UISCE ÉIREANN : IRISH WATER

Stillorgan Reservoir Upgrade Project

Environmental Impact Statement

Scoping Report

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IRISH WATER

STILLORGAN RESERVOIR UPGRADE PROJECT

ENVIRONMENTAL IMPACT STATEMENT

SCOPING REPORT

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1 INTRODUCTION

1.1 Overview

The Stillorgan Reservoir holds treated drinking water from the Vartry Water Supply Scheme and the Ballymore Eustace Water Supply Scheme prior to its distribution to over 200,000 customers in the Dún Laoghaire Rathdown and wider south Dublin region. The Stillorgan Reservoir is critical to the continued supply and quality of water in the region.

The Stillorgan Reservoir cells are man-made structures constructed over 100 years ago to store drinking water prior to supply. The provision of drinking water storage is a normal requirement for water supply schemes to balance daily fluctuations in demand and provide some security of supply should a breakdown occur upstream of the reservoirs.

The proposed works will include the construction and operation of a new covered reservoir within the existing site to address risks to drinking water quality from the present open water reservoir cells.

1.2 Purpose of this Report

This document is the Environmental Impact Statement (EIS) Scoping Report for the proposed upgrade works to Stillorgan Reservoir. It is submitted for opinion as to the scope and content of an EIA for the proposed works.

This document has been prepared by Nicholas O'Dwyer Limited on behalf of Irish Water.

2 NEED FOR THE PROPOSED DEVELOPMENT

2.1 Existing Conditions Overview

The existing site is occupied by open water reservoirs and associated buildings. The site is irregular in shape and is surrounded by a high embankment. Three storage reservoirs are located on site as shown in **Figure 2-1**.

Figure 2-1 Existing reservoir storage at Stillorgan

The northern edge of the site is bounded by the residential housing estates of Weir View Drive and Stillorgan Heath. To the east is the N31, Brewery Road, to the south the LUAS tracks and to the west is St. Raphaela's Road. As a result of the surrounding embankment the reservoirs can only be viewed from elevated locations, principally in the apartments and offices of the Sandyford Business District with some views from upper windows of houses to the north of the site.

The nature of the existing development being active storage reservoirs means that they should be periodically drawn down for inspection and maintenance works. Therefore, their physical nature and appearance could be subject to variation depending on the maintenance requirements associated with drinking water reservoirs.

2.2 Benefits of the Proposed Upgrade Works

The Stillorgan Reservoirs are one of only two remaining uncovered drinking water reservoir sites in Ireland with the other (Ballyboden) to be replaced in 2017. Open storage of treated drinking water places the supply at direct risk of environmental (e.g. microbiological pollution from wildlife) or deliberate contamination (e.g. from unauthorised access, vandalism or terrorism). As a result, it is necessary to remove the open storage at Stillorgan and replace it with a covered storage reservoir. This will

ensure a long-term, secure and sustainable water supply to the region that meets current and future regulatory requirements.

Both the EPA and HSE support Irish Water's proposal to replace the existing open storage at Stillorgan with a covered storage reservoir (see attached correspondence in **Appendix A**).

2.3 Volume of Storage Required

The short to medium term storage requirements at Stillorgan has been identified at 160 million litres. This equates to approximately 48 hours of current demand and approximately 36 hours of future projected short to medium term demand growth (2031).

This is a reduction in the current storage levels on site but is more than adequate for the supply area as the recommended storage from services reservoirs is normally between 24 and 36 hours.

The reduced storage volume can be explained as follows:

- Even though a larger volume is currently stored on site the effective volume of usable water is much less due to short circuiting between the reservoirs and water quality concerns at lower depths.
- Improvements throughout the Greater Dublin Water Supply Area means that a greater security of supply exists than was previously the case.

Due to the strategic nature of the site any areas not being used for storage will be landscaped and reserved for future longer term storage requirements.

3 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 General

Environmental Impact Assessment (EIA) is a process by which information about the environmental effects of a project is collected, evaluated and presented in a form that provides a basis for consultation. Decision-makers can then take account of these environmental effects when determining whether or not a project should proceed.

The results of the EIA process are reported in an Environmental Impact Statement (EIS) that accompanies the application for planning permission. The EIS is made available to consultees through the statutory consultation process for granting of planning permission.

The scope of the EIS has been defined on the basis of reference to the:

- Environmental Protection Agency's (EPAs) Revised Guidelines on information to be contained in an EIS (Draft September 2015);
- EPA Advice notes on current practice in the preparation of an EIS (Draft September 2015);
- Department of Environmental, Community and Local Government Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (March 2013);

The EIA process has a number of key characteristics:

- It is systematic, comprising a sequence of tasks defined both by regulation and by practice;
- It is analytical, requiring the application of specialist skills from the environmental sciences;
- It is impartial, its aim being to inform the decision-makers;
- It is consultative, with provision being made for obtaining feedback from interested parties, including local authorities and statutory agencies; and
- It is interactive, allowing opportunities for environmental concerns to be addressed during the planning, design and implementation of a project.

3.2 Screening and Development Thresholds

There are a number of steps within the EIA process and the first of these is a requirement to determine if an EIA is required. This is often referred to as 'screening'.

Annex I of the EIA Directive (EC97/11/EC) sets out the type of projects for which an EIA is mandatory. Annex II of the same directive sets out those projects for which an EIA is required if it exceeds a specific threshold. These thresholds are set by individual member states and, in the case of Ireland; the relevant thresholds are set out in Part 2 of Annex 5 of the Planning and Development Regulations, 2001.

3.2.1 Mandatory EIA

The following are water infrastructure type projects which are outlined in Annex 5 of the Planning and Development Regulations (2001) as ones which require mandatory EIA:

- *Dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres.*

The volume of the proposed storage at Stillorgan is 160 Ml or 160,000 cubic metres and therefore is well below the criteria for a mandatory EIA.

The Planning and Development Regulations (2001), Schedule 5, Part 2, Section 10, (b) (iv*)* state that an EIA is required for:

- *Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere. (In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)*

During pre-application discussions with officers of the planning authority, Dún Laoghaire Rathdown County Council (DLRCC), it was noted that the proposals could be considered as 'urban development' due to their proximity to the Sandyford Business District. Therefore, DLRCC have concluded that an EIA should be undertaken on a precautionary principle.

3.2.2 Likelihood for Significant Effects

The 1997 amending Directive (97/11/EC) introduced guidance for Member States in terms of deciding whether or not a development is likely to have "significant effects on the environment". The guidance is provided by way of criteria set out in Annex III of the consolidated Directive.

Schedule 7 of the Planning and Development Regulations sets out "criteria for determining whether a development would or would not be likely to have significant effects on the environment" in accordance with Annex III of the Directive. Schedule 7 effectively acts as guidance for consent authorities in Ireland in assessing whether a 'sub-threshold development' should be subject to EIA.

The EIA screening report predicted the potential environmental impacts from the proposed development to be minor with the exception of the landscape impact which due to the change in nature from open drinking water storage to a combined covered drinking water storage/landscaped area could be considered to be an impact. The visual impact will range from neutral to most receptors at ground level to high from receptors with elevated views. The elevated views are mainly from apartments and offices within the Sandyford Business District Area and some residential properties within Stillorgan Heath. As a result a detailed Landscape and Visual Impact Assessment (LVIA) is proposed. It should be noted however that due to the nature of the existing development being man-made drinking water reservoirs that are subject to drawdown, inspection and maintenance the existing open water views should not be considered permanent or guaranteed. This aspect will feature in the proposed LVIA.

