

Greater Dublin Drainage Project Addendum

**Environmental Impact Assessment Report Addendum:
Volume 2A Part A of 6**

Chapter 4A Description of the Proposed Project

Uisce Éireann

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Greater Dublin Drainage Project Addendum

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4. Description of the Proposed Project

4.1 Introduction

As detailed in Chapter 1A (Introduction) in Volume 2A Part A of this Environmental Impact Assessment Report (EIAR) Addendum, we have reviewed Chapter 4 (Description of the Proposed Project) in Volume 2 Part A of the EIAR submitted with the original 2018 planning application, in light of the additional project elements that were incorporated into the planning design for the Greater Dublin Drainage Project (hereafter referred to as the Proposed Project), following the Oral Hearing and the subsequent planning conditions for application ABP-301908-18 .

4.2 Proposed Project Elements

The following Proposed Project elements were incorporated into the planning design for the Proposed Project following direction at the Oral Hearing in 2019 and the subsequent planning conditions attached to the planning permission dated 11 November 2019, namely:

- The inclusion of ultraviolet (UV) treatment at the proposed wastewater treatment plant (WwTP) in Clonshagh (Clonshaugh); and
- The extension of the River Mayne Culvert along the proposed access road to the proposed WwTP.

A full description of these updated elements is included in Section 4.4.5 and Section 4.4.8.

The remaining elements of the Proposed Project included in the 2018 planning application remain unchanged.

4.3 Location of the Proposed Project

There are no changes to the location of the Proposed Project and the information presented in this Section of the EIAR in the 2018 planning application.

4.4 Description of the Proposed Regional Wastewater Treatment Plant

4.4.1 Proposed Site

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to the proposed WwTP site.

4.4.2 Proposed Treatment Capacity

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to proposed treatment capacity.

4.4.3 Proposed Design Basis

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to the proposed design.

4.4.4 Proposed Treatment Standards

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to proposed treatment standards.

4.4.5 Indicative Design

The design for the proposed WwTP has remained unchanged since the original 2018 planning application, with the exception of the inclusion of UV treatment.

UV light technology has been developed over the last 30 years to provide UV disinfection for both water and wastewater. It is a mature technology that is used worldwide (with more than 10,000 installations) to meet water quality objectives in receiving waters. In WwTPs, banks of UV emitting bulbs are provided in units depending on the flow. These units are designed to provide hydraulic residence time for the effluent to be irradiated by UV light of the particular wavelengths necessary to achieve a design reduction in bacteria numbers. These UV systems are designed specifically for each WwTP to achieve a reduction in the *Escherichia coli* (*E. coli*) concentration levels (measured in colony forming units (cfu)) at the point of discharge which is appropriate to the designation of the waters (e.g. bathing / shellfish), the distance of the discharge from the designated receiving waters, the local current and tidal system, and the total volume and flow rate that effluent is discharged from the WwTP.

Typically, with secondary wastewater treatment, the discharge concentrations of coliforms in the effluent are variable and are dependent on the combined or otherwise nature of the sewerage network, the organic load to the WwTP, the flow on any given day, the temperature, and the residence time in the WwTP. Water quality modelling undertaken in advance of, and during the Oral Hearing for the Proposed Project, confirmed that the combination of these factors provided equal time for uptake / accumulation and the subsequent clearance / removal of any coliforms by the shellfish. As such, it was concluded that there was no predicted impact on the shellfish water quality as a result of the Proposed Project and that the Proposed Project would not lead to a deterioration in water quality within the Shellfish Protected Area. However, having regard to submissions made by Fingal County Council and members of the public, including relevant fishermen, it was determined that, out of an abundance of caution to ensure the protection of the shellfish waters, additional treatment would be applied to the effluent prior to discharge.

It was subsequently agreed as part of the Oral Hearing process that this additional treatment would take the form of UV treatment at the proposed WwTP located at Clonshagh. UV treatment of the final effluent will be incorporated into the proposed WwTP to provide a further reduction in the *E. coli* concentrations and further protection to the designated shellfish waters.

