

Stillorgan Reservoir Upgrade Project

Environmental Impact Statement
Non-Technical Summary



Irish Water



Stillorgan Reservoir Upgrade Project

Environmental Impact Statement Non Technical Summary

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NON-TECHNICAL SUMMARY

1. INTRODUCTION

This document is a Non-Technical Summary of the Environmental Impact Statement (EIS) prepared by Nicholas O'Dwyer Ltd., on behalf of Irish Water, to accompany a planning application for the Stillorgan Reservoir Upgrade Project.

This EIS documents the assessment of the impacts on the environment of the construction and operation of the proposed covered storage reservoir.

The key elements of the proposed covered reservoir which relate to this EIS include the following:

- Draining and Decommissioning of the Gray Reservoir.
- Construction of a new covered reservoir.
- Draining and Decommissioning of the Upper and Lower Reservoirs (once the new covered reservoir is operational).
- Landscaping of the decommissioned areas.

This environmental assessment addresses all aspects of the environment identified in National and European Environmental Impact Assessment Legislation.

2. NEED FOR THE PROPOSED SCHEME

The reservoirs at Stillorgan store treated drinking water from water treatment plants at Vartry in County Wicklow and Ballymore Eustace in County Kildare. The reservoir provides drinking water to over 220,000 customers located in Dún Laoghaire-Rathdown and the south Dublin area. The provision of treated 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 customers served consist of both residential and commercial. Should the reservoir not be able to function, the drinking water supply to Dún Laoghaire-Rathdown and the south Dublin area would fail and customers in this area would not be supplied with treated drinking water.

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). These risks are currently being managed, principally through ongoing site maintenance and the recent installation of an ultraviolet disinfection unit. However, the risks need to be eliminated for the long term.

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.

The Environmental Protection Agency (EPA) has identified the Vartry Water Supply Scheme (including Stillorgan) 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 Health Service Executive (HSE) has raised concerns about the security of water supply in the Stillorgan Reservoir. The HSE wrote to Irish Water to outline their position and in regard to the proposed development stated, “the Department of Public Health welcomes these initiatives which will safely provide good quality drinking water to the population living on this supply area for generations to come”.

3. SITE LOCATION

The site is located in the townlands of Mulchanstown, Tipperstown and Kilmacud East in the parish of Kilmacud. The area is within the County of Dún Laoghaire Rathdown.

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. The site is irregular in shape and is surrounded by a high embankment. 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 site location is presented in Figure 3.1.