3.3 Scoping Process

Scoping describes the process of identifying the likely significant environmental effects that should be addressed in an EIS. The scope of the EIS has been defined on the basis of:

- Reference to the Environmental Protection Agency's (EPAs) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements;
- Draft Guidelines on the Information to be contained in Environmental Impact Statements;
- The project team's experience of the EIA process; and
- Knowledge of the existing reservoir site and the issues surrounding its development.

This scoping report has been produced and includes the following information:

- An outline description of the proposed development;
- The site location and description;
- The purpose of the proposal; and
- The proposed basis of the EIA.

Potential significant environmental effects that are considered to require further assessment are identified in this report. This scoping report also identifies potential environmental effects which are not considered significant, in order that consultees and decision-makers are provided with a complete picture to help them to decide whether they agree with the proposed scope of the EIA.

Comments received on the scoping report will be taken into account when undertaking the EIA.

3.4 Environmental Impact Statement

The scope of the EIA covers the period from commencement of construction through to the operational phase. The requirement for storage of treated water on the site will continue for the foreseeable future, thus consideration of environmental effects associated with decommissioning of the proposed development is not envisaged. The decommissioning of the existing open reservoirs will be considered within the EIA.

The spatial scope varies between both environmental effects and specialist topic areas. For example, the effect of a proposed development upon landscape and visual receptors is likely to require a greater spatial scope than, for example, the study of effects on soils. The spatial extent of each part of the assessment is made clear under each individual technical section.

The content of the EIS will be in accordance with the Planning Regulations (Schedule 6 of S.I. No. 600 of 2001) and is likely to be structured as set out in **Table 5-1**.

Table 3-1 Proposed Structure of the EIS

Section	Contents	
	A non-technical summary of the EIS	
1	Background to the project and the EIA process	
2	Project context (including the regulatory and national and local planning policy context)	
3	Description of the proposed development (including infrastructure, processes and a discussion of the alternatives considered)	
4	Explanation of, and results of, the scoping exercise	
Technical Assessments		
5	An assessment in relation Socio Economic & Human Beings	Impacts principally affecting the human population.
6	An assessment in relation to Archaeology Cultural Heritage	
7	An assessment in relation to Landscape & Visual	
8	An assessment in relation to Noise & Vibration	
9	An assessment in relation to Air Quality & Climate	
10	An assessment in relation to Traffic	
11	An assessment in relation to Aquatic and Terrestrial Ecology	Impacts on the natural and built Environment.
12	An assessment in relation to Hydrology & Flood Risk	
13	An assessment in relation to Soils, Geology & Hydrogeology	
14	An assessment in relation to Interactions	
Each of the technical assessment chapters follows the following format: a) Description of the existing environmental conditions; b) Identification of the potential environmental effects and identification of the incorporated mitigation measures to reduce effects; and c) An assessment of the environmental effects of the scheme following incorporation of the identified mitigation measures.		

The assessment will be based on a thorough understanding of the proposed development with each of the environmental topics being assessed against existing baseline data. Different methodologies are required to assess the environmental effects relating to each of the topics that are investigated as part of the EIA.

Individual methodologies will be outlined at the start of each topic subsection of the EIS and be based upon recognised best practice. For each of the environmental topics being assessed, the temporary impacts, mainly during construction, and the long-term impacts of operation of the works will be separately assessed. The EIA will take account of direct, indirect and cumulative effects.

The significance of environmental effects will be evaluated using a matrix approach, taking account of the type of environmental effect, its magnitude, the probability of its occurrence and the policy importance or sensitivity of receptors, using standard criteria. An indication will also be given of any difficulties (technical deficiencies or lack of know-how) encountered in compiling the required information.

3.5 Construction Phase

The detailed specifications of the proposed works are not fully known at this stage, as the bidders for the proposed works may submit their preferred designs for consideration at tender stage. In line with best practice, where assumptions have to be made to account for any limitations in the current understanding of the construction methods, or operational procedures, to be employed the EIA will consider a worst-case scenario so that any potential significant environmental effects are identified.

3.6 Operational Phase

Operational effects will be assessed on the basis of the day to day operation of the covered reservoir once commissioned and will include any ongoing maintenance requirements.

3.7 Consultation

Consultation is an essential element of the EIA process. It is designed to allow consultees to become engaged in the evolution of the development proposals, and to ensure that their concerns and ideas are identified and considered. This scoping report will be forwarded to various organisations, to seek their views on the proposed scope of the assessment. Consultation will also be held with the general public in the local vicinity to the development through information provided in leaflets and webpages and public information days at a local venue.

The information provided by consultees will be used to refine the scope of the assessment.

It should be noted that environmental effects that are not identified in the scoping report might emerge later during the course of the EIA process as scoping is continuous throughout the whole EIA process. The scoping process will be revisited in relation to these effects in order to decide whether there is a need for them to be assessed. Where appropriate, the scope of these additional environmental effects will be the subject of consultation with relevant organisations.

3.8 Limitations on the EIA Process

In accordance with the EIA Regulations, and with accepted good practice, the EIS must identify any limitations due to lack of knowledge/information or lack of engineering detail available. At this stage, the detailed specifications of the works are not fully known. Consequently certain assumptions will be made for the purposes of the EIA about various details relating to new infrastructure. In such cases, the EIA will consider the worst case scenario and/or identify specified design limits on emissions, such as, noise etc. necessary to meet environmental standards. These limits will be incorporated into the tender documents for the DBO contract.

4 PROPOSED DEVELOPMENT AND KEY ENGINEERING DECISIONS

4.1 Scope of the Works for the Purposes of the EIA

The scope of works for the purpose of this EIS Scoping Report have been identified on the basis of their proximity to sensitive receptors and their potential to impact on these receptors.

The scope of works are summarized in **Table 4-1** below and indicated in **Figures 4-1 to 4-3**.

Table 4-1 Scope of Works for the Purposes of the EIA

Ref.	Description
Phase 1 **(~ 24 mths)**	• Covered Storage Reservoir within the existing embankments of the Gray Reservoir including: o Decommissioning of the Gray Reservoir (drainage and removal of silts and some rock). o Construction of three water storage cells (160Ml total storage) and a control and treatment building. The control and treatment building will house inlet and outlet control pipework as well as a new On Site Electrolytic Chlorination (OSEC) plant to replace the existing chlorine gas dosing system. o A new entrance from St. Raphaela's Road for construction and operational deliveries. o Associated site services. o Simplification and rationalisation of site pipework. • Site Drainage works including: o Overflow pipework. o Drainage attenuation pond.
Phase 2 **(~ 12 mths)**	• Decommissioning of the Upper and Lower Reservoirs: o To be undertaken once the new covered storage is fully commissioned and will include landscaping proposals.

4.1.1 Maximum Building areas

The new development will contain three storage cells for treated water in a flat-roofed structure with approximate size 275m x 174m and a control building attached to the reservoir cells resulting in a total development area of approximately 4.8 hectares. The reservoir structure will be located within the current Gray reservoir area which will be decommissioned prior to construction. Following commissioning of the new covered reservoir the Upper and Lower Reservoirs will be decommissioned and the decommissioned areas will be landscaped. The total site area for the development (the existing site boundary) is approximately 18 hectares.