The UV treatment system proposed at the WwTP will be designed and operated to achieve a maximum of 20,000 cfu/100ml (millilitres), with an average concentration in the order of 5,000 to 6,000 cfu/100ml, in the final effluent. At this concentration, there will be no impact on the designated shellfish water. The inclusion of the proposed UV treatment system at the proposed WwTP will provide a combined 99.9% *E. coli* reduction across the entire proposed WwTP (cumulation of primary, secondary, and tertiary treatment processes).

UV treatment will also reduce and control the spikes and variability of the concentrations of *E. coli* discharged from the proposed WwTP, thus providing greater protection to the receiving waters.

The UV system will control photo-reactivation (i.e. the process whereby bacteria recover after being inactivated by UV light in the presence of daylight), as the UV treatment reduces the ability of bacteria to photo-reactivate. Furthermore, at the proposed WwTP, the final effluent will not be exposed to daylight for approximately four hours after the UV treatment due to the length of the proposed outfall pipeline route. This will further inhibit the photo-reactivation process.

UV treatment requires the use of additional energy resources. The best practice approach for UV disinfection of wastewater is to use dynamic dosing. Dynamic dosing adapts the application of UV depending on the characteristics of the effluent, including total suspended solids (including metals) and turbidity, thereby continuously providing a sufficient dose while minimising energy usage. This process is controlled by an energy management system and such a system will be incorporated.

The UV system will include automatic cleaning as well as additional stand-by units to facilitate continued operation of the proposed WwTP during maintenance. Instruments will be installed to continuously monitor the UV dose being applied to the final effluent in accordance with performance requirements. This will facilitate

additional cleaning or bulb replacement as required. In addition, regular inspections of the UV system will be completed.

The proposed UV treatment system will be designed for the expected incoming flows to the proposed WwTP and will be installed on the final effluent line in the north-eastern corner of the proposed WwTP site, as shown in Figure 4.1 (Zonal Arrangements) in Volume 5A of this EIAR Addendum and in Addendum Planning Drawing Number 32102902-2120. UV treatment will be in operation all-year-round. Accordingly, the proposed UV treatment will have no impact on the operational capacity of the proposed WwTP. The UV system will consist of a minimum of three and a maximum of four treatment units located below, or partially below ground level with an above-ground motor control centre (MCC) (in a kiosk) along with minor maintenance and control equipment (e.g. shut-off button, frame for supporting, retracting and cleaning of UV lamps etc.). The footprint of the proposed UV unit will be a maximum of 18 metres (m) in length and 10m in width, and the above ground MCC (in a kiosk) will be 1.5m in height.

4.4.6 Description of the Proposed Sludge Hub Centre

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to the proposed Sludge Hub Centre (SHC).

4.4.7 Landscape Treatment for the Proposed Wastewater Treatment Plant

As part of the current remittal application, a Biodiversity Assessment was carried out and included as Appendix 2 of the Addendum Planning Report. This assessment is in response to Uisce Éireann's Biodiversity Action Plan (Uisce Éireann 2020) which seeks 'No Net Loss' for Uisce Éireann projects, and the recent Fingal Development Plan 2023 - 2029 (Fingal County Council 2023) which seeks '*a net gain in green infrastructure through the protection and enhancement of existing assets, through the provision of new green infrastructure as an integral part of the planning process*'.

As part of this assessment, the original landscape mitigation plans for the proposed Abbotstown pumping station and the proposed WwTP sites were used to calculate the balance of biodiversity loss and gain at each of these sites and to feed into the overall assessment calculations. The relevant Landscape Mitigation Plans at each site have been updated following this assessment, to provide an annotation of the mitigation included in the Biodiversity Assessment (refer to Figure 12.1 and Figure 12.2 in Volume 5A of this EIAR Addendum). However, the overall design has not changed since the 2018 planning application.

4.4.8 Access

There are no changes to the proposed access roads outlined in this Section of the EIAR in the 2018 planning application. However, there will be an extension to the culvert proposed under the access road to the proposed WwTP off the R139 Road.

As a result of discussion and engagement during the Oral Hearing process, a change was proposed to the River Mayne Culvert and this was confirmed in the initial grant of permission issued for the Proposed Project in 2019.