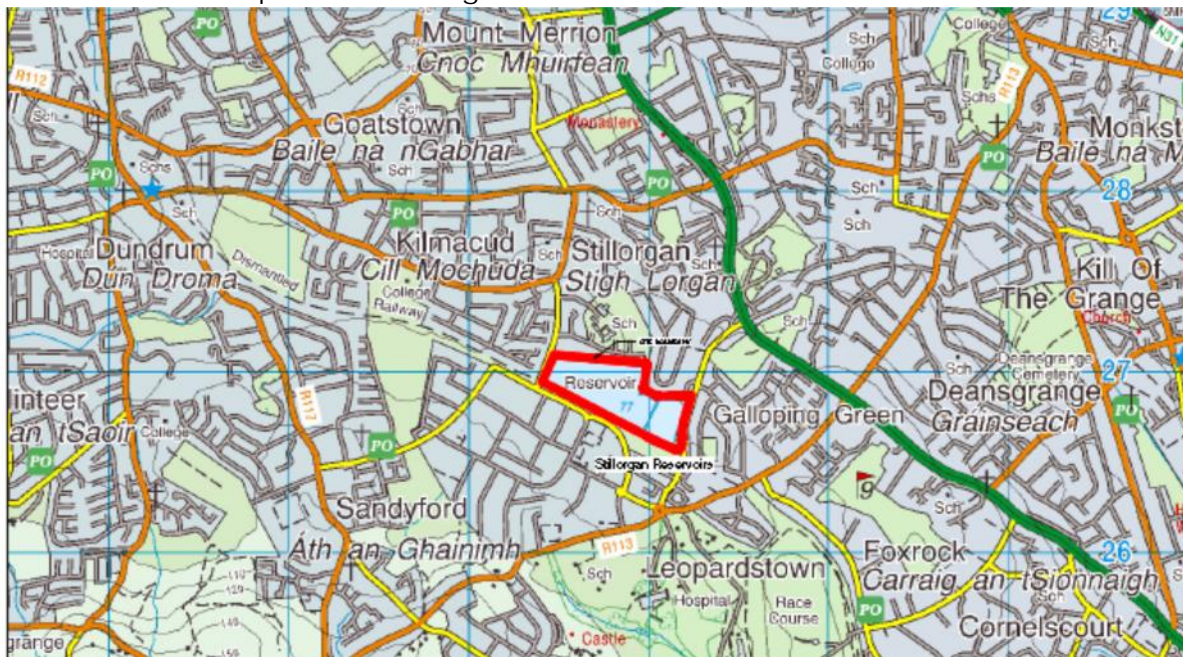


Figure 3-1 Site Location

3.1 Existing Infrastructure

The existing site comprises of three open reservoir cells operated by Dublin City Council, on behalf of Irish Water. Three storage reservoirs are located on site as shown in Figure 1-2.



Figure 3-2 Existing Scheme Layout

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 are subject to variation depending on the maintenance requirements associated with drinking water reservoirs.

3.2 Overview for Proposed Scheme

An overview of the proposed development relating to this EIS is as follows:

- Covered Reservoir totalling 160 ML of treated drinking water storage (representing 1.5 days storage for yr. 2031 demand), consisting of three cells of approximately equal volume, containing baffle walls to prevent short circuiting of flows.
- A new site entrance from St Raphaela's Road.
- Access roadway within the site including a new bridge over the Carysfort-Maretimo Stream.
- Pipeline modifications and improvements including new pipelines under the Luas tramway.
- Drainage and drainage attenuation.
- Site services.
- Landscaping.

The proposed site layout is presented in Figure 3-3.

