



# Greater Dublin Drainage Project Addendum

**Environmental Impact Assessment Report Addendum:  
Volume 3A Part A of 6**

**Chapter 18A Soils and Geology**

**Uisce Éireann**

October 2023

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## 18. Soils and Geology

### 18.1 Introduction

As detailed in Chapter 1A (Introduction) in Volume 2A Part A of this Environmental Impact Assessment Report (EIAR) Addendum, we have reviewed Chapter 18 (Soils and Geology) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application, in the light of:

- Changes to the baseline environment;
- The requirement for updated surveys; and
- Changes to the law, policy, and industry standards and guidance in the intervening period.

Table 18.1 includes a summary of the project elements which were incorporated into the planning design for the Greater Dublin Drainage Project (hereafter referred to as the Proposed Project) following direction at the Oral Hearing in 2019 and the subsequent planning conditions applied to the 2018 planning application submission. A full description is included in Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of the EIAR Addendum. The remaining elements of the Proposed Project included in the 2018 planning application remain unchanged.

**Table 18.1: Updated Proposed Project Elements**

| Updated Element               | Outline Description of Updated Element   |
|-------------------------------|--|
| Ultraviolet (UV) Treatment    | <ul style="list-style-type: none"> <li>• UV Treatment is to be included in the treatment process at the proposed wastewater treatment plant (WwTP) in the northern section of the WwTP site.</li> <li>• The UV treatment system will be designed for the expected flows at the plant and will be installed on the final effluent line. UV treatment will be in operation 24 hours a day, 365 days a year.</li> <li>• 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.).</li> </ul> |
| River Mayne Culvert Extension | <ul style="list-style-type: none"> <li>• Extension of the River Mayne Culvert on the proposed access road to the WwTP by 4m (from 21m to 25m) to cater for the full width of the future north south link road.</li> </ul>  |

This EIAR Addendum Chapter should be read in conjunction with Chapter 18 (Soils and Geology) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application.

Please note that the updated soils and geology impact assessment of the proposed Regional Biosolids Storage Facility aspect of the Proposed Project is addressed in Section 7A (Land and Soils) in Volume 4A Part A of this EIAR Addendum.

### 18.2 Methodology

#### 18.2.1 Introduction

The following Section outlines any updates to legislation and guidelines considered, since the submission of the EIAR in the 2018 planning application.

#### 18.2.2 Guidelines

In 2022, the Environmental Protection Agency (EPA) published an updated set of Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the updated EPA Guidelines) (EPA 2022). The updated EPA Guidelines have been considered in terms of the methodology applied in this Chapter of the EIAR in the 2018 planning application, which incorporated the previous Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the previous EPA Guidelines) (EPA 2017) and it has been determined that the methodology is consistent with the updated EPA Guidelines.

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

### **18.2.3 Application of Methodology**

As there have been no changes to the Institute of Geologists of Ireland (IGI) Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impact Statements (hereafter referred to as the IGI Guidelines) (IGI 2013), the impact assessment methodology outlined in this Section of the EIAR in the 2018 planning application remains unchanged.

### **18.2.4 Study Area**

There are no changes to the study area or to the information presented in this Section of the EIAR in the 2018 planning application, as there have been no changes to the planning boundary for the Proposed Project.

### **18.2.5 Baseline Data Collection**

#### Introduction

There have been no changes to the information on the statutory consultation which took place to inform the EIAR submitted as part of the 2018 planning application.

Following an Oral Hearing process, An Bord Pleanála (ABP) previously made a decision to grant the planning application by Order dated 11 November 2019 under reference number ABP-301908-18 for the Proposed Project. That decision was quashed by Order of the High Court and the case was remitted by that Court to ABP for a fresh determination. Following the remittal Order, ABP decided that given the passage of time since the submission of the original planning application, and in accordance with Section 37F(1)(c) of the Planning and Development Act 2000 (as amended), Uisce Éireann should have the opportunity to update, where appropriate, the EIAR and Natura Impact Statement, and any other information submitted.

In light of this, ABP contacted those who had made submissions as part of the original consultation process in 2018 advising that the case had been reactivated under a new reference number (ABP-312131-21) and invited those interested parties to make any further general submissions / observations on the planning application by 30 September 2022. A total of 16 submissions were received. Arup has reviewed the submissions received and found one of these to be of relevance to this Addendum Chapter. In summary, this submission, from Iarnród Éireann, made reference to the requirement for the completion of a comprehensive and detailed ground investigation report and a works design statement. This submission is acknowledged and these requirements must be carried out prior to detailed design stage and issued to Iarnród Éireann for comment, should the Proposed Project be granted planning permission.

#### Desk Study Information

The datasets used in the previous baseline assessment were reviewed and no changes or relevant updates were noted. There were no changes to the findings of the desk study. Therefore, there are no changes to the sources of information outlined in this Section of the EIAR in the 2018 planning application.