Condition 13(c) of An Bord Pleanála's (ABP's) initial grant of permission issued in November 2019 stated that:

'the developer shall increase the width of the culvert at the crossing of the River Mayne as part of the Clonshaugh site entrance, to cater for the full width of the future north south link road.'

The culvert will be extended by 4m from the original 21m presented in the 2018 planning application to 25m, in order to meet the requirements of Condition 13(c). The proposed culvert extension remains within the planning boundary submitted in the 2018 planning application and is presented in Addendum Planning Drawing Numbers 32102902-2148 and 32102902-2149.

4.4.9 Odour Control

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to odour control.

4.4.10 External Lighting

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to external lighting.

4.4.11 Construction Methodology

There are no changes to the construction methodology presented in this Section of the EIAR in the 2018 planning application.

4.5 Description of the Proposed Orbital Sewer Route, North Fringe Sewer Diversion Sewer Connection and Outfall Pipeline Route

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

However, during the 2019 Oral Hearing, further clarity was provided in relation to the alternative construction methodology considered for the proposed outfall pipeline route (marine section), and so for completeness, has also been outlined in this Chapter of the EIAR Addendum.

There have been no amendments to the proposed outfall pipeline route (marine section) since the 2018 planning application, and as per the 2018 planning application, the preferred methodology has not been altered and the marine pipeline will be constructed using a combination of tunnelling and subsea dredging techniques.

The final methodology selected for the construction of the proposed outfall pipeline route (marine section), between the low water mark (Section 4, Chainage 2,000m approximately) to the proposed outfall location, approximately 1 kilometre (km) north-east of Ireland's Eye (a distance of approximately 4km), was subsea laying of the pipeline in an excavated (dredged) trench in the sea bed.

As explained at the 2019 Oral Hearing, the reasonable alternative considered for this section of the Proposed Project was the continuation of tunnelling from the low water mark to the proposed outfall location. Due to environmental constraints pertaining to the Baldoyle Bay Special Area of Conservation (SAC) and technical constraints pertaining to Portmarnock Golf Club's groundwater irrigation system, the section of the proposed outfall pipeline route (marine section) from the fields to the west of the R106 Coast Road (Section 4, Chainage 0.00m) to a point below the low water mark (Section 4, Chainage 2,000m approximately) is required to be constructed by means of tunnelling, with the tunnel diameter to be determined by the construction methodology chosen for the remaining section of the proposed outfall pipeline route (marine section).

Construction of the proposed outfall pipeline (marine section) by tunnelling the complete length (approximately 6km) would require a large bore tunnel, with an approximate outer diameter of 4.5m, constructed in the rock layer using a Tunnel Boring Machine (TBM). Extensive investigations were carried out in the marine environment in order to determine the feasibility of either the fully tunnelled option or a mixture of tunnelling / subsea dredging. These investigations included:

- Geotechnical investigations along the pipeline corridor including rotary core boreholes, vibrocores, lab testing of rock and sediments and geophysical surveys;
- Archaeological surveys along the pipeline corridor including geophysical surveys and follow on dive surveys;
- Ecological surveys, including dive surveys at Ireland's Eye to assess reef habitat, bird surveys and harbour porpoise surveys (visual and passive acoustic monitoring); and
- Tide and current surveys.

The geotechnical investigations indicated the presence of a south-east to north-west trending fault to the west of Ireland's Eye, and also identified areas of highly weathered rock, both of which would increase the technical difficulty and environmental risk of constructing the proposed outfall pipeline route (marine section) by tunnelling methods only. In addition, as discussed above, tunnelling the complete length would require a large bore tunnel of approximately 4.5m, as opposed to the approximate 2m diameter required utilising a mix of tunnelling and subsea laying. As a result, construction by a mixture of tunnelling and subsea laying techniques was deemed to be the preferred option on a technical and environmental basis.

4.6 Description of the Proposed Abbotstown Pumping Station

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to the proposed Abbotstown pumping station.

4.7 Construction Phase Programme

An updated estimated timeline is provided in Diagram 4.1. The total Construction Phase will remain as approximately 48 months, including 12 months of commissioning. Individual activities will have shorter durations.