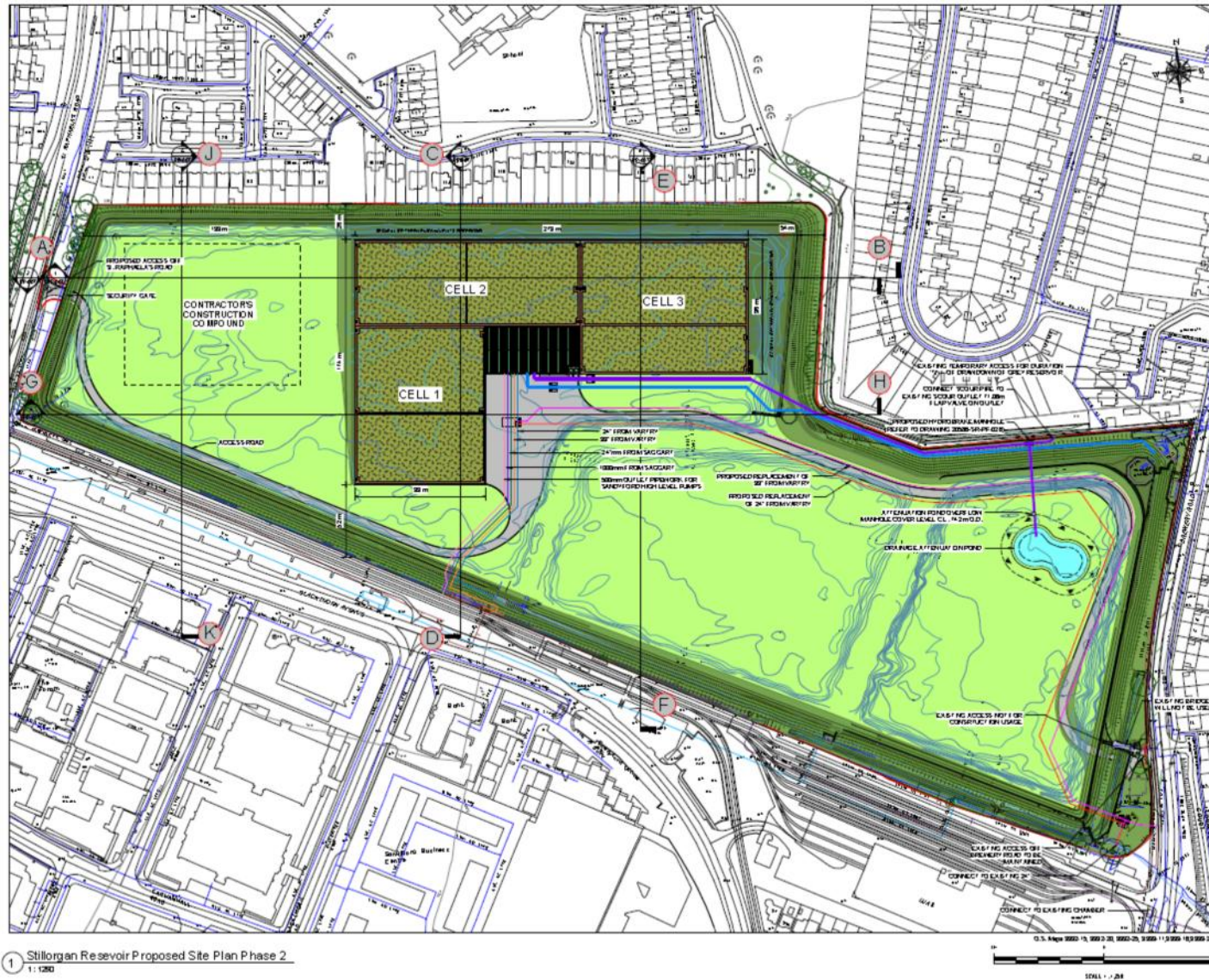


Figure 3-3 Proposed Scheme Layout

3.3 Future Strategic Need for the Site

Irish Water's role is to provide water services including treated drinking water for current and future populations. The current development proposal will meet the forecast demand needs of the water supply area (Dún Laoghaire-Rathdown and south Dublin) through to 2031. Beyond this, the growth in water demand is uncertain. If growth continues at the present rate (approximately 1% per annum) then additional treated water storage capacity will be required at the site beyond 2031. The Sandyford Urban Framework Plan 2016-2022 references the possibility of abandoning part of the site. This is not a viable option due to future supply requirements. It would be irresponsible of Irish Water to abandon a valuable site in terms of existing and proposed infrastructure.

Planning for future development would be undertaken in the mid-2020s. It is anticipated that a similar capacity to that proposed (i.e. 160 MI) would be required. Irish Water has considered where this would be located on the site and it is expected that the area of the Upper and Lower Reservoirs would be proposed. This would be subject to consent through the planning authority at that time.

However, given the strategic importance of the site, provision is being made to reserve lands should additional storage be required in the future. Any areas not being used for the proposed storage will be landscaped and reserved for the future longer term storage requirements.

4. REQUIREMENT FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

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 i.e. EIA Screening / EIA Determination.

In June 2016, an EIS Screening Report was prepared by Nicholas O'Dwyer Ltd. on behalf of Irish Water. This report was considered by the Planning Section of Dún Laoghaire-Rathdown County Council.

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 Schedule 5 of the Planning and Development Regulations, 2001-2016.

In the case of the proposed Scheme, there is no reference under Schedule 5 of the 2001-2016 Regulations to covered reservoirs as a category of development that would come within the scope of Part I (mandatory EIS) or Part II (requirement for EIS if above a specified threshold).

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 meetings 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. As a result, DLRCC proposed that an EIA should be undertaken on a precautionary principle.

5. APPROPRIATE ASSESSMENT

The EU Habitats Directive (92/43/EEC) provides the framework for legal protection for habitats and species of European conservation significance. The Directive provides the legislative means to establish a network of sites (known as the Natura 2000 network) throughout the EU with the objective of conserving habitats and species deemed to be of community interest. These sites include Special Area of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Birds Directive.

A Screening Report in support of the Appropriate Assessment of the proposal was completed by Nicholas O'Dwyer Limited and is presented in Appendix B. The screening determined that a Natura Impact Statement was not required and a 'Finding of No Significant Effects' (FONSE) statement was prepared.

6. PLANNING CONTEXT

The site is located within the Sandyford Urban Framework Plan boundary and is included in Objective F Zone 7 Open Space. The application does not propose to change the existing use of the land for public services, as defined in the Dún Laoghaire-Rathdown County Development Plan 2016-2022. The application has been assessed against the following policies and plans:

- National Spatial Strategy 2002-2020;
- Greater Dublin Area Regional Planning Guidelines 2010- 2022;
- Dún Laoghaire-Rathdown County Development Plan 2016-2022;
- Record of protected Structures/Record of Monuments and Places/Architectural Conservation Areas;
- Sandyford Urban Framework Plan 2016-2022;
- Green Infrastructure Strategy;
- Infrastructure and Capital Investment Plan 2016-2021;
- Irish Water – Water Services Strategic Plan;
- Irish Water - Capital Investment Plan 2014-2016; and
- Irish Water Business Plan – Transforming Water Services in Ireland to 2021.