4.1.2 Materials and External Finishes

The material finishes for the roof and walls of the reservoir building will be the subject of consultation during the preparation of the EIS. The views of the planning authority will also be considered. The landscape proposals for the development will be the subject of a landscape masterplan which will also be consulted on during the preparation of the EIS.

Figure 4-1 Plan of Proposed Development following completion of Phase 1 (~24 mths)

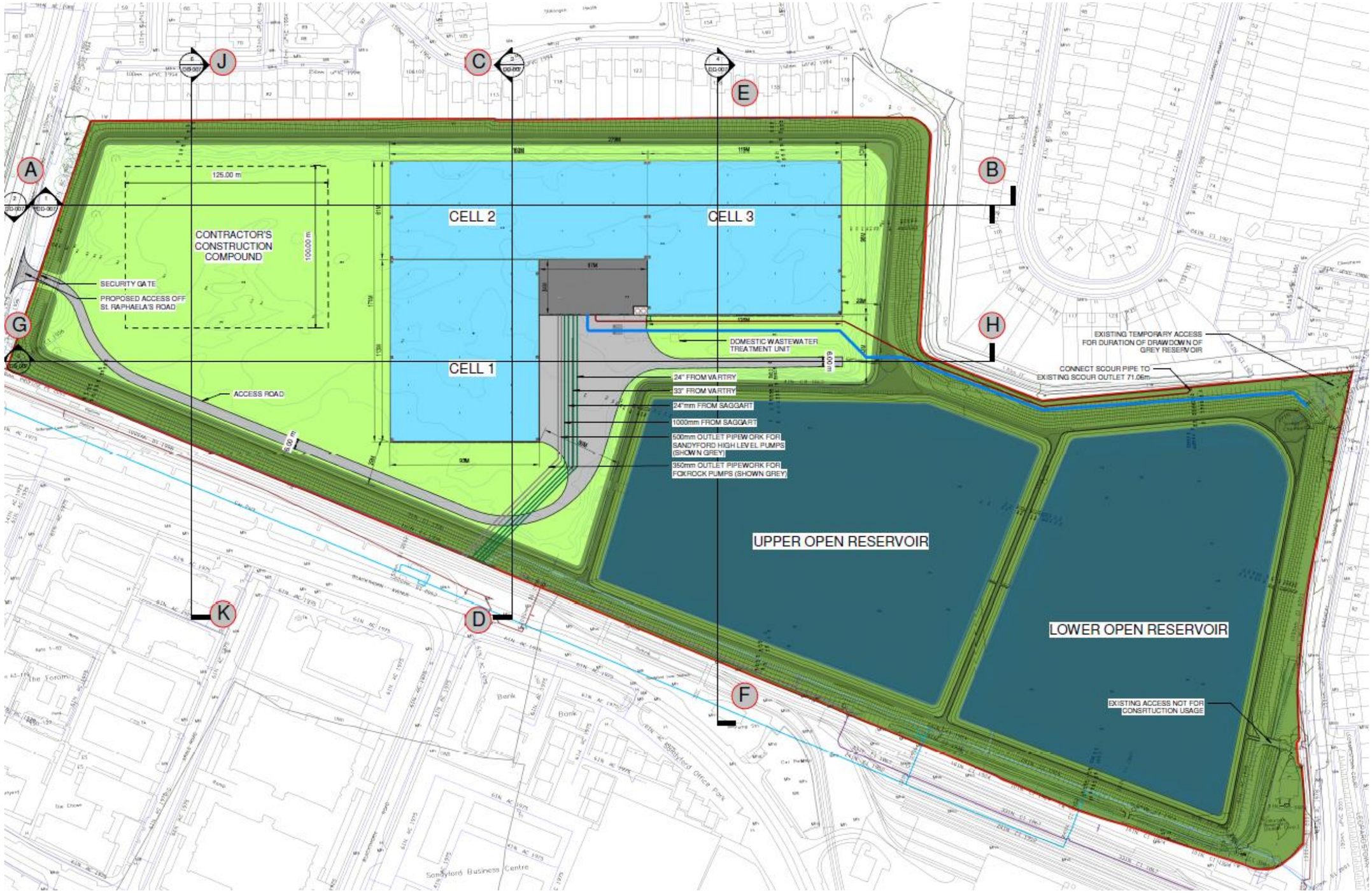


Figure 4-2 Plan following completion of Phase 2 (~12 mths).

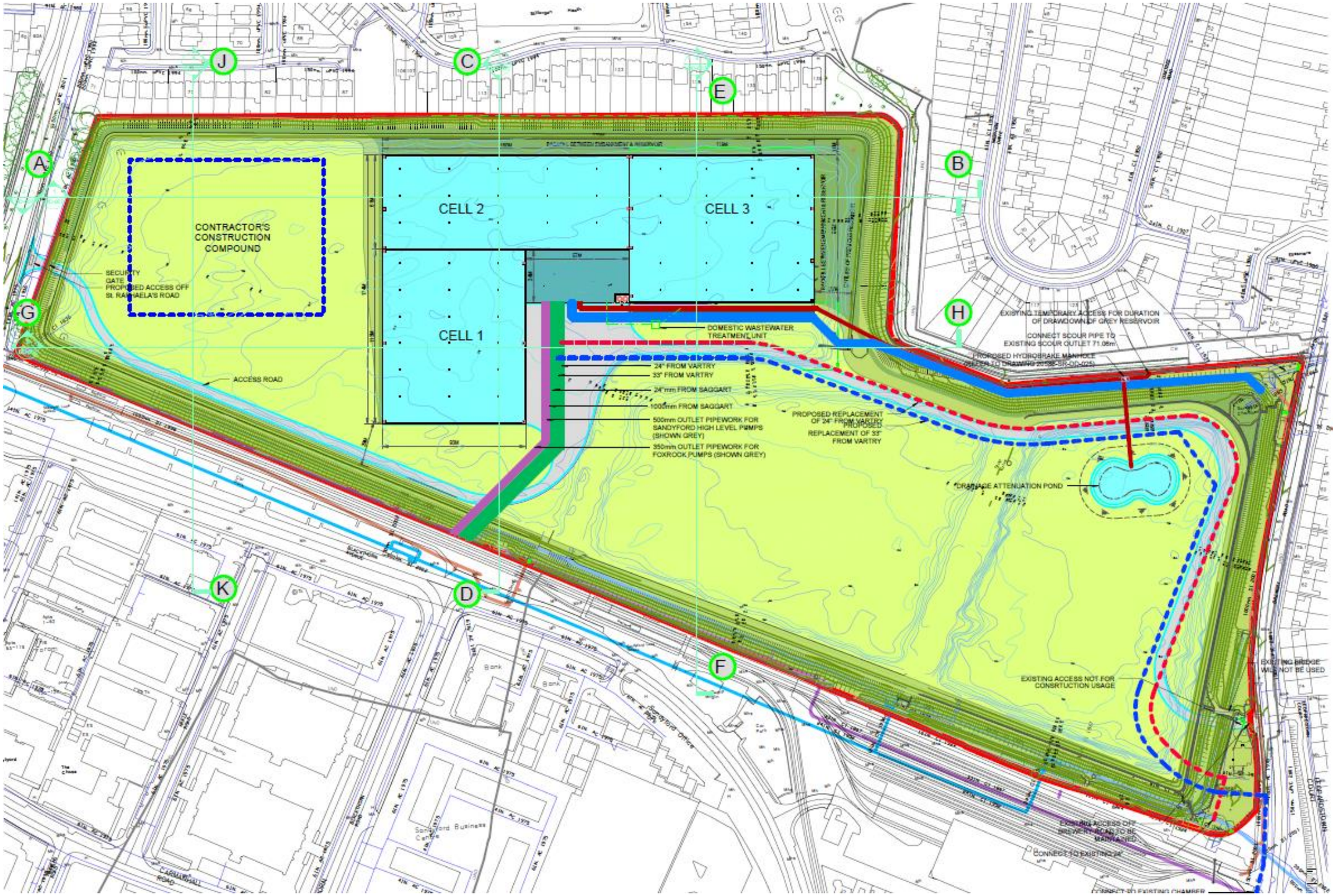
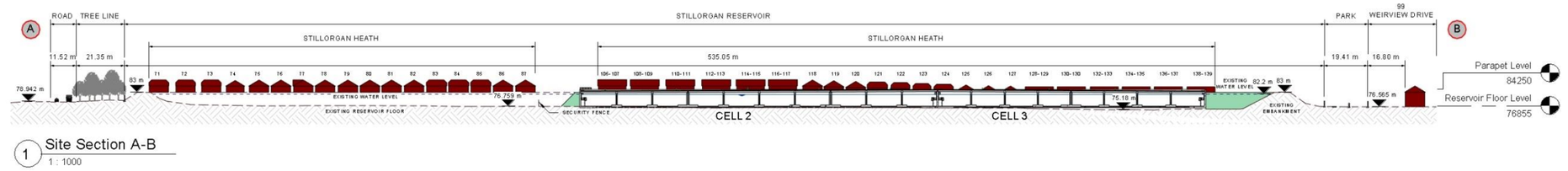
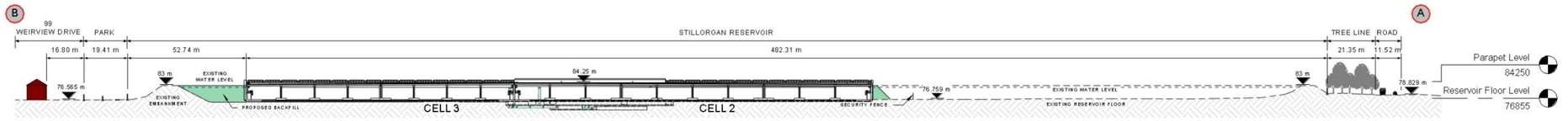