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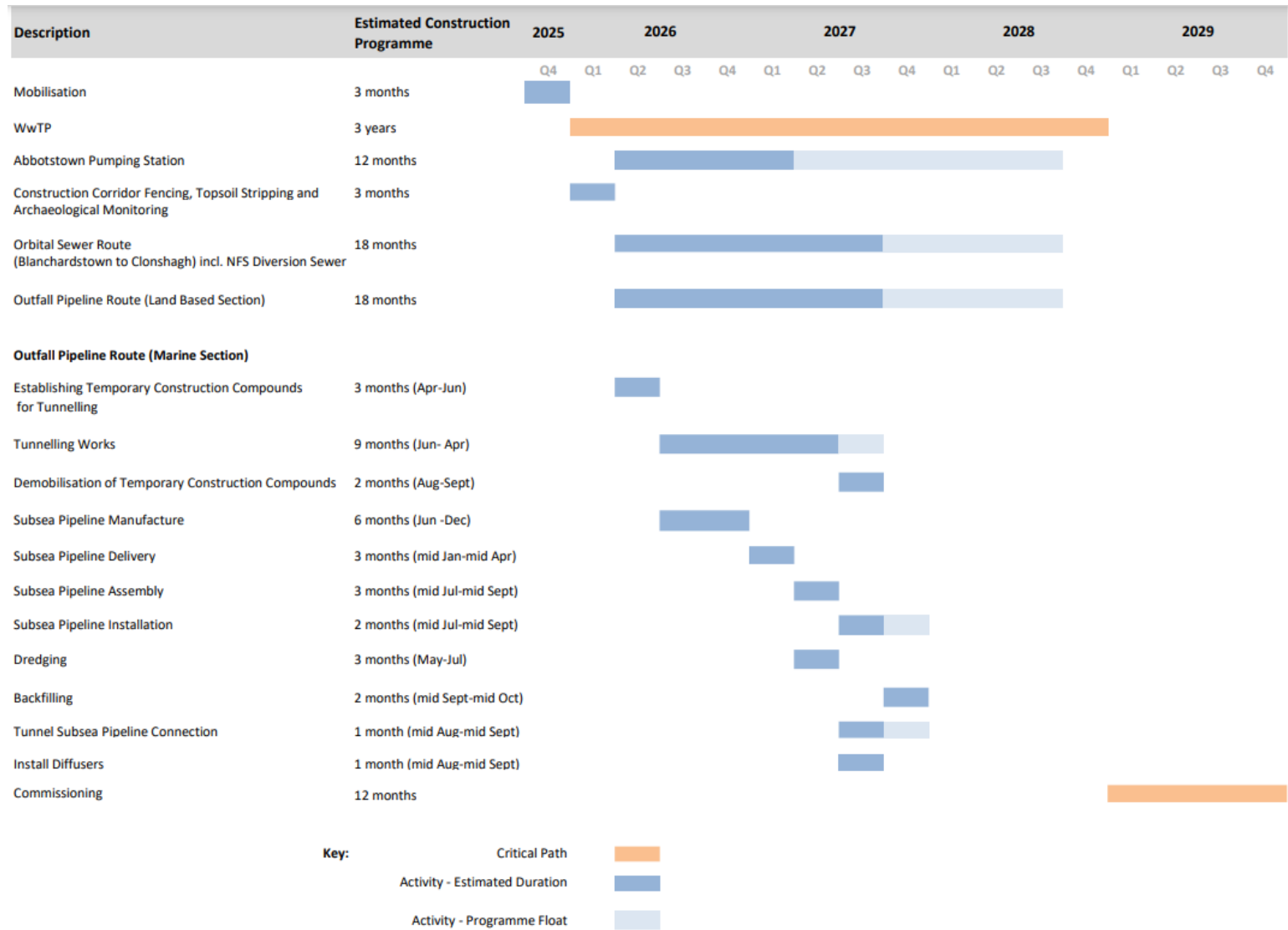


Diagram 4.1: Updated Proposed Project Construction Programme

4.8 Operational Phase of the Proposed Project

The normal Operational Phase of the Proposed Project and its constituent elements, including the UV treatment system will be fully automated and will be monitored, controlled and managed from the control centre location at the proposed WwTP, as outlined in the 2018 planning application. The proposed WwTP will be added to the new Uisce Éireann 24-hour manned Operations Management Centre, which went live in 2022, for monitoring and escalation of critical alarms.