A planning application was previously submitted by Dublin City Council in 2001 for covered storage within the reservoir similar to the proposed development. This application was consented to by Dún Laoghaire-Rathdown County Council (DLRCC) in 2002 and An Bord Pleanála following appeal (Ref: PLo6D.129014). The proposed development is similar to the previously permitted development.

7. CONSULTATION AND SCOPING

Consultation is an important element of the Environmental Impact Assessment (EIA) process. Chapter 4 of the EIS has been prepared in order to record the consultation carried out to date in respect of the proposed Scheme.

In July 2016, Nicholas O'Dwyer Ltd., on behalf of Irish Water, prepared an EIA Screening Report and requested an opinion from the planning authority and statutory consultees on the scope of the EIS. The following organisations were consulted:

- An Taisce – The National Trust for Ireland

- Department of Arts, Heritage and the Gaeltacht
- Department of Jobs, Enterprise and Innovation
- Department of the Environment, Community and Local Government
- Department of Communications, Energy and Natural Resources
- Dublin Bus
- Environmental Protection Agency (EPA)
- Commission for Electricity Regulation
- Transport Infrastructure Ireland (previously National Roads Authority)
- Office of Public Works
- National Transport Authority (incorporating previous Dublin Transportation Office)
- Inland Fisheries Ireland
- The Heritage Council
- Health Services Executive
- Bord Gáis
- ESB
- Irish Environmental Network
- Birdwatch Ireland
- IBEC
- Dublin Chamber of Commerce

Written opinions were received from the following:

- Environmental Protection Agency (EPA)
- Transport Infrastructure Ireland (TII)
- Inland Fisheries Ireland (IFI)
- Health Service Executive (HSE)
- Dún Laoghaire – Rathdown County Council, Forward Planning

Submissions and comments resulting from this scoping process have been taken into account in this EIS. The complete submissions received are contained in Appendix D of Volume 3.

In addition, Nicholas O'Dwyer Ltd., on behalf of Irish Water, conducted a six week public consultation on the proposed new covered reservoir, from Wednesday, 3 August to Wednesday, 14 September 2016.

This non-statutory consultation included engagement with interested stakeholders, elected representatives and the general public.

Information evenings were held on Thursday, 25 August and Monday, 5 September 2016 at Glenalbyn Sports Club, Stillorgan where interested parties could meet the project team to have queries answered and receive further information on the project.

A site visit was held for elected representatives and meetings were held with representatives from the Sandyford Business District Association, Stillorgan Heath Residents Association and a number of local councillors and TDs.

Details of the above consultation are included in Chapter 4 of the EIS and in the Consultation Report presented in Appendix I.

8. ALTERNATIVES CONSIDERED

The proposed covered reservoir will satisfy the future demands of the water supply area through to 2031 while minimising environmental impacts.

Prior to the selection of the Scheme components, an assessment of available alternatives was undertaken by Nicholas O'Dwyer Ltd. to ensure that better solutions were not

overlooked in terms of (i) a 'do nothing' scenario, (ii) alternative reservoir locations, (iii) alternative options within the existing site.

On the grounds of the assessment of alternatives, it is proposed to proceed on the basis of the Scheme as detailed in Section 4 above.

A detailed discussion of the evolution of the preferred Scheme is detailed in Section 3.4 of the EIS.

9. CONTRIBUTORS TO THE EIS

The study team was led by Environmental specialists from Nicholas O'Dwyer Limited. Table 9-1 below lists the consultants and specialists involved in the preparation of each of the main chapters in the EIS.