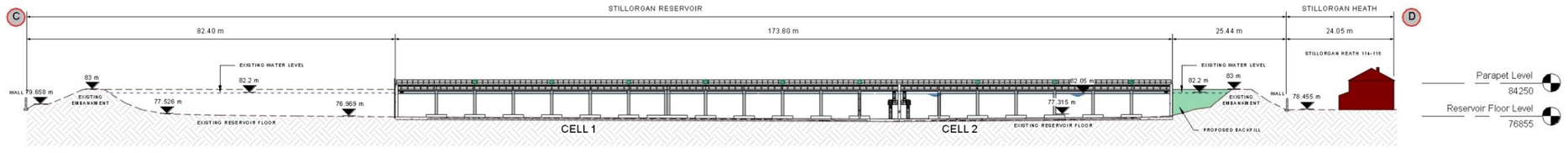
Figure 4-3 Cross-sections through the Proposed Development



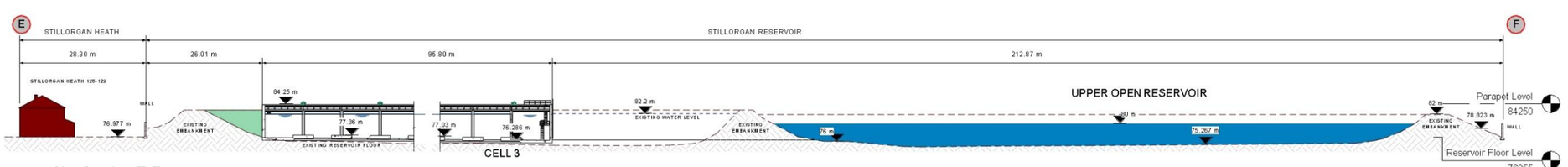
1 Site Section A-B
1 : 1000



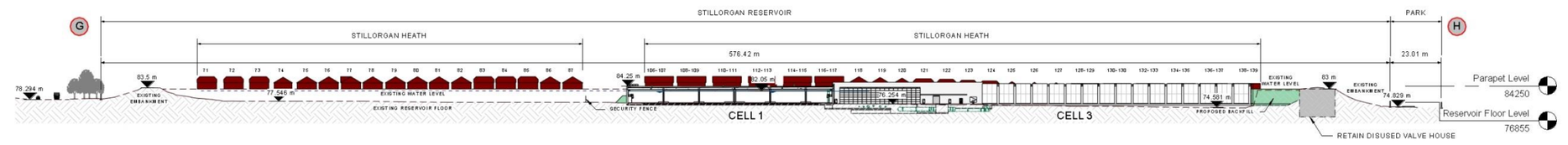
2 Site Section B-A
1 : 1000



3 Site Section C-D
1 : 500



4 Site Section E-F
1 : 500



5 Site Section G-H
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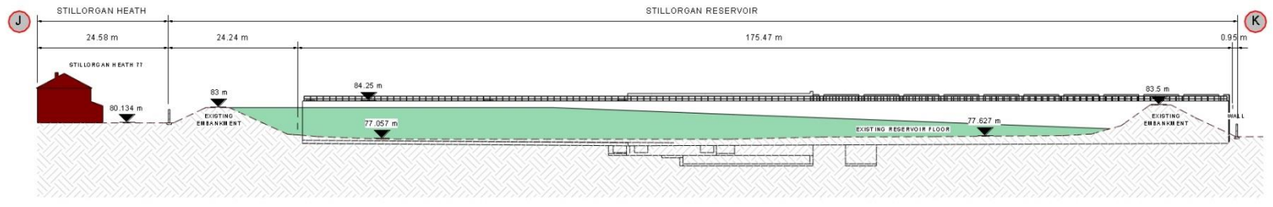

6 Site Section J-K
1 : 500

5 ALTERNATIVES CONSIDERED

5.1 Requirement to Consider Alternatives to the Proposed Development

If a proposed development is believed to have potentially significant impacts on the environment, then an EIA is undertaken for the proposal and ideally for feasible alternatives. The identification of alternatives will continue throughout the entire EIA process whereby other alternatives will be investigated as a means of preventing environmental damage. The amended Directive 97/11EC "*requires environmental statements to include an outline of the main alternatives studied by the developer, and an indication of the main reasons for the developers choice, taking into account the environmental effects*" and "*a description of the measures envisaged in order to avoid reduce and, if possible, remedy significant adverse effects.*" Hence the EIS will contain information on the alternatives to be considered. A range of alternatives have been considered for the reservoir. These will be outlined in the Alternatives chapter of the Environmental Impact Statement (EIS). A summary of alternatives considered are presented below.

5.2 Alternative Locations

The existing site is used for storage of treated drinking water and is a critical asset in water supply to the south Dublin region. Significant water supply infrastructure including large diameter supply pipes to the site and large diameter distribution pipelines from the site supply the region with drinking water. Any alternative reservoir location would require significant disruption and associated impact on both the supply and distribution networks. Alternative locations within the supply area of the size required for reservoir storage and at the correct elevation are not available. Given that the existing site is being retained for its existing use and the technical difficulties outlined above no further consideration has been given to alternative site locations and it is proposed to retain the existing site for drinking water storage.