#### Historic Ground Investigations

There are no changes to the historic ground investigation information outlined in this Section of the EIAR in the 2018 planning application.

#### Project Specific Information

A ground investigation relevant to the next phase of the Proposed Project, post planning, was carried out in 2020 and details of this are presented below.

- Causeway Geotech, Greater Dublin Drainage – Factual Report, Report No. 19-1283, May 2020, Interim Report (Causeway 2020).

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This ground investigation was carried out by Causeway Geotech between January and March 2020 to inform the next phase of the Proposed Project, and included the following:

- 31 cable percussive boreholes, 20 of which were put to completion by rotary follow-on methods;
- 16 boreholes by dynamic (windowless) sampling methods, 10 of which were put to completion by rotary follow-on methods;
- 18 standpipe installations;
- 21 machine dug trial pits;
- Seven machine dug slit trenches;
- An infiltration test performed in 15 of the trial pits;
- Indirect CBR tests at 14 locations; and
- One packer test.

### Geophysical Surveys

There were no fundamental changes to the soils and geology along the alignment, and therefore, further geophysical surveys were not required in relation to the baseline environment. There are therefore no changes to the information presented in this Section of the EIAR in the 2018 planning application.

### **18.2.6 Technical Limitations**

There is no change to the information presented in this Section of the EIAR in the 2018 planning application. The information remains sufficient to complete the soils and geology evaluation.

## **18.3 Baseline Environment**

### **18.3.1 Introduction**

This Section describes any updates to the soils and geology in the study area, since the submission of the EIAR in the 2018 planning application.

### **18.3.2 Regional Overview**

There have been no changes to the regional baseline environment outlined in this Section of the EIAR of the 2018 planning application, and this Section therefore remains unchanged.

### **18.3.3 Site Specific Information**

#### Geomorphology and Topography

The baseline environment relating to the Proposed Project has not changed since the 2018 planning application and the information presented in this Section of the EIAR in the 2018 planning application remains valid.

#### Agricultural Soils and Superficial Deposits

The baseline environment relating to the Proposed Project has not changed since the 2018 planning application and the information presented in this Section of the EIAR in the 2018 planning application remains valid.

#### *Proposed Abbotstown Pumping Station*

Previously, for the Phase 2 ground investigation completed to inform the EIAR in the 2018 planning application, BH107 and BH108 were the borehole numbers allocated in the vicinity of the proposed Abbotstown pumping station. For the updated 2020 ground investigation, BH261 and BH262 were the borehole reference numbers assigned within the vicinity of the proposed Abbotstown pumping station.

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The remaining information presented in this Section of the EIAR in the 2018 planning application remains as previously presented.

### *Proposed Orbital Sewer Route (Blanchardstown to Clonshagh)*

There have been no changes to the baseline environment outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### *Proposed Wastewater Treatment Plant and North Fringe Sewer Diversion Sewer at Clonshagh*

In this Section of the EIAR in the 2018 planning application, it was previously stated that no made ground was identified in the preliminary site investigation locations in this area. One area of made ground was encountered during the 2020 ground investigation in close proximity to the R139 Road at BH259 to a depth of 0.9mBGL (metres below-ground level).

The remaining information presented in this Section of the EIAR in the 2018 planning application remains as previously presented.

### *Proposed Outfall Pipeline Route (Land Based Section)*

There have been no changes to the baseline environment outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### *Proposed Outfall Pipeline Route (Marine Section)*

Table 18.2 presents any updates to the superficial deposits within the study area since the submission of the EIAR in the 2018 planning application.

**Table 18.2: Superficial Deposits Within Study Area**

| Strata*                             | General Extent / Location                             | Proposed Abbotstown Pumping Station | Proposed Orbital Sewer Route  | Proposed WwTP and North Fringe Sewer (NFS) Diversion Sewer | Proposed Outfall Pipeline Route (Land Based Section) | Proposed Outfall Pipeline Route (Marine Section) |
|-------------------------------------|---|-------------------------------------|-------------------------------|--|--|--|
|                                     |   |                                     |                               |  |  |  |
| Topsoil                             | Widespread  | No change                           | No change                     | No change  | No change  | No change  |
| Made ground                         | Local pockets likely                                  | No change                           | No change                     | No change  | No change  | No change  |
| Alluvial/estuarine deposits         | Mainly Portmarnock                                    | No change                           | No change                     | No change  | No change  | No change  |
| Marine deposits (sands and gravels) | Proposed outfall pipeline route (marine section) only | No change                           | No change                     | No change  | No change  | No change  |
| Glacial till derived from limestone | Widespread  | No change                           | 0.2–15.3 (previously 0.2-3.7) | 0.5–30 (previously 0.5-16.5)                               | 0.4–10.5 (previously 0.4-5.1)                        | No change  |
| Fluvio-glacial sands and gravels    | Clonshagh WwTP  | No change                           | No change                     | 5.5–26.5 (previously 5.5-7)                                | 0.5–8 (previously 0.5-1.5)                           | No change  |