Table 9-1 Contributors to the EIS

Chapter	Consultant/Specialist
Non-Technical Summary and Part I	Nicholas O' Dwyer Ltd.
Traffic	Nicholas O' Dwyer Ltd.
Human Beings - Socio Economics	Nicholas O'Dwyer Ltd.
Ecology	Nicholas O'Dwyer Ltd. and Natura Consultants Ltd.
Soils, Geology and Hydrogeology	Nicholas O'Dwyer Ltd.
Hydrology and Water Quality (including Flood Risk Assessment)	Nicholas O' Dwyer Ltd.
Air Quality and Climate	Envest Consulting Ltd
Noise and Vibration	Envest Consulting Ltd
Landscape and Visual	Cunnane Stratton Reynolds Ltd.
Archaeology and Cultural Heritage	IAC Limited
Built Heritage	Rob Goodbody, Historic Building Consultants Ltd.
Material Assets	Nicholas O' Dwyer Ltd.
Interactions	Nicholas O' Dwyer Ltd.

10. STATEMENT OF DIFFICULTIES ENCOUNTERED

No significant difficulties were encountered in compiling the specified information as set out in the Second and Third Schedules of S.I. No. 93 of 1999. Any relevant difficulties encountered have been identified in the respective Chapters of the EIS, as appropriate.

11. LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES

The following likely significant environmental effects and proposed mitigation measures were identified through the assessment.

11.1 HUMAN BEINGS – SOCIO ECONOMICS

Chapter 5 of the EIS considers the impact of the proposed development in the context of population and settlement, land use, employment and other impacts of a social and economic nature.

The impact of the proposed development will be felt in the immediate surrounding area of Dún Laoghaire-Rathdown (DLR) and also with the supply area including Dún Laoghaire-Rathdown County Council and parts of Dublin City Council.

Due to the sites proximity to the city centre the surrounding area is densely populated. It comprises two elements, the residential population and employment population including those working in the adjoining office, commercial and industrial premises to the south.

The CSO statistics show an increase in population throughout DLR and Dublin City and the state. In 2016 the overall state population increase was 3.7%. However, DLR had a population increase of 5.3%, one of the highest growth rates in the country, along with the three other administrative areas of Dublin. As a result, the demand for treated drinking water supply in this area is increasing.

The existing land use has been in place for approximately 150 years. The application does not propose to change this existing land use defined as public services. The use of the site as a treated drinking water reservoir will remain. When the reservoir was originally constructed there was no development in the surrounding area. Over time surrounding land uses including residential to the north, east and west and commercial to the south have formed around the reservoir. The continued development of the area shows that the existing use is compatible with a range of uses.

The proposed scheme is estimated to have a value of approximately €80 million. The scheme will give rise to positive impacts on employment and economic activity during the construction and operational stages.

The construction of the proposed covered reservoir will give rise to additional jobs in the area over an approximate 24 months period. This will provide a boost for the construction sector – in terms of employment generation and capital spend on materials and construction labour costs. Associated with this activity, there will be a higher local demand for goods and services with an associated positive economic impact. This is considered to be a positive impact. The operations state will be relatively similar to the existing situation.

The site is not currently open to the public and security is in place to ensure unauthorised access does not occur. The application does not propose to open the site to the public. The Sandyford Urban Framework Plan 2016-2022 includes an objective regarding the subject site and potential for a park should the site be abandoned. The application does not propose to abandon the site. The entire site is required for the covered storage area, associated works and potential future need of the site. There is considered to be no impact on the provision of tourism and recreation.

In summary, there will be indirect positive impacts on patterns of employment and economic development resulting from the construction phase of the development. In addition, there will be longer-term, strategic impacts arising from the operation and existence of the facility whereby the availability of longer-term infrastructure will provide a reliable drinking water supply to the population in the Dún Laoghaire-Rathdown and south Dublin area. It can be stated that these socio-economic impacts will be positive due to the nature of the proposed development.

11.2 ARCHAEOLOGY AND CULTURAL HERITAGE

Chapter 6 of the EIS assesses the archaeological and cultural heritage implications of the proposed upgrade of the existing Stillorgan Reservoir, Dublin 18. The site is bordered by residential housing to the north, Brewery Road to the east, the Luas green line and Blackthorn Avenue to the north and the Upper Kilmacud Road extension the west (OS Sheet 22).

There are no previously recorded archaeological sites located within the immediate vicinity of the proposed development area. The assessment has revealed that it is clear that extensive disturbance has already taken place within the proposed development area. These works are likely to have led to the removal of any sub-surface archaeology that may have survived in the footprint of the reservoir pre-1860. As such, no adverse impacts are predicted upon the archaeological resource as a result of the proposed development going ahead.

No further archaeological mitigation is deemed to be necessary as part of the proposed development.