5.3 Alternative Development Options Within the Existing Site

A number of development options were considered for the proposed covered reservoir within the existing site. Considerations on the size, location, orientation and design were made and these will be detailed within the EIS. However these have been constrained by the factors outline earlier namely:

- There is only one functioning outlet from Stillorgan Reservoir - from the Lower reservoir - and locating the covered storage in the Gray Reservoir will mean that the upper and lower reservoirs will be able to continue to remain in service without any changes to the existing outlet arrangement.
- Construction access to the western half of the Gray Reservoir is easier to establish. This will keep a lot of construction activity and associated impacts away from the Upper and Lower reservoirs which will be in service during construction of the covered reservoir.
- The Gray Reservoir site has a higher top water level than the other reservoirs which will maximise the efficiency and supply potential of the covered storage.

5.4 Key Engineering Considerations in the Design Proposals

Several significant engineering considerations have constrained the existing design proposals and these are discussed below.

5.4.1 Proposed Design Capacity

Detailed network and demand forecast models developed previously by Dublin City Council and updated by Irish Water have determined that the present required capacity within the reservoir site is 160 Megalitres (Ml). This will provide approximately 1.5 days storage for the forecasted demand levels in 2031. It also represents approximately 2 days storage for existing demand levels of approximately 80 ML/D.

Bathymetric and flow studies have demonstrated that the storage capacity of the existing reservoirs is poorly utilised with short circuits in flow and siltation within the open water bodies. In addition, recent improvements to Dublin Water Supply Schemes particularly at Ballymore Eustace has resulted in improved security of supply and means that higher levels of storage are not required to satisfy current design standards.

5.4.2 Need for Long-Term Strategic Capacity

Irish Water recognise the strategic importance of the Stillorgan site and its ability to store and serve a large area in the Dublin Water Supply Zone. It is therefore critical to reserve space for future longer term demand growth beyond 2031. Any areas not being used for the new covered reservoir will be landscaped and reserved for future longer term storage requirements.

5.4.3 Existing Infrastructure

The existing outflow pipes for the distribution network leave the reservoir site in the north-east corner at Brewery Road. The screen building and disinfection treatment plants are located in this area – the Screen Building is on the Record of Protected Structures.

During construction the existing water supply to the south Dublin area must be maintained. The existing infrastructure constrains the continuity of supply from the Upper and Lower Reservoirs, and therefore, the drinking water supply must be maintained during the construction of the new covered storage, hence the reason why the new covered storage is located within the footprint of the Gray Reservoir.

6 APPROPRIATE ASSESSMENT

6.1 AA Screening

Irrespective of the need for an EIA, the development proposals must take into account Regulation 29 of the Natural Habitats regulations which outlines the obligations of the competent authority to undertake an Appropriate Assessment where a development is likely to have potentially significant effects, either individually or in combination with other developments on a European Site.

An Appropriate Assessment is an assessment of the potential adverse or negative effects of a plan or project, in combination with other plans or projects, on a European site. An Appropriate Assessment must be carried out before any decision is made to allow the plan or project to proceed. The obligation to undertake Appropriate Assessment derives from both Article 6(3) and 6(4) of the Habitats Directive. The European Union has provided guidance as to how to produce a Habitats Directive Assessment and identifies four main stages in the process as follows:

Stage One: Screening

The process identifies the likely impacts upon a Natura 2000 site of a project or plan, whether alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant.

Stage Two: Appropriate Assessment

The consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

Stage Three: Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

Stage Four: Assessment where no Alternative Solutions Exist and where Adverse Impacts Remain.

An assessment of compensatory measures, where in the light of an assessment of imperative reasons of overriding public interest, it is deemed that the project or plan should proceed.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the planning stage, and designing the project in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, then it is rejected. If no alternative solutions are identified and the project is required for imperative reasons of overriding public interest (IROPI test) under Article 6 (4) of the Habitats Directive, then compensation measures are requires for any remaining adverse effects.

7 PLANNING CONTEXT

7.1 Introduction

This section sets out the relevant Development Plan policies to be considered for the proposals. A description of the relevant national strategic and local planning policy framework is included below.

The Planning and Development Act 2000 consolidates all previous Planning Acts and much of the EIA Regulations. The key legislative instruments governing planning in Ireland are as follows:

- Planning and Development Act, 2000; and
- Planning and Development Regulations, 2001 (S.I. No. 600 of 2001).

7.2 Site and Surrounds Planning History

The site is located within the Sandyford Urban Framework boundary.

A planning application was submitted by Dublin City Council in 2001 for covered storage within the Gray Reservoir. This application was consented to by Dun Laoghaire Rathdown County Council (DLRCC) in 2002 and An Bord Pleanála following appeal by the Stillorgan Heath Residents Association (Ref: D01A/1176 and PLo6D.129014).

7.3 Greater Dublin Area Regional Planning Guidelines 2010 - 2022

These guidelines detail the importance of water quality and the need to meet future needs, particularly in large metropolitan areas.

> *"It is vitally important that solutions are found to meet the medium and long term needs for water supply and treatment for the next decades in the GDA and to allow for consolidation of the built up areas in line with sustainable development objectives."*

The proposed works are considered to be part of the solution to current and future needs. Further works may be required to accommodate the growing population in the area. Locating this infrastructure within the vicinity of the proposed covered reservoir is considered favourable.

7.4 Dún Laoghaire Rathdown County Development Plan 2016-2022

Chapter 5.1 Environmental Infrastructure and Management

Within this chapter Section 5.1.1 Water Supply and Wastewater states that:

> *"The County Council will work closely with Irish Water to ensure that the County Development Plan and - in particular the Core Strategy - continue to align with both the National Spatial Strategy and the Regional Planning Guidelines and that the provision of water/ wastewater services will not be a limiting factor in terms of forecasted growth."*

The plan also states that:

> *"The overall water supply and wastewater situation for the whole Greater Dublin Area (GDA) is critical and is almost certain to become more so in*

> *the short term. Water services in the GDA came under severe pressure from the population and economic growth experienced in the region and has been a serious issue of concern since the early 1990's. The speed of change and pace of development experienced previously, in both the wider Dublin Region and within Dún Laoghaire-Rathdown has placed stresses and pressures on the water supply and wastewater infrastructure of the County"*

The objectives show support for water supply works in the area. Compliance with relevant standards is understood by the plan and reflected in the policies and objectives.

As detailed in the Dun Laoghaire Rathdown Development Plan the proposed works are critical to the Greater Dublin Area. Without the correct action now drinking water supply could become a limiting factor in terms of forecasted growth.

7.5 Sandyford Urban Framework Plan 2016-2022

The Sandyford Urban Framework Plan sets a number of objectives for development within the Sandyford area. The objectives and land use zones range from mixed use, office based employment, light industrial to residential and open space.

The subject site is covered by Zone 7 Open Space and is considered under Objective F Open Space. The purpose of this objective is to maintain and provide open space for the residents and employees in the area.