The UV treatment system will include for automated cleaning. Additional cleaning or bulb replacement may be required periodically. During the UV treatment system's operation, planned inspections and servicing will be required to maintain the equipment, and this will be included in the general maintenance activities for the proposed WwTP. In addition to the information outlined in this Section of the EIAR in the 2018 planning application, deliveries to site will also include the required chemicals to facilitate the UV treatment process.

4.9 Energy Sources

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application.

4.9.1 Energy Efficient Design

Proposed amendments to the Energy Performance of Buildings Directive by way of Revised Directive 2023/1791 came into effect on 10 October 2023 which are aimed at ensuring buildings are categorised as zero-emission buildings by 2030 for new builds and 2050 for existing buildings. As before, this update will be considered at the next phase of the design of the Proposed Project.

The best practice approach for UV disinfection of wastewater is to use dynamic dosing. Dynamic dosing adapts the application of UV depending on the characteristics of the effluent, including total suspended solids (including metals) and turbidity, thereby continuously providing a sufficient dose while minimising energy usage and promoting energy efficiency. This process is controlled by an energy management system.

4.9.2 Renewable Energy Options

There are no changes to the information presented in this Section of the EIAR in the 2018 planning application in relation to renewable energy options.

4.10 Surface Water Management

During the Construction Phase, there will be no changes to the management of surface water runoff during construction activities, in accordance with the Outline Surface Water Management Plan (SWMP), which is included in Appendix 3 to the Outline CEMP in the 2018 planning application, as supplemented by Appendix 2 (SWMP) of the Addendum to the Outline CEMP included as a standalone document in this Addendum.

The design for surface water management has remained unchanged since the 2018 planning application. Some additional surface water drainage pipes may be required to service the UV treatment process building within the proposed WwTP. However, there will be no change to the volume of surface water runoff, as a result of the inclusion of the UV treatment unit, as this area was previously hardstanding in the 2018 planning application.

4.11 Description of the Regional Biosolids Storage Facility

4.11.1 Location

The site location for the proposed RBSF, as presented in this Section of the EIAR in the 2018 planning application, remains unchanged. There are therefore no changes to the information presented in this Section of the EIAR in the 2018 planning application.

4.11.2 Characteristics of the Regional Biosolids Storage Facility

Need for the Regional Biosolids Storage Facility

There are no changes to the need for the proposed RBSF, as outlined in this Section of the EIAR in the 2018 planning application. The need for the proposed RBSF is set out in the National Wastewater Sludge Management Plan (NWSMP) (Uisce Éireann 2016), which has not been amended since the 2018 planning application submission, and therefore remains valid.

Biosolids Description

There are no changes to the description of biosolids provided in this Section of the EIAR in the 2018 planning application.

Storage Requirements

Since the submission of the 2018 planning application, the proposed RBSF was granted planning permission by ABP (Case Reference Number PA29S.301798), as part of the Ringsend Wastewater Treatment Plant Upgrade Project, in April 2019.

The design horizon years and interim milestones for the development of Ringsend WwTP and the Proposed Project WwTP shown in Table 4.7 in this Section of the EIAR in the 2018 planning application have changed since the 2018 planning application. The projected loadings for the Ringsend catchment have also changed. As a result, the estimated production of biosolids and storage volumes have been updated to reflect these changes since 2018, and are outlined in Table 4.1. For the 2040 design horizon, the estimated storage requirement for the 'Most Likely Scenario' has reduced by approximately 1,200m³ (cubic metres) (3.4%) since 2018.