\*Strata indicated may not be present at all locations along the Proposed Project

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

### Bedrock Geology

There have been no changes to the baseline environment outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

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### [Proposed Abbotstown Pumping Station](#)

In this Section of the EIAR in the 2018 planning application, it was previously stated that during the previous project-specific ground investigation, weathered bedrock was encountered at BH107 at 1.2mBGL. Intact unweathered limestone was encountered at 2.5mBGL and this was described as medium-strong thinly to thickly laminated dark-grey argillaceous limestone with bedding dipping sub-horizontally up to 40° (degrees). Associated jointing and calcite veining was also observed.

During the project-specific ground investigation carried out in 2020, weathered bedrock was encountered at BH261 and BH262 at 1.2m and 2mBGL, respectively. Intact unweathered limestone was encountered at 2.7mBGL. This was described as medium-strong (locally weak) and very thinly bedded blackish grey limestone with bedding dipping sub-horizontally to 35°. Associated jointing was also observed.

The remaining information presented in this Section of the EIAR in the 2018 planning application remains as previously presented.

### [Proposed Orbital Sewer Route](#)

There have been no changes to the baseline environment outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### [Proposed Wastewater Treatment Plant and North Fringe Sewer Diversion Sewer at Clonshagh](#)

In this Section of the EIAR in the 2018 planning application, it was previously stated that bedrock was not encountered in this location during the project-specific ground investigation to a depth of 18mBGL. The ground investigation and depths checked at that time were sufficient to characterise the soils in the area to inform the EIAR in the 2018 planning application. During the project-specific ground investigation, carried out in 2020, no bedrock was encountered up to depths of 30mBGL, except for at BH279 and BH290. Intact bedrock was encountered at 29.15m and 29.8mBGL at these two boreholes, respectively. This was described as medium-strong, thinly to medium bedded black argillaceous or grey limestone, with bedding dipping sub-horizontally to 5°. Associated jointing was also observed. This simply confirmed the depth to bedrock in the area.

The remaining information presented in this Section of the EIAR in the 2018 planning application remains as previously presented.

### [Proposed Outfall Pipeline Route \(Land Based Section\)](#)

There have been no changes to the baseline environment outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### [Proposed Outfall Pipeline Route \(Marine Section\)](#)

There have been no changes to the baseline environment outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### [Summary of Bedrock Geology](#)

There have been no changes to the different rock formations expected within the study area, as outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### [Karst](#)

There have been no changes to the baseline karst environment outlined in this Section of the EIAR in the 2018 planning application. The risk of karst therefore remains as Negligible and is not further assessed.

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### Soft and/or Unstable Ground

There have been no changes to the baseline environment in relation to soft and / or unstable ground, as outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### Contaminated Land

There have been no changes to the baseline environment in relation to contaminated land, as outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### Mineral/Aggregate Resources

There have been no changes to the baseline environment in relation to mineral / aggregate resources, as outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### Geological Heritage Areas

There have been no changes to the baseline environment in relation to geological heritage areas, as outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### Summary of Features of Geological Feature Importance

There have been no changes to the summary of geological features, as presented in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

## 18.3.4 Conceptual Site Model

Given the additional data, which was provided from the 2020 ground investigation, the Conceptual Site Model (CSM) was revisited and any updates as a result of the revised CSM are shown in tabular format below in Table 18.3.

Table 18.3: Conceptual Site Model (CSM)

| Feature / Location                                   | Ground Level (mOD*) |     | Invert (mOD) |     | Chainage | Construction Method | Ground Conditions |
|--|---------------------|-----|--------------|-----|----------|---------------------|-------------------|
|  | Max                 | Min | Max          | Min |          |                     |                   |
| Proposed Abbotstown pumping station                  | No change           |     |              |     |          |                     |                   |
| Proposed orbital sewer route                         | No change           |     |              |     |          |                     |                   |
| Proposed WwTP and NFS diversion sewer at Clonshagh   | No change           |     |              |     |          |                     |                   |
| Proposed outfall pipeline route (land based section) | No change           |     |              |     |          |                     |                   |
| Proposed outfall pipeline route (marine section)     | No change           |     |              |     |          |                     |                   |

\*metres above Ordnance Datum



### Importance of Features

There have been no changes to the information outlined in this Section of the EIAR in the 2018 planning application, and this Section therefore remains unchanged.

### Environment Type

There have been no changes to the environment types outlined in this Section of the EIAR in the 2018 planning application, as there have been no changes to the IGI Guidelines (IGI 2013).

## **18.4 Characteristics of the Proposed Project**

The description of the Proposed Project and construction activities provided in Chapter 4 (Description of the Proposed Project) in Volume 2 Part A of the EIAR in the 2018 planning application has been supplemented by Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of this EIAR Addendum (Table 18.1 provides a summary of the updates to the Proposed Project elements).

This Section provides any updates to the soils and geology impact assessment, following consideration of these changes.

### **18.4.1 Activities/Environment Matrix**

Based on a review of the updated Proposed Project elements, as outlined in Table 18.1, no additional project activities, other than those included in this Section of the EIAR in the 2018 planning application were identified. This Section therefore remains unchanged.

## **18.5 Impact of the Proposed Project – Construction Phase**

This Section of Chapter 18 (Soils and Geology) in Volume 3 Part A of the EIAR in the 2018 planning application has been reviewed and considered against all updates to elements of the Proposed Project (outlined in Table 18.1), any changes to the baseline environment, and updates to guidance and reference material, since the submission of the 2018 planning application.

Based on a review, no additional Construction Phase impacts were identified. The impacts outlined in this Section of the EIAR in the 2018 planning application therefore remain unchanged.

## **18.6 Impact of the Proposed Project – Operational Phase**

This Section of Chapter 18 (Soils and Geology) in Volume 3 Part A of the EIAR in the 2018 has been reviewed and considered against all updates to elements of the Proposed Project (outlined in Table 18.1), any changes to the baseline environment, and updates to guidance and reference material, since the submission of the 2018 planning application.

Based on a review, no additional Operational Phase impacts were identified. The impacts outlined in this Section of the EIAR in the 2018 planning application therefore remain unchanged.

## **18.7 Mitigation Measures**

### **18.7.1 Introduction**

The updates to the Proposed Project elements, as outlined in Table 18.1, were assessed and deemed not to result in any additional impacts, above those identified in the original Chapter 18 (Soils and Geology) in Volume 3 Part A of the EIAR in the 2018 planning application. There is therefore no requirement for additional mitigation measures, above the measures outlined in this Section of the EIAR in the 2018 planning application and the mitigation measures outlined in this Section of the EIAR in the 2018 planning application will be implemented in full.

### **18.7.2 Summary of Residual Impacts**

The updates to the Proposed Project elements, as outlined in Table 18.1, were assessed and deemed not to result in any additional impacts, above those identified in the original Chapter 18 (Soils and Geology) included in Volume 3 Part A of the EIAR in the 2018 planning application. The residual impacts therefore remain, as presented in this Section of the EIAR in the 2018 planning application.

### **18.8 Monitoring**

The updates to the Proposed Project elements, as outlined in Table 18.1, were assessed and deemed not to result in any additional impacts, above those identified in the original Chapter 18 (Soils and Geology) included in Volume 3 Part A of the EIAR in the 2018 planning application. There is therefore no requirement for additional monitoring measures, above the measures outlined in this Section of the EIAR in the 2018 planning application.

### **18.9 Reinstatement**

The updates to the Proposed Project elements, as outlined in Table 18.1, were assessed and deemed not to result in any additional impacts, above those identified in the original Chapter 18 (Soils and Geology) included in Volume 3 Part A of the EIAR in the 2018 planning application. There therefore remains no change to the information on reinstatement presented in this Section. It is noted that, in relation to materials under Article 27, S.I. No. 126/2011 – European Communities (Waste Directive) Regulations 2011 have been amended by S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020.

### **18.10 Difficulties Encountered in Compiling Required Information**

No specific difficulties were encountered during the completion of this EIAR Addendum Chapter.

### **18.11 Oral Hearing**

During the 2019 Oral Hearing, a query was raised in relation to the geology under Baldoyle Bay, and further clarification was provided in the 'Response to Soils and Geology Questions' delivered to the Inspector and the public on 28 March 2019. This brief of evidence is included in Appendix A18.1 in Volume 3A Part B of this EIAR Addendum. The clarifications provided were checked against the updates provided in this Addendum Chapter and remain valid.

### **18.12 Conclusion**

This Addendum Chapter has considered all updates to elements of the Proposed Project, and updates to guidance and reference material since the submission of the 2018 planning application. Following consideration, there are no changes to the assessment of environmental impacts on soils and geology as a result of any of the updates discussed in this Addendum Chapter.

## **18.13 References**

Causeway (2020). Causeway Geotech. Greater Dublin Drainage – Factual Report, Report No. 19-1283, May 2020, Interim Report

EPA (2017). Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. August 2017

EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

IGI (2013). Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impact Statements

### Directives and Legislation

Planning and Development Act 2000 (as amended)

S.I. No. 126/2011 – European Communities (Waste Directive) Regulations 2011

S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020