11.3 BUILT HERITAGE

Chapter 7 of the EIS assesses the Built Heritage of the site and the potential impacts. The assessment found a Moderate impact to the setting of one Recorded Protected Structure on the site (the Bridge) from the location of a new bridge in close proximity to the historic structure. Mitigation measures for the design of the new bridge were recommended and the residual impact was considered to be 'Slight'.

11.4 LANDSCAPE AND VISUAL

Chapter 8 of the EIS sets out to describe the landscape and visual environment of the area and to assess the impacts of the proposed development. Landscape and visual mitigation measures to negate or ameliorate impacts identified are also set out in this Chapter.

The site is located at the interface between two distinct urban character areas, a suburban landscape to the north and the rapidly developing high density, mixed use town centre of Sandyford Business District to the south.

The presence of the reservoir in the landscape, in views and as a result in the consciousness of people in the area, is limited. This is due to a number of factors including:

- (a) the tall earth embankments that form and enclose the reservoir;
- (b) the tall stone walls and vegetation around the boundaries, which form an additional physical and visual barrier;
- (c) the fact that there are broad road corridors around three sides (west, south, east) of the reservoir site separating it from neighbouring land use;

- (d) the fact that the reservoir has generally been treated as a utility site in land use and urban design terms; few adjacent or nearby land uses and buildings recognise or respond appreciably to the reservoir (apart from the houses of Stillorgan Heath);
- (e) the fact that public access to the reservoir site has been strictly controlled (for reasons of public safety and security of the water supply).

The only views of the water surface of the reservoir are from the upper floors of the houses in Stillorgan Heath immediately to the north and the upper floors of certain buildings in the Sandyford Business District to the south. Other than the occupants of these buildings, people who would be conscious of the presence of the reservoir in the landscape are those who gain entry to the site illegally for recreation.

The reservoir makes little contribution to the character and quality of the residential suburbs to the north, west and east; these estates are generally inward-looking. It also makes limited contribution to the character of the Sandyford Business District; the reservoir stands somewhat removed from the rapidly developing high density urban area and features only in views from certain buildings and not from the public realm.

As a result Stillorgan Reservoir is not a key element in the landscape character of the surrounding urban area (the proposed development's receiving environment).

The removal from the landscape of a large, man-made, open water body would result in a profound change to the landscape of the site. However, the impact on the landscape character of the wider receiving environment would be limited as the reservoir has a limited physical and visual relationship with the surrounding area; it makes little contribution to the character and quality of the residential estates to the north, west and east, or to Sandyford Business District to the south.

The introduction of the covered reservoir - a building of large footprint - and the ancillary infrastructure such as the access road to the site would also result in a profound change to the site landscape. However, again due to the site's physical and visual separation from much of the surroundings, the effect of the development on landscape character - as experienced daily by people in the receiving environment - would be limited.

Regarding the development's potential to impact on the particular landscape values of the site, the following:

- Open space. The proposed covered reservoir has been designed to minimise its height, so that it would project only marginally above the existing reservoir embankments. It would thus have little effect on the perception of the site as an open space in the urban environment; the building would generally not intrude in views. The exceptions to this are that the building would be visible from the houses of Stillorgan Heath, and from the tall buildings of the Sandyford Business District. From these locations the site's openness and relative absence of structures (although a constructed landscape itself) is notable and this value would be reduced by the development, although the roof of the building itself would appear as open space.
- Cultural heritage. The proposed development retains all of the Victorian structures including the embankments enclosing the reservoirs (with stone lining at the water level on the inner faces) and the architectural features namely Vartry House, the gateway, bridge and chamber house (all protected structures). From most vantage points in the receiving environment these structures and their

contribution to views and visual amenity would be unchanged. However, from the houses of Stillorgan Heath and the tall buildings of the Sandyford Business District, the reservoirs, an historic element of the landscape, would be replaced by green open space and this would affect the sense of place for some visual receptors.

- Vegetation and habitat. The proposed development would have no effect on any vegetation or habitat of value in the landscape. The replacement of the open reservoir with a covered reservoir, opening up a large part of the site to revegetation, allows for the introduction of a significant volume and variety of new vegetation and habitat to the landscape. This is addressed in Section 7.6 below.

These potential effects on landscape character and certain landscape values generate requirements and opportunities for mitigation of the impacts.

The following mitigation measures were recommended in the design and impact assessment process and have been incorporated into the proposed development:

- Stone cladding to softening the appearance of the building. The proposed covered reservoir has been designed to minimise its height and therefore minimise its protrusion above the existing embankments into views from the surroundings. However it will appear in certain views, notably from the 1st and attic floors of the houses of Stillorgan Heath to the north. It is proposed to fill the void between the building and the existing embankment with earth, thus reducing the exposed part of the northern facade to only 0.4m above the adjacent ground level. It is recommended that this exposed strip of the façade be clad in stone salvaged from the site (the inner faces of the reservoir embankments) to soften its appearance.
- Green roof to softening the appearance of the building and for ecosystem services. From the attic rooms of the houses of Stillorgan Heath and from the tall buildings in the Sandyford Business District the roof of the covered reservoir would be visible. From the tall buildings the very large, rectilinear footprint of the reservoir would be appreciable, and a gravel or similarly covered flat roof of such scale would be prominent and unsightly. It is recommended that a green roof be installed on the building to soften its appearance and also to provide a range of additional ecosystem services (water attenuation, habitat, avoidance of heat island effect).
- Earth embankments against the walls to screen the building. Where the proposed reservoir is not adjacent to an existing embankment (allowing the void to be filled with earth) it is proposed that an earth embankment be formed against the façade to minimise the expanse of wall exposed to view and soften the appearance of the building.
- Vegetation to screen the building and access roads. In addition to using existing and new earth embankments as visual screens it is recommended that vegetation be planted around the building for additional screening and softening of the structure. Where the vegetation would be planted at a higher ground level than adjacent properties, excessive overshadowing should be avoided so planting should be more sparse and/or the selected species should be lower.
- Vegetation for urban greening, visual amenity and ecosystem services. The site is identified in the CDP as a key piece of the local and county-wide green

infrastructure. While the range of potential 'cultural' ecosystem services of the site is limited by the requirement to restrict public access, the site can deliver some 'supporting', 'provisioning' and 'regulating' services.

It is recommended that a framework of vegetation corridors be planted around and across the site, in imported soil where required. This vegetation would provide, in addition to its visual screening effect, urban greening/visual amenity, habitat provision and related services, water management and microclimate regulation services.

The open space of the existing reservoir is a valuable characteristic of the site, therefore it is not proposed to fill the spaces that are not to be occupied by buildings with vegetation. Rather, it is proposed to plant hedgerows and tree lines selectively, using historic features of the landscape (field boundaries and internal reservoir embankments) to guide their alignment. It is recommended that the open space between these linear vegetation corridors be allowed to revegetate naturally to form habitats suitable to the site conditions and requiring minimal maintenance.

- Re-use of materials. It is recommended that changes to the existing external and internal reservoir embankments be minimised, to retain the distinctive spatial arrangement of the site. Where the internal embankments are required to be removed for the provision of material to fill around the new covered reservoir, it is recommended that some of the embankment material be retained in place, re-formed and re-clad using the existing stone. Features of the same materials and form would thus be retained in views from elevated locations around the site.

In summary, the proposed development would result in a profound change to the landscape of the site arising firstly from the removal of the large open water reservoir, secondly from the construction of a large building (low in profile and green roofed) and ancillary infrastructure, and thirdly from the extensive new planting across the site. Other aspects/elements of the site landscape would be largely unaffected including the industrial heritage features, individually and collectively. These changes to the site would have limited effect on the landscape character of the surrounding urban area and the significance of the landscape impacts has been categorised as medium, and neutral.

The development would contribute to the realisation of the CDP objective for the site to function as an element of the local green infrastructure (the proposed landscape treatment of the site would deliver, in addition to its visual screening effect, urban greening/visual amenity, habitat provision and related services, water management and microclimate regulation services). However, the redeveloped site cannot provide publicly accessible open space as the need for a strategic storage reserve would not allow for this.

Because of factors including the tall earth embankments that enclose the reservoir and the broad road corridors on three sides of the site, the development would not be visible from much of the receiving environment. However, from two areas the development would be visible. These are Stillorgan Heath and the tall buildings of the Sandyford Business District.

The residents of Stillorgan Heath are highly sensitive to visual change. These receptors would experience a low to medium magnitude change, from rear-facing 1st floor and attic windows only. They would see the top of the new covered reservoir protruding above the existing embankment, at a distance of 35m+ from the houses. The broad protruding

façade would be clad in stone and partially screened by clumps of low vegetation in front of it. The meadow grass on the roof would further soften the building's appearance.