Table 4.1: Storage Volume Requirements for Biosolids (Updated)

Year	Source	Biosolids Type	Annual		Storage Period	
			Dry Tonnes (tDS)	Wet (Tonnes)	Wet (Tonnes)	Volume (m ³)
2021	Ringsend WwTP	Biocake	5,670	21,800	6,990	6,660
		Biofert	15,320	16,650	5,340	12,130
		Total				18,790
2025	Ringsend WwTP	Biocake	7,330	28,200	9,040	8,610
		Biofert	15,320	16,650	5,340	12,130
	Proposed Project WwTP	Biocake	8,890	34,200	10,960	10,440
	Total				31,180	
2040	Ringsend WwTP	Biocake	8,760	33,700	10,800	10,290
		Biofert	15,320	16,650	5,340	12,130
	Proposed Project WwTP	Biocake	9,400	36,160	11,590	11,040
	Total				33,460	

Notes: Figures are rounded. Bulk density of biofert is approximately 440kg/m³ (kilograms per metre cubed) and biocake is approximately 1050kg/m³.

The remaining information in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12 Proposed Works for the Regional Biosolids Storage Facility

4.12.1 Site Layout

Since the submission of the 2018 planning application, ownership of the proposed RBSF site transferred from Fingal County Council to Uisce Éireann. The proposed RBSF was granted planning permission by ABP (Case Reference Number PA29S.301798), as part of the Ringsend Wastewater Treatment Plant Upgrade Project, in April 2019. There has been no development at the site since the 2018 planning application and the layout for the proposed RBSF remains unchanged.

4.12.2 Biosolids Storage Buildings

There are no changes to the proposed layout of the RBSF site or the design of storage buildings, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.3 Administration and Welfare Building

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.4 Weighbridges

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.5 Heavy Goods Vehicle Parking Area

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.6 Electrical Services

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.7 External Lighting

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.8 Water Supply

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.9 Wheel Cleaning Area

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.10 Surface Water Drainage

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.11 Foul Drainage

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.12 Odour Control

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.12.13 Landscape

There are no changes to the design of the proposed RBSF, and therefore, the information presented in this Section of the EIAR in the 2018 planning application remains unchanged.

4.13 Regional Biosolids Storage Facility Construction Phase

4.13.1 Programme

There have been changes to the programme presented for the proposed RBSF in this Section of the EIAR in the 2018 planning application. The initial phase of construction for the proposed RBSF will involve the construction of one storage building. This has been updated to commence in 2024 (originally 2020). The estimated construction works period has been considered further since the 2018 planning application, and based on this, the construction period has been amended to 18 months (from 12 months). This will bring completion of the initial phase to 2025. The second building is likely to be constructed in 2028. An updated indicative programme for the construction works for the initial phase is shown in Diagram 4.2.

Task No.	Task and Description	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18
1	Mobilisation and Site Set Up	■																	
2	Demolition		■	■	■														
3	Earthworks and Excavation			■	■	■													
4	Roads				■										■		■		
5	Drainage			■	■	■								■				■	
6	Storage Building Concrete Foundation				■	■	■												
7	Storage Building Concrete Ground Slab					■	■	■											
8	Storage Building Retaining Walls						■	■	■	■									
9	Structural Steel and Roof Trusses									■	■								
10	Roofing										■	■							
11	Cladding											■	■	■					
12	Mechanical and Electrical												■	■	■	■	■	■	
13	Administration and Welfare Building				■	■	■	■	■	■	■	■	■	■	■	■	■	■	
14	Landscaping and Planting													■	■	■	■	■	■
15	Commissioning																		■

Diagram 4.2: Proposed RBSF Construction Works Programme – Initial Phase (Updated)

4.13.2 Construction Activities

There are no changes to the information relating to construction activities for the proposed RBSF, as presented in this Section of the EIAR in the 2018 planning application.

4.13.3 Operational Phase

There are no changes to the information relating to the Operational Phase of the proposed RBSF, as presented in this Section of the EIAR in the 2018 planning application.

4.14 References

Fingal County Council (2023). Fingal Development Plan 2023 - 2029

Uisce Éireann (2016). National Wastewater Sludge Management Plan

Uisce Éireann (2020). Biodiversity Action Plan

Directives and Legislation

Revised Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955