The reservoirs are directly referenced in Objective F2:

> *"It is an objective of the Council to actively pursue the use of the existing reservoir site as active open space (Class 1) when the use of part of this area as a reservoir is abandoned and the remaining part is covered over. This space will compensate for any future loss of the parklands at St. Benildus associated with the construction of the Eastern Bypass."*

A foot note is included in the framework stating:

> *"The utilisation of the site as active open space is dependent on the upgrading of the reservoir, which forms an integral part of the Vartry Supply Scheme, being realised."*

The long term requirements for additional strategic storage and the engineering constraints for the proposed development of Gray Reservoir will result in no part of the existing reservoir site being abandoned from its present use.

As detailed above the proposal includes covering the Gray Reservoir and none of the site is being abandoned. This is in keeping with Objective F2 detailed above.

7.6 Planning Summary

The proposal includes the provision of covered storage and associated works. The proposed development is considered to be in accordance with the Greater Dublin Area Regional Planning Guidelines, Dún Laoghaire Rathdown County Development Plan 2016-2022 and the Sandyford Urban Framework Plan 2016-2022.

8 TECHNICAL AREAS

8.1 General

The following sections briefly outline the baseline situation and provide an overview of receptors with the potential to be affected together with a summary characterisation of the potential effects of the proposals. Where potential for significant environmental effects are identified a proposed assessment methodology is provided, stating how the identified significant environmental effects will be addressed in the EIS.

8.2 Socio-Economics and Human Beings

8.2.1 Baseline Situation

The Stillorgan reservoirs are a critical asset for the continued supply and quality of water in the south Dublin region. The proposed covered reservoir is supported by the EPA and HSE to remove risks to the water quality for the region associated with open storage of drinking water.

8.2.2 Potential Effects

Construction

The construction phase may lead to local employment opportunities as local businesses are used to support any main contractor and accommodation will be required for visiting workers.

Operation

The employment levels for the operation of the development are expected to be similar to present. It is expected that this proposal will have a positive impact in the wider area by providing improved water services infrastructure. Consequently, the proposed development will have a very beneficial impact due to improved water supply security for residential, commercial and industrial uses within the Dún Laoghaire Rathdown and South Dublin areas. There will be no loss of development land or residential property.

8.2.3 Proposed Assessment Methodology

The methodology for this section will involve examination and compilation of supporting socio-economic data and reference to relevant Dún Laoghaire Rathdown County Development Plan and any Local Area Plan criteria.

Following data identification and collection, an assessment of the impacts will be made. It is anticipated that these will be mainly positive. Key positive issues are likely to include:-

- Economic contribution of construction and operational phases to the local and regional economies.
- Direct and indirect effects.
- Facilitation of development in the serviced area.

Issues including noise, air quality, landscape and traffic will be quantitatively dealt with in subsequent specialist sections that specifically address those topics. This Socio Economic section will include cross references to these sections as relevant.

8.3 Archaeology and Cultural Heritage

8.3.1 Baseline Situation

Cultural heritage is represented by a wide range of features, both visible and buried, that result from past human use of the landscape. These can include standing buildings sub-surface archaeological remains and artefact scatters. It also includes earthwork monuments as well as landscape features and industrial remains.

8.3.2 Potential Effects

Due to the previous excavation of the present reservoirs within the area no impact on archaeological potential is anticipated.

8.3.3 Assessment Methodology

The archaeological potential and built heritage of the existing Stillorgan site will be fully assessed. The protected structures within the site have been identified and a full heritage assessment of protected and non-protected structures has been undertaken. All protected structures will be retained and are unaffected by the proposed development.

8.4 Landscape and Visual

8.4.1 Baseline Situation

The existing landscape character of the site is dominated by the existing open drinking water storage reservoir cells. These man-made lagoon structures are actively maintained and are dewatered and cleaned on a regular basis.

8.4.2 Potential Effects

Construction

Construction of the proposed scheme will require the temporary introduction of cranes and other large plant and equipment which may be visible above the site perimeter. However, as construction works will be short term and temporary in nature a significant visual impact from construction works is not anticipated. The majority of construction works will be well screened behind the existing embankments.

Operation

The open drinking water reservoir cells will be decommissioned and replaced with the covered storage reservoir and landscaped surrounding area. The new covered reservoir building will have a flat roof which is approximately level with the existing embankments which will be retained for screening.

Visual impacts will likely vary from low significance and neutral experienced at ground level to high significance for elevated views.

8.4.3 Proposed Assessment Methodology

The visual impact will be assessed in accordance with the methodology prescribed in the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013 (GVLIA) published by the UK Landscape Institute and the Institute for Environmental Management and Assessment.

The need for photomontages of will be reviewed depending on the outcome of outline design process.

8.5 Noise and Vibration

8.5.1 Baseline Situation

The site is surrounded by an urban area to the south and a sub-urban residential area to the north. Arterial roads are located to the East and West of the site with the Luas line to the north. Noise and vibration levels for the site are expected to be in line with this urban-suburban environment.

8.5.2 Potential Effects

Construction

There will be construction noise, particularly, during the initial stages of development due to the need for ground preparation prior to construction of the reservoir structure. Noise will result from rock breaking in localised areas within the site.

Any such impacts would be localised and temporary in nature.

Operation

Some plant and mechanical equipment will be located within the Control Building for the development. These are all electrically driven and will not have any noticeable noise or vibration in the area. Best practice, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.

8.5.3 Proposed Assessment Methodology

The proposed development will be assessed in terms of its potential noise sources during the construction and operational phases. In terms of the construction phase, typical noise source data levels will be obtained from relevant standards such as BS 5228 – 1: 2009: Code of practice for noise and vibration control on construction and open sites – Noise. The likely level of noise emissions from the development will be predicted in accordance with standard guidance (i.e. ISO 9613: Acoustics – Attenuation of sound outdoors, Part 2: General method of calculation, 1996). Where appropriate, distance attenuation, barrier screening, ground topography and meteorological conditions will be taken into account. Vibration will also be considered for the construction phase.

The potential noise and vibration impact of construction and operational phases of the development will both be assessed through reference to appropriate criteria and guidance documents. Where necessary, control measures required to ameliorate the impact will be specified. Additional predictive calculations will be undertaken where appropriate in order to establish the residual impact of the development.

8.6 Air Quality and Climate

8.6.1 Baseline Situation

The existing air quality in the vicinity of the proposed development could reasonably be expected to be similar to values reported for Zone A: Dublin Conurbation. The most sensitive receptors are residents and businesses adjacent to the site.

8.6.2 Potential Effects

Construction

The construction works of the covered storage at the Stillorgan Reservoir site have the potential to generate a dust impact. Dust becomes airborne due to the action of wind on material stockpiles and other dusty surfaces, or when thrown up by mechanical action, for example the movement of tyres on a dusty haul road or activities such as site clearance, foundations excavation, etc.

The existing ponds contain plant material, in particular, Canadian Knotweed which is listed as an invasive species. The presence and location of this will be fully assessed in the Ecological Impact Assessment. This plant material will be cleared from the reservoir cells once they are drained and immediately buried below inert rock and soil material onsite. This will remove the potential for odours from the breakdown of the organic material.

Operation

All plant and machinery will be electrically operated. There are no expected odours from processes onsite.

8.6.3 Proposed Assessment Methodology

The assessment and evaluation of the potential air quality and dust impact arising from the proposed Stillorgan Reservoir scheme will involve the following:

- Review of background ambient air quality in the vicinity of the proposed Stillorgan Reservoir scheme using available reference data available from the EPA.
- Identification of potential air quality and dust emissions released from the construction of the proposed Stillorgan Reservoir scheme.
- A recommendation of appropriate construction mitigation measures.