The occupants of the Sandyford Business District buildings (mostly office buildings) are less sensitive to visual change. Due to their elevation (from the 2nd floor and higher) they would experience a greater magnitude of change, with the full extent of the development visible. They would see the large new covered reservoir, softened by its green roof and belts of woodland planting in front of its southern and western facades. Tree planting all along the southern embankment would partially screen the revegetating floors of the drained reservoirs. Tree lines and hedgerows elsewhere across the site (aligned with historic field boundaries and the removed inner reservoir embankments) would provide additional screening and would ultimately mature to form substantial landscape features.

For both these groups of visual receptors, the mitigation measures incorporated into the proposed development would lessen the impacts of the proposed development – the impacts of the new covered reservoir in particular. Additional vegetation would feature in all views, and the resulting views would not be of poor quality. However, the removal of the existing open reservoir from the views would change their composition and character and have an adverse effect on visual amenity.

11.5 NOISE AND VIBRATION

Chapter 9 assesses the likely noise and vibration impacts associated with both the construction and operational phases of the proposed development.

An environmental noise survey was conducted in accordance with ISO 1996: 2007: Acoustics – Description, measurement and assessment of environmental noise.

A noise impact assessment has been completed and this compared the measured noise levels in proximity to the nearest noise sensitive properties to the relevant guideline noise limits outlined in the WHO Guidelines for Community Noise and the EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

The measured noise levels at the noise monitoring location are in accordance with the relevant guideline noise limits outlined in the WHO Guidelines for Community Noise and the predicted noise levels at the nearest residential properties are in accordance with the WHO Guidelines for Community Noise during daytime and night-time.

Appropriate mitigation measures have been identified to ensure the Construction Phase target noise limits are not exceeded. The contractor will be required to implement the control measures recommended in BS 5228 and apply the appropriate measures where applicable.

The assessment of operational noise from the proposed development has indicated that the EPA recommended noise limit criteria will not be exceeded at the nearest residential properties during daytime and night-time. Therefore, the residual impacts resulting from the development will not be significant.

A geotechnical vibration assessment has been completed. Mitigation measures including rock excavation techniques and structural monitoring have been recommended. The expected vibration impact of construction of the development on the surrounding area will not be significant.

11.6 AIR QUALITY AND CLIMATE

Chapter 10 of the EIS assesses the potential impact on Air Quality and Climate associated with the proposed development.

The assessment and evaluation of the potential air quality and dust impact arising from the proposed Stillorgan Reservoir scheme involved 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.

The background air quality in the area of the proposed development is of very good quality and the site is located in 'Zone A' as denoted by the EPA.

The potential for any dust arising from the construction works at the covered storage at Stillorgan Reservoir has been assessed. A number of mitigation measures including a dust management plan will be implemented.

The potential for residual dust impacts is considered to be negligible at the nearest sensitive receivers with appropriate mitigation measures employed and dust deposition rates will be in accordance with relevant guideline limits assuming the recommended construction mitigation measures are adhered to.

There will be no significant air quality and dust impacts from the operation of the proposed development.

11.7 TRAFFIC AND TRANSPORT

Chapter 11 of the EIS, prepared by Nicholas O' Dwyer Ltd., presents an environmental assessment of the effects of road traffic arising from the construction and operation activities of the Clonmel Town and Rural Water Supply Scheme.

This assessment has been based on information obtained from the NRA traffic count database.

The assessment compares the volume of construction related traffic against baseline traffic flows. The characteristics of the development are such that the dominant traffic impact will be during its construction stage. The operational stage will have minimal traffic movements associated with small numbers of staff who will work at the site and with periodic maintenance checks, and will approximate the existing site traffic. Therefore, the assessment focuses on the traffic impacts associated with the construction phase of the proposed upgrade project.

The report focuses on the construction traffic along the proposed route local to the site. The assessment found that impacts on the N11 and M50 from the construction traffic were negligible. The report also focuses on impacts on the Luas Green Line, and intersections with the National Road network.

The assessment has concluded that the additional traffic from HCVs and light vehicle movements per day during the construction phase would not have a significant effect on the traffic and transport related environmental effects identified, i.e. severance; driