058)	Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	7.6km west via hydrogeological pathway (same bedrock aquifer as Project site)
Ballycotton Bay SPA (004022)	Teal (Anas crecca) [A052] Ringed Plover (Charadrius hiaticula) [A137] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Turnstone (Arenaria interpres) [A169] Common Gull (Larus canus) [A182] Lesser Black-backed Gull (Larus fuscus) [A183] Wetland and Waterbirds [A999]	6.8km southeast - Potential for ex-situ birds associated with SPA to use habitats around Castlemartyr

Considering the source-pathway-receptor model, all the sites above are considered to be potentially within the zone of influence of the Project. The potential impacts that could arise, and likely significant effects that could result, are considered further below.

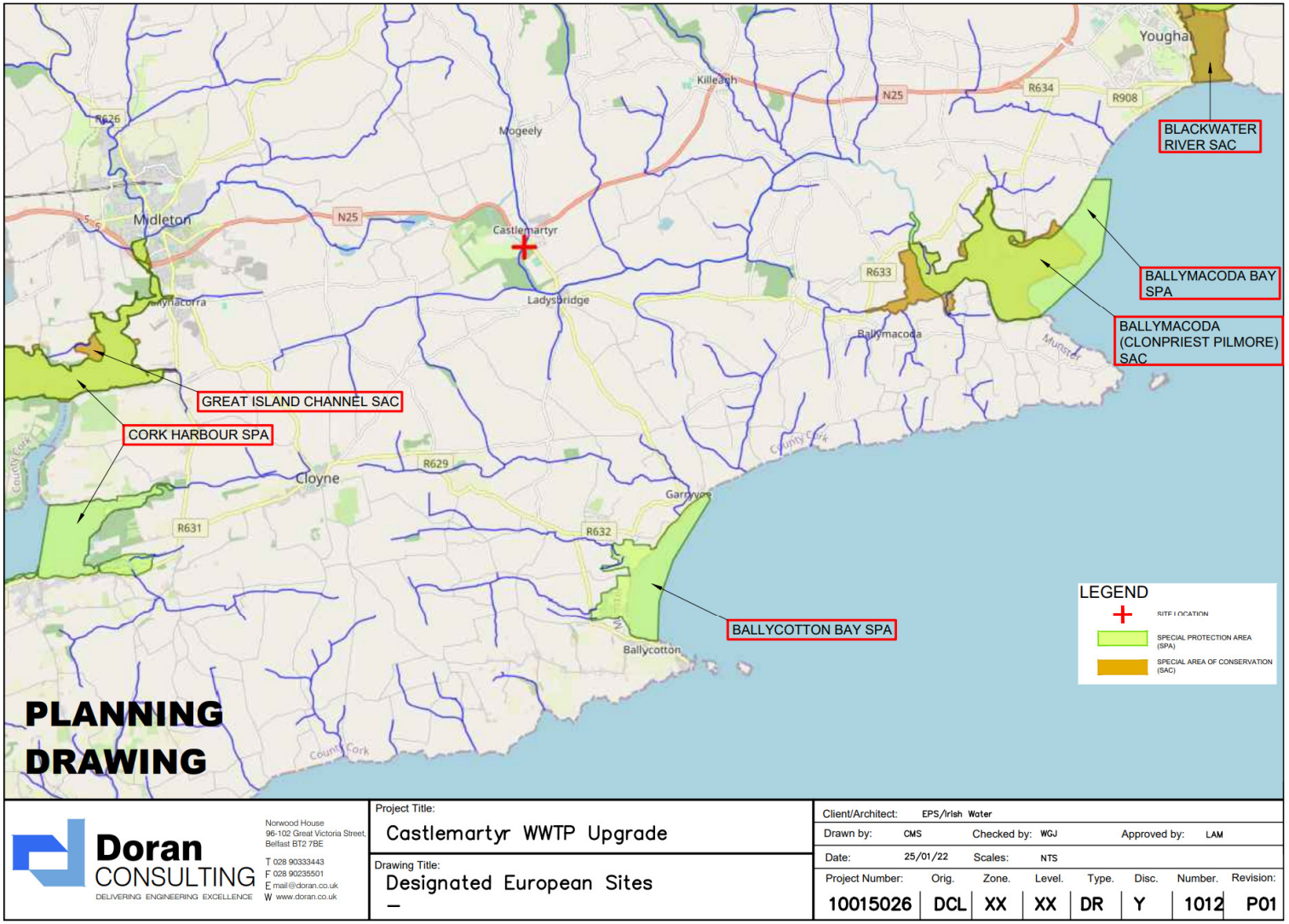


Figure 3 European Sites

Likely Impacts Arising

Given the scale and nature of the project, the direct and indirect impacts that could arise during project construction of relevance to the European Sites listed above are as follows:

- Release of sediment-laden waters, wastes or other pollutants: Any releases of sediments or pollutants from the excavation and construction of new infrastructure will naturally flow toward the Womanagh River. Depending on the scale of the releases, water quality could be negatively affected. Releases of pollutants within deeper excavations could also interact with groundwater, affecting groundwater quality.
- Noise and Visual disturbance - Construction activities could result in disturbance of ex-situ birds associated with the SPAs above using the areas around the Project site
- Habitat loss - Should areas of the site be used by ex-situ bird species, the loss of habitat would need to be considered.
- Facilitating spread of invasive species.

Potential Operational Stage impacts are:

- Improved-quality discharge to the Womanagh River – The biological and chemical water quality data indicate that the current discharge is not significant impacting downstream water quality. Furthermore the WAC analysis indicates Good status water quality conditions will be met by the proposed discharge.
- Increased site operations and maintenance resulting in higher disturbance levels to ex-situ species.

Likely Significant Effects on European Sites

The purpose of this section of the Screening is to examine the possibility that the Project, either individually or in combination with other plans and projects, is likely to result in significant effects to any European Site. It further considers the qualifying interests which may be sensitive to the potential impacts of the Project identified above, in the context of the nature and scale of the works.

The Conservation Objectives and Supporting Documents of the 5-no. relevant European Sites were reviewed as part of this Screening Assessment:

- NPWS (2015) Conservation Objectives: Ballymacoda (Clonpriest and Pillmore) SAC 000077. Version 2. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Ballymacoda (Clonpriest and Pillmore) SAC 000077. Conservation objectives supporting document – coastal habitats. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2015) Ballymacoda (Clonpriest and Pillmore) SAC 000077. Conservation objectives supporting document – marine habitats. Version 2. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- NPWS (2014) Conservation Objectives: Ballymacoda Bay SPA 004023. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Ballymacoda Bay SPA 004023. Conservation objectives supporting document Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Conservation Objectives: Cork Harbour SPA 004030. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht
- NPWS (2014) Cork Harbour SPA 004030. Conservation objectives supporting document Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht
- NPWS (2014) Conservation Objectives: Great Island Channel SAC 001058. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Great Island Channel SAC 001058. Conservation objectives supporting document – coastal habitats. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Great Island Channel SAC 001058. Conservation objectives supporting document – marine habitats. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Conservation Objectives: Ballycotton Bay SPA 004022. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2014) Ballycotton Bay SPA 004022. Conservation objectives supporting document Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The Project is not directly connected with or necessary to the management of any site for nature conservation.

Construction Stage Effects

There is a direct pathway for impacts arising to water quality to affect the conservations objectives of the qualifying interests of Ballymacoda (Clonpriest and Pillmore) SAC and Ballymacoda Bay SPA. The risk of uncontrolled releases of sediments or other pollutants is highest from dewatering activities and from works at the headwall. In the absence of control measures there is also the potential for invasive species to be spread along this pathway. While the impact would need to be severe given the distance to the nearest estuarine habitats, considering the precautionary principle, significant effects cannot be excluded at this stage.

The hydrogeological pathway identified to Ballymacoda Ballymacoda (Clonpriest and Pillmore) SAC, Ballymacoda Bay SPA, Cork Harbour SPA and Great Island Channel SAC is via a regionally important diffuse karstified aquifer[7]. This aquifer type is characterised by diffuse groundwater flows rather than more direct conduit flows[8]. Given the limited depth and scale of excavations, and distance to these designated sites, there is no likelihood of any localised groundwater pollution giving rise to significant effects on the conservations objectives of the qualifying interests of these sites.

The pathway for ex-situ birds associated with Cork Harbour SPA, Ballymacoda Bay SPA and Ballycotton Bay SPA relates to the possibility that wintering birds associated with these sites could use the habitats in the vicinity of the Project Site as ex-situ roosting or foraging grounds. Some wintering bird species that are also qualifying interests of the relevant sites (e.g. wigeon, curlew, lapwing) have been recorded from

[7] https://gis.epa.ie/EPAMaps/Water
[8] https://www.gsi.ie/en-ie/programmes-and-projects/groundwater-and-geothermal-unit/activities/understanding-ireland-groundwater/aquifer-classification/Pages/Aquifer-categories-and-types.aspx

habitats associated with the Womanagh River and particularly the impounded section in the estate. The habitats however are unsuitable for anything other than small groups of wintering birds, due to high disturbance levels. The scale of disturbance associated with the Project, in the context of disturbance in the surrounding area, may cause occasionally small number of wintering birds to displace to quieter areas of the estate upstream, but has no potential to give rise to significant effects on the conservations objectives of the qualifying interests of these sites.

Operational Stage Effects

The pathway for operational impacts arises from the discharge of treated effluent to the Womanagh River and the potential for water quality impacts to arise and affect the qualifying interests of Ballymacoda (Clonpriest and Pillmore) SAC and Ballymacoda Bay SPA . Elevated nutrient input from wastewater effluent into the freshwater and marine environments can lead to an altered nutrient balance (eutrophication), increased primary productivity, and the potential for algal blooms. While downstream water quality and WAC analysis results indicate that local water quality will not be affected, adequacy of the proposed treatment standards needs to be considered in the context of the attributes and targets of the downstream qualifying interests, particularly those in unfavourable conservation condition, and therefore significant effects cannot be excluded at this stage.

Potential Cumulative or In-combination Effects with other Plans and Projects

As part of AA Screening, in addition to the Project and Approved Development, other relevant projects and plans in the region must also be considered. This report aims to identify at this early stage any possible significant effects on the European Sites arising from in-combination or cumulative impacts with other plans and projects.

<u>Plans</u>
Plans of relevance include Irish Waters WSSP, the Cork County Development Plan, and the national river basin management plan.

In 2015, Irish Water published the **Water Services Strategic Plan**, a 25-year Plan which as well as detailing current and future challenges affecting water services, identifies priorities to be addressed in the medium term. Solutions in these priority areas are delivered through capital and other projects outlined in Irish Waters Investment Plan, a multi annual plan covering a five-year horizon, currently 2020-2024. The Castlemartyr WwTP upgrade is prioritised for investment under this plan.

The **Cork County Development Plan** 2022-2027 has been recently published. This new plan amalgamates the former municipal area regional plans into the main county plan. The plan has several relevant objectives and statements relating to wastewater:

- WM 11-1: EU Water Framework Directive and the River Basin Management Plan
    - *f) Support the prioritisation of the provision of water services infrastructure in: 1. Metropolitan Cork, the Key Towns and Main Towns to complement the overall strategy for economic and population growth while ensuring appropriate protection of the environment. 2. All settlements where services are not meeting current needs, are failing to meet the requirements of the Urban Wastewater Treatment Directive, and where these deficiencies are – interfering with Councils ability to meet the*

requirements of the Water Framework Directive; or – having negative impacts on Natura 2000 sites; and

- *g) Development may only proceed where appropriate wastewater treatment is available which meets the requirements of environmental legislation, the Water Framework Directive and the requirements of the Habitats Directive*

- Emission Limit Values (ELVs)
  - *11.5.12 In many instances, the Emission Limit Value standards set by the EPA when licensing treatment plants are significantly higher than the requirements of the Urban Wastewater Directive (UWWD). Some of these ELV standards cannot consistently be achieved even by relatively modern plants without significant upgrades. This is a national issue not unique to Cork but it occurs in several locations across the County.*
  - *11.5.13 In assessing the capacity of a WWTP to cater for future development where an ELV issue pertains, the assessment has been based on the hydraulic and organic loadings of the treatment plant relative to its design capacity on the assumption that the ELV issue will be resolved in an approach that will be determined/ agreed at a national level between Irish Water and the EPA.*
- Castlemartyr is noted as a WwTP not currently complaint with its ELV's with further infrastructure upgrades required and with the following implications for development expansion:
  - *Future capacity subject to implementation of projects on the Irish Water Investment Plan (Revenue Control Period 3) or aligned programmes. Any development which would have an adverse impact will be put on hold until resolution of issues relating to impact on water quality in sensitive water catchments.*
- *Section 11.9.5 The assimilative capacity of the County's waterbodies is not infinite, and it is considered important, when assessing individual development proposals involving abstraction or dilution of discharges, that sufficient assimilative capacity is retained so as to allow for the continued growth of the overall settlement and avoiding the unsustainable exploitation of the watercourse.*

Information on the **River Basin Management Plan** (2018-2021), Draft River Basin Management Plan (2022-2027), and associated information on the catchments available on www.catchments.ie was reviewed:

- The RBMP sets out the measures that are necessary to protect and restore water quality in Ireland. The overall aim of the plan is to ensure that Irelands natural waters are sustainably management and that freshwater resources are protected so as to maintain and improve Ireland's water environment. The Draft 3rd cycle plan, identifies that based on 2013-2018 data, 53% of surface waters are in good or high ecological status while the remaining 47% are in unsatisfactory ecological status.
- The Plan (2018-2021) identifies Castlemartyr as the only significant pressure on the Womanagh_020 waterbody.
- Continued investment in wastewater infrastructure is highlighted as one of the key actions in the plans. The Womanagh River is identified as an Area For Action (AFA) with a Restoration objective, though there is no specific reference to Castlemartyr upgrade as a measure/action.

The above plans have themselves been assessed in accordance with Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act, 2000 and the implementation of those plans will not result in adverse effects to the integrity of any European site(s). The plans support the upgrade of

Castlemartyr WwTP. Considered with the Project, there is no potential for these Plans to give rise to cumulative effects on any European Site.

Projects

Cork Co.Co. planning system was reviewed for any proposed or potentially active projects that could lead to in-combination impacts with the Project. There have been a number of recently approved developments associated with the Castlemartyr estate: 175371 (wedding/Conferencing building), 175372 (car park extension), 17373 (bar extension and terrace) 175636 (various extensions and modifications) and 216775 (external and internal modifications including realignment of internal road). The 4 no. 2017 applications and the 2021 application were subject to AA Screening with the competent authority determining that were would be no significant effects on any European Sites. These projects therefore do not have the potential to give rise to cumulative effects with the Project.

A range of other small development residential, business and agricultural developments within the Castlemartyr agglomeration, which may seek connection to the sewerage network, have been recently granted or are seeking planning consent. Irish Water reviews available capacity for treatment prior to any connection to the IW network and therefore any local development connecting to the WwTP will be within the treatment capacity which meets WFD requirements. As discussed, for certainty regarding likely effects, the treatment standards require further consideration in the context of the downstream Ballymacoda (Clonpriest and Pillmore) SAC and Ballymacoda Bay SPA , however as the impact of the upgraded WwTP 'alone' accounts for the full operating capacity inclusive of future new connections, these potential connections do not have the potential to give rise to cumulative effects with the Project.

The hotel pumping station adjacent to the WwTP is in need of improvement works. Flooding was observed above the pumping station's access cover. The cause of this is not clear, but may be due to high river flows and associated ingress of water through structural defects in the pumping station chamber. Flooding was noted to be contained above the PS and by surrounding vegetation. No spillage to the watercourse was observed. The Project will improve treatment standards in Castlemartyr WwTP however for certainty, these standards need to be assessed in the context of the attributes and targets of the downstream European Sites Ballymacoda (Clonpriest and Pillmore) SAC and Ballymacoda Bay SPAs, and therefore any potential negative cumulative effects on the downstream European Sites of the discharge in-combination with the risk of intermittent pump station flooding spillages cannot be excluded at this stage.

Screening Conclusions

The likely impacts that will arise from Castlemartyr WwTP Upgrade Project have been examined in the context of a number of factors that could potentially affect the integrity of the Natura 2000 network.

This AA Screening assessment finds that the likelihood of significant effects on Ballymacoda (Clonpriest and Pillmore) SAC and Ballymacoda Bay SPA arising from the proposed Project individually or in combination with other projects cannot be excluded. As a result, a Stage Two Appropriate Assessment is required.

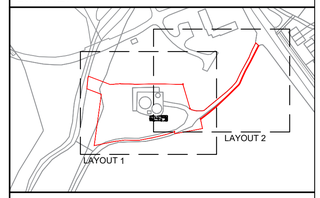
APPENDIX B

SITE LAYOUT & HYDRAULIC PROFILE

NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS AND DOCUMENTATION.
2. ALL LEVELS IN METRES TO MALIN HEAD DATUM.
3. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
4. PROPOSED STRUCTURAL HEIGHTS, LEVELS AND DIMENSIONS ARE INDICATIVE.

LAYOUT KEY:-



KEY:-

+9.56 EXISTING SITE LEVELS

+9.56 PROPOSED SITE LEVELS

EXISTING INCOMING SEWERS - NO WORKS REQUIRED

PROPOSED NEW PROCESS PIPEWORK

PROPOSED ADDITIONAL LAND ACQUISITION

PROPOSED SITE RED LINE BOUNDARY

OS MAPPING REFERENCE: 6510-12

REPRODUCED FROM THE ORDNANCE SURVEY BY PERMISSION OF THE GOVERNANCE LICENSE NO.3-3-54

Rev	Drawn	Chkd	Appvd	Date	Description
P12	CMS	WGJ	LAM	06/10/2022	PLANNING ISSUE
P11	CMS	WGJ	LAM	19/08/2022	UPDATED FOR PLANNING ISSUE
P10	CMS	WGJ	LAM	08/03/2022	UPDATED FOR PLANNING ISSUE

Drawing Status: PLANNING

Drawing Scale:	1:200	Drawn By:	CMS
Original Size:	A1	Date:	APR 21

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Business & Technology Park, Quartertown, Mallow, Co.Cork. Phone: 022-31200 Email: contracts@epswater.com
Mountrath, Co. Laois Phone: 057-8732279

Scheme Name: PROVISION OF MAJOR PROCESS MEICA AND DBO WORKS LOT 2B-5 ECI WWTP

Drawing Title: CASTLEMARTYR WWTP PROPOSED SITE LAYOUT 1 OF 2

Client: IRISH WATER

Consulting Engineers: DORAN CONSULTING

EPS Project Code:	Originator:		
EC0008	DORAN CONSULTING		
Zone/Asset: XX	Level: XX	Type: DR	Role: Y
Sheet Number: 1001		Suitability Code: S3	Revision Code: P12

Drawing Number: 10015026-DRC-XX-XX-DR-Y-1001

OS MAPPING REFERENCE: 6510-12

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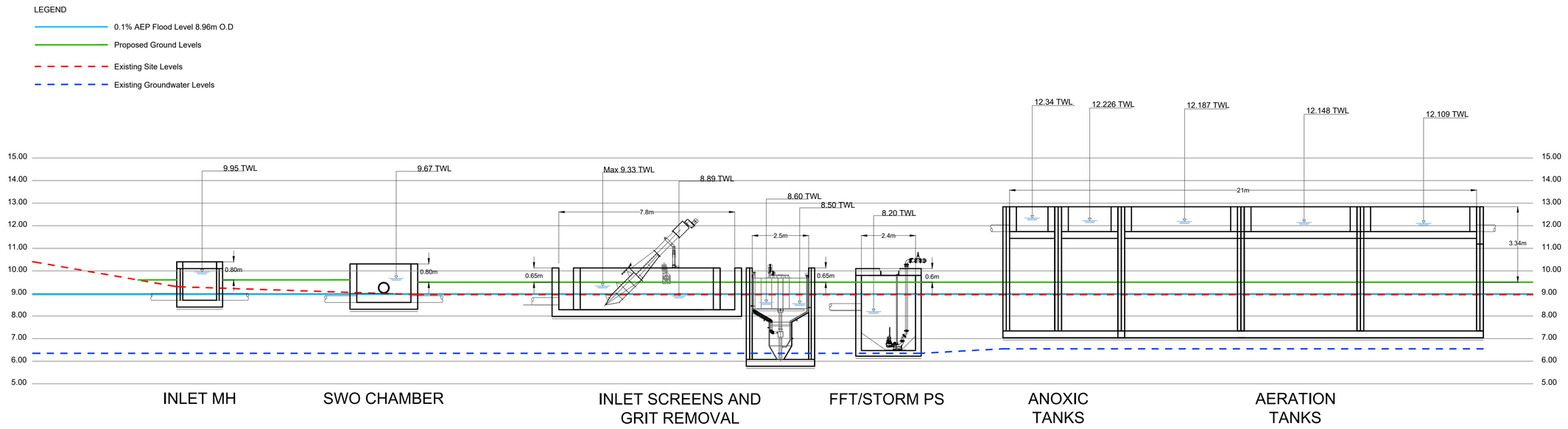

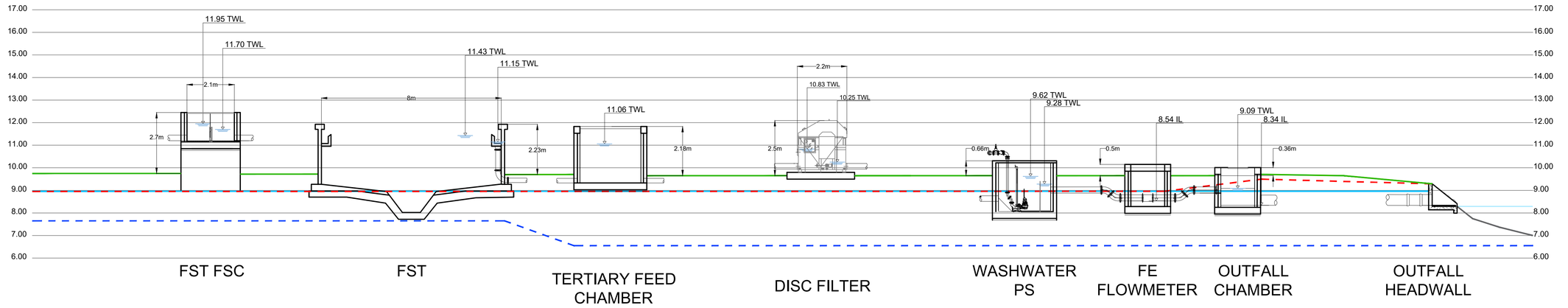

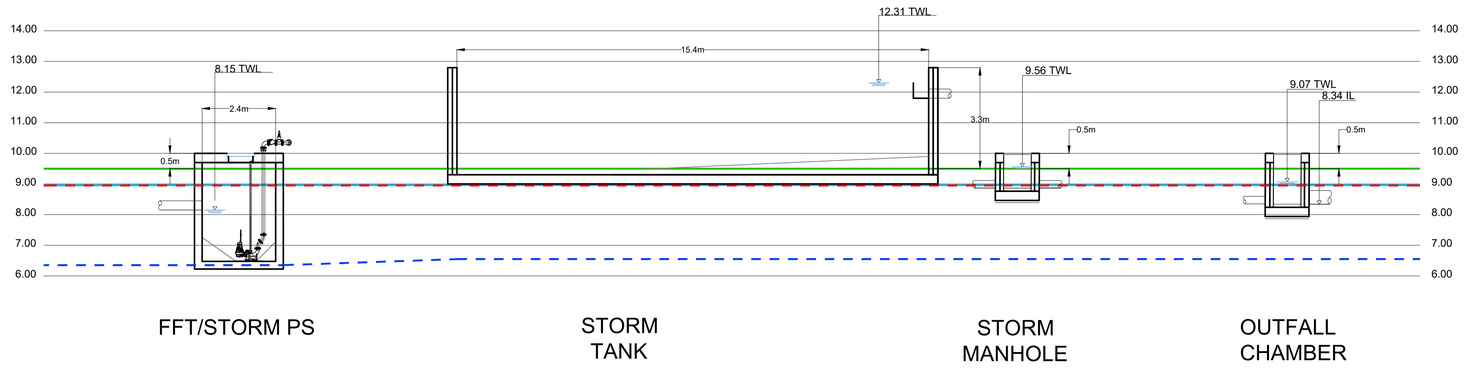

NOTES

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2. ALL LEVELS IN METRES TO MALIN HEAD DATUM.
3. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
4. FOR DETAILS ON TERTIARY FILTER & WASHWATER REFER TO SITE LAYOUT PLAN - 10015026-DRC-00-XX-DR-Y-1000

Rev	Drawn	Chkd	Appvd	Date	Description
P07	CMS	WGJ	-	06/10/2022	PLANNING ISSUE
P06	CMS	WGJ	-	19/08/2022	STRUCTURE HEIGHTS UPDATED
P05	CMS	WGJ	-	08/03/2022	PLANNING REVIEW ISSUE

Drawing Status: PLANNING

Drawing Scale:	1:100	Drawn By:	CMS
Original Size:	A1	Date:	APR 21

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Mountrath, Co. Laois Phone: 057-8732279

Scheme Name: PROVISION OF MAJOR PROCESS MEICA AND DBO WORKS LOT 2B-5 ECI WWTP

Drawing Title: CASTLEMARTYR WWTP
PROPOSED HYDRAULIC PROFILE & SECTIONS

Client: IRISH WATER

Consulting Engineers: DORAN CONSULTING

EPS Project Code: EC0008		Originator: DORAN CONSULTING	
Zone/Asset: XX	Level: XX	Type: DR	Role: Y
Sheet Number: 1004		Suitability Code: S3	Revision Code: P07

Drawing Number: 10015026-DRC-XX-XX-DR-Y-1004

APPENDIX C

CONSTRUCTION PLAN

NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS AND DOCUMENTATION.
2. ALL LEVELS IN METRES TO MALIN HEAD DATUM.
3. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.

LEGEND

- EXISTING WWTP LOCATION
- SITE COMPOUND AREA
- CONSTRUCTION SITE ACCESS
- WASHDOWN/DECONTAMINATION AREA
- SITE CAR-PARKING
- MATERIALS STORAGE
- TEMPORARY WORKS AREA
- TEMPORARY TREATMENT UNIT
- PROPOSED SITE BOUNDARY FENCE
- PLANNING RED LINE BOUNDARY
- SILT-FENCING
- EXISTING SEWERS
- PROPOSED SEWERS

TEMPORARY WORKING AREA WAYLEAVE

AREA FOR CONSTRUCTION ACCESS 3am

AREA FOR SITE PARKING 15m x 5m

TEMPORARY SLUDGE TREATMENT 6m x 2m

EXISTING WWTP SITE BOUNDARY 25m x 23m

WASHDOWN/ DECONTAMINATION AREA 18m²

AREA FOR SILTBUSTER UNIT 4m x 3m

PROPOSED SILT FENCING

PROPOSED Ø8m FINAL SETTLEMENT TANK 1

PROPOSED Ø8m FINAL SETTLEMENT TANK 2

FSC

PROPOSED STORM ONLINE TANK Vol. 170m³

PROPOSED STORM BLIND TANK Vol. 85m³

EXISTING Ø9.4m CLARIFIER CONVERTED TO PFT

CONSTRUCTION SITE COMPOUND 20m²

MATERIAL STORAGE AREA 12m x 12m

PROPOSED AERATION TANK 3 W5.5m x L12.5m x D5m Vol. 342m³

PROPOSED AERATION TANK 2 W5.5m x L12.5m x D5m Vol. 342m³

PROPOSED AERATION TANK 1 W5.5m x L12.5m x D5m Vol. 342m³

PROPOSED ANOXIC TANK 2 L12.5m x W2m x D5m Vol.115m³

PROPOSED ANOXIC TANK 1 L12.5m x W2.5m x D5m Vol. 115m³

BLOWERS

TEMPORARY WORKS AREA 8m x 8m

VEGETATION

Flooded

S8 596194.704 572962.613 9.282

S5 596233.353 572906.612 9.321

S6 596300.240 572925.179 11.352

OS MAPPING REFERENCE: 6510-12

10m 0 10m

SCALE 1 : 200

OS MAPPING REFERENCE: 6510-12

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Rev	Drawn	Chkd	Appvd	Date	Description
P05	CMS	WGJ	-	06/10/2022	PLANNING ISSUE
P04	CMS	WGJ	-	19/08/2022	SITE LAYOUT UPDATED
P03	CMS	WGJ	-	08/03/2022	PLANNING ISSUE REVIEW

Drawing Status: PLANNING

Drawing Scale:	1:200	Drawn By:	CMS
Original Size:	A1	Date:	JAN 22

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Scheme Name: PROVISION OF MAJOR PROCESS MEICA AND DBO WORKS LOT 2B-5 ECI WWTP

Drawing Title: CASTLEMARTYR WWTP PROPOSED CONSTRUCTION SITE PLAN

Client: IRISH WATER

Consulting Engineers: DORAN CONSULTING

EPS Project Code: EC0008		Originator: DORAN CONSULTING	
Zone/Asset: XX	Level: XX	Type: DR	Role: Y
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