The operation of the proposed development is most unlikely to result in air quality impacts.

8.7 Traffic

8.7.1 Baseline Situation

Arterial roads bound the site to the east and west. These will be used for deliveries of materials and staff during the construction and operation of the reservoir.

A new entrance to the site for the construction period is proposed from St Raphaela's Road. This entrance will be maintained during the operational period but only for emergency access and occasional (approximately quarterly) deliveries of chemicals. The

existing entrance from Brewery Road will be maintained for day-to-day operational purposes.

8.7.2 Potential Effects

Construction

During the construction period there will be an increase in traffic volumes as a result of employees travelling to and from the site and for the delivery and disposal of construction related materials. This will impact on local residents only during working hours but will be temporary in nature. Suitable traffic management measures will be implemented during the construction period to mitigate potential construction related impacts and it is intended that construction related activities will be restricted to normal working hours.

Operation

Employees will travel to and from the works during the operational phase and there will also be delivery of chemicals to the OSEC plant on a quarterly basis. This will be the same level as existing operational traffic associated with the existing site. Accordingly the long term traffic movements during the operational phase will be very low, not significant and the same as existing levels

8.7.3 Proposed Assessment Methodology

The methodology used in the traffic assessment will adhere to that set out in the Institute of Environmental Assessment's Guidelines for the Environmental Assessment of Road Traffic, 1993. It is based on a comparison between predicted traffic flows on potentially affected roads with and without construction/operational traffic.

Taking into account the sensitivity of the receptors or the resources likely to be affected and any changes in the composition of traffic, specifically if more HCVs are anticipated the following criteria are used to establish if significant environmental effects will arise:

- Rule 1,include highway links where traffic flows will increase by more than 30% or where the number of heavy goods vehicles will increase by more than 30%
- Rule 2, include any other specifically sensitive areas where traffic flows have increased by 10% or more.

It should be noted that increases below 10% are generally considered to be insignificant, given that daily variations in background traffic flow may fluctuate by this amount.

8.7.3.1 Construction Traffic Assessment Methodology

The construction traffic assessment will focus on:

- Potential impacts on local roads and the users of those roads; and
- Potential impacts on land uses and environmental resources fronting those roads, including the relevant occupiers and users.

Based on experience of similar schemes elsewhere, the increase in the volume of traffic is likely to vary over the construction period. Therefore, the peak flow of HCVs will be considered to ensure that the worst case for impacts from traffic during construction is assessed.

8.8 Terrestrial and Aquatic Ecology

8.8.1 Baseline Situation

A Phase 1 habitat survey of the site was conducted in September, 2015 using methodology developed by the Joint Nature Conservation Committee (1993). Numerous terrestrial habitats were identified within the survey area that ranged from low to high value of local importance. The bird populations within the study area were considered to be of local importance. The bat population within the affected areas was considered to be of high local importance.

8.8.2 Potential Effects

Construction

The construction activities will lead to replacement of open water habitat with landscaped areas. The affected species are predominantly birds. Fish and eel species within the open water reservoirs will be captured and released into suitable receiving watercourses under licence from the IFI.

Operation

Once the site is landscaped it is not anticipated that the operation of the development will have any effect on the surrounding ecology. A landscape masterplan will be prepared for the site which will propose biodiversity benefits.

8.8.3 Assessment Methodology

An Ecological Impact Assessment (EcIA) will be carried out by qualified ecologists at Nicholas O'Dwyer and reported within the EIS.

8.9 Hydrology and Flood Risk

8.9.1 Baseline Situation

Surface run-off from the limited land on the existing site and scouring of the reservoir systems currently discharge to the Brewery Stream to the north east of the site. The Brewery Stream is diverted around the eastern boundary of the site. A CFRAM study has been completed for the area which indicates flood potential outside the site area associated with the Brewery Stream.

8.9.2 Potential Effects

Construction

All construction sites provide some level of risk to the aquatic environment due to the potential for accidental releases of fuels/oils from construction plants. The liberation of sediment can also occur during the earthworks phase of construction due to the presence of exposed soils and soil stockpiles. However, surface water run-off during the construction period will be controlled within the site with settlement of suspended solids prior to any pumping to the Brewery Stream. Detailed methodologies and protocols for all construction works shall require identification and establishment in the EIS and the Construction Environmental Management Plan (CEMP) to ensure protection of the water quality and hydrogeology of the area.

Operation

Surface run-off from the proposed development will be attenuated within an open surface water attenuation pond to the east of the proposed covered reservoir prior to discharge to the Brewery Stream. The surface water attenuation pond will be designed to enable some biodiversity benefit. A detailed design of the proposed surface water attenuation will be presented in the EIS.

There will be no regular discharges to surface waters from the covered storage. Discharge during draining down of pipes or reservoir cells will be to a management plan which will include detailed procedures for dechlorination.

8.9.3 Proposed Assessment Methodology

Flood Risk

As per "The Planning System and Flood Risk Management Guidelines for Planning Authorities" a sequential approach to flood risk assessment will be adopted. Having regard to the guidelines and the sequential approach to flood risk assessment set out therein, a Stage 1 Flood Risk Assessment will be carried out for the proposed development to determine if any further investigations are warranted. Appropriate site drainage systems for the site will be detailed in the EIS such that the development will not have a significant impact on downstream flood risk.

8.10 Soils, Geology and Hydrogeology

8.10.1 Baseline Situation

The site for the development is presently an open drinking water reservoir and no soils are present. The surrounding earth embankments will be retained for the development. The site is underlain by granitic bedrocks, localised lenses of sands and gravels may be present. The bedrock is classified by the Geological Survey of Ireland as a poor aquifer which is generally unproductive except for localised zones. There are no groundwater wells or springs within the catchment.

8.10.2 Potential Effects

Construction

The proposed reservoir will result in the excavation of some silts and bedrock. It is proposed that all of this material will be reused onsite within the onsite roads and for site landscaping. It is not anticipated that significant impacts on soil and geology will occur.

Operation

No impact on soils, geology and hydrogeology are expected to occur as a result of the operation of the development.

8.10.3 Assessment Methodology

Based on the information reviewed as part of this scoping exercise, no likely significant effects, relating to either the construction or operational phases of the works are considered likely. It is therefore proposed to scope out further assessment within the

EIS. Mitigation measures to avoid contamination of soils from spills/leaks will be detailed in the EIS.

8.11 Interactions

8.11.1 Baseline Situation

None of the foregoing technical areas exists in total isolation from each other and because of this any one element of the environment may also impact on another. Accordingly minor impacts from a number of sources may act cumulatively to have a significant impact on sensitive receptors.

8.11.2 Potential Effects

There is the potential for socio-economic and landscape and visual interactions from the proposed works. Noise, Air and traffic impacts can also cumulatively impact on sensitive residential receptors.

8.11.3 Assessment Methodology

As part of the EIS an examination of potential interactions between technical areas will be carried out and a matrix of interactions prepared. Subsequently each technical area will be assessed in terms of the cumulative impacts of all overlapping technical areas.

9 CONCLUSIONS AND RECOMMENDATIONS

This Scoping Report represents a comprehensive and robust scope for the EIS to accompany the application for the Stillorgan Reservoir Upgrade Project.

The environmental effects which are likely to be significant (and therefore require further assessment and possibly mitigation) are summarised in **Table 9-1**. This table also identifies the scope of the assessment based on the likely significant environmental effects identified.

Other issues not identified in **Table 9-1** will be scoped out of the assessment, and the EIS will therefore concentrate on appropriate evaluation of relevant topics, as per the Environmental Protection Agency (March, 2002) Guidelines on the Information to be Contained in Environmental Impact Statements.

Table 9-1 Potential Significant Effects and Scope of EIS Assessment

Potential Significant Effects during Construction or Operation	Scope of Assessment
Socio-Economics and Human Beings	
The Stillorgan reservoirs are a critical asset in the supply of drinking water to the area. The development will secure the water supply and enable future development within the area. The development will lead to employment opportunity in the construction period.	The methodology for this section will involve examination and compilation of supporting socio-economic data and reference to relevant Dún Laoghaire Rathdown County Development Plan and any Local Area Plan criteria.
Archaeology and Cultural Heritage	
The preliminary archaeological assessment indicates no archaeological potential within the existing site due to the previous development. Protected structures within the site have been identified and will be retained and are unaffected by the proposed development.	The Archaeological Impact Assessment and a Built Heritage Assessment will form the basis of Environmental Impact Assessment of Cultural Heritage.
Landscape and Visual	
A long term change to the Landscape Character of the area from an open drinking water reservoir to a combined covered drinking water reservoir and landscaped area is required by the development. Temporary disruption of views experienced by local residents, in the vicinity of the proposed works arising from the presence of construction plant and traffic movements.	The landscape and visual impact will be assessed in accordance with best practice and current guidance.
Noise & Vibration	
Noise from the construction could impact on residents of nearby properties. During construction there will be a temporary increase in the volume of traffic which could impact on noise levels experienced by properties adjacent to affected roads during peak flows.	The potential noise and vibration impact of construction and operational phases of the development will both be assessed through reference to appropriate criteria and guidance documents. Where necessary, control measures required to ameliorate the impact will be specified. Additional predictive calculations will be undertaken where

Potential Significant Effects during Construction or Operation	Scope of Assessment
	appropriate in order to establish the residual impact of the development.
Air Quality & Climate	
Potential for impacts from emissions and dust associated with construction. Potential for odours from the breakdown of organic material within the reservoir cells.	Environmental best practice will need to be implemented on site to ensure the risk of a significant environmental effect on sensitive receptors is avoided, thus appropriate mitigation measures will be identified in the EIS to reduce the magnitude of dust and other emission impacts during the construction stage. In respect of the operation stage no assessment of air quality or air pollutants such as NOx, PM10, VOC and CO associated with operational traffic is considered necessary
Traffic	
During construction there will be a temporary increase in the volume of traffic which could impact on road users and residents of properties adjacent to these roads during peak flows.	The traffic assessment will focus on the Construction stage and will adhere to guidance set out in the Institute of Environmental Assessment's Guidelines for the Environmental Assessment of Road Traffic, 1993. It is based on a comparison between predicted traffic flows on potentially affected roads with and without construction/operational traffic.
Water Quality, Hydrology	
Construction may lead to accidental releases of fuels/oils/chemicals/sediment to groundwater or surface waters. Surface run-off from the development will be attenuated onsite prior to discharge to the downstream Brewery Stream.	The EIS will identify sensitive aquatic receptors, surface water and ground waters at risk during construction using a source-pathway-receptor model. A Stage 1 Flood Risk Assessment will also be undertaken as part of the EIS.
Aquatic & Terrestrial Ecology	
Construction will result in the loss of some aquatic habitat of low ecological value but the development of terrestrial habitat.	The findings of the EcIA will be presented within the EIS.
Soils, Geology & Hydrogeology	
There is potential for the proposed works to contaminate groundwater during construction works if appropriate mitigation measures are not implemented.	Based on existing knowledge, it is not proposed to undertake further assessment in relation to the construction/operational phase. Appropriate mitigation measures however will be detailed in the EIS to mitigate against potential for contamination of soils during construction works.

APPENDIX A – EPA LETTER REFERENCING THE PROPOSED UPGRADE WORKS

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Mr Tom Cuddihy,
Irish Water,
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7th June 2016

Re: Vartry and Stillorgan Water Supply

Dear Mr Cuddihy,

I refer to your recent correspondence dated 3rd June 2016 regarding the submission of planning applications in respect of the Vartry and Stillorgan Water Supplies.

The Vartry Water Supply Scheme has been identified by the Environmental Protection Agency (EPA) as being at risk of failure to meet the requirements of the national drinking water standards and was included on the original EPA Remedial Action List (RAL) in 2008. The supply was included on the RAL due to EPA concerns about the safety and security of the supply. It is the largest supply on the RAL serving approximately 220,000 persons.

The EPA has concerns about the existing Vartry tunnel as is was constructed 150 years ago and surveys carried out previously have confirmed that the unlined tunnel is at imminent risk of failure. There is no alternative water supply to large parts of North Wicklow and South Dublin in the event that this tunnel should fail and thus large numbers of consumers would be left without water should this risk be realised. The tunnel also has high levels of infiltration of untreated water which presents water quality risks as this ingress can occur quite rapidly after rainfall meaning that the overlying soil has insufficient time to remove potential microbiological contaminants. Previous EPA audits reported that an average of 2,000 m^3/d water was entering the tunnel though the actual amount fluctuates and is weather dependent.

The final treated water at the Vartry Water Treatment Plant and the water post Callow Hill has had intermittent detections of low levels of *Cryptosporidium*. *Cryptosporidium* is a parasite capable of causing serious illness particularly in immunocompromised individuals and its detection in treated water is unacceptable and it should not be present in water supplied to consumers. Furthermore, some of the supply zones served by the Vartry Water Treatment Plant intermittently fail to meet the parametric value in the *European Communities (Drinking Water) Regulations, 2014* for Trihalomethanes (THMs). This is due to inadequate removal of organic material in the slow sand filters at Vartry and may be exacerbated by ingress into the tunnel.

Finally, the security of supply from the scheme is also at risk due to algal (diatom) blooms which can occur from March to May, blinding the existing slow sand filters and reducing output from the plant by over 50%. This has had a significant impact on the volume of water treated and has led to water shortages in North Wicklow in previous years.

For these reasons the EPA welcome the replacement of the Callow Hill Tunnel and the upgrade of the Vartry Water Treatment Plant at the earliest opportunity.

The Stillorgan Reservoir is one of only two open treated water storage reservoirs remaining in Ireland with the other (Ballyboden) to be replaced in 2017. It is also the largest treated water reservoir in the country. The open storage of treated water places the supply at risk of direct risk of environmental (e.g. microbiological pollution from wildlife) or deliberate contamination (e.g. from unauthorised access, vandalism or terrorism). Previous EPA audits have found evidence of unauthorised access to the reservoir which puts the supply at risk. The immediate risk of microbiological contamination has been mitigated by the installation of UV treatment in outflow from the reservoir in 2015 but the risk of deliberate contamination from unauthorised access remains.

The EPA has been calling for the covering or replacement of the Stillorgan Reservoir at the earliest opportunity to address these concerns.

The EPA welcomes the implementation of solutions to these issues at the Vartry and Stillorgan Water Supply at the earliest opportunity as it will address the water quality concerns raised by the EPA and provide safe and secure drinking water supply for the existing supply area.

If you have any queries or wish to discuss this matter please do not hesitate to contact me at 01 2680105.

Yours sincerely

David Flynn
Programme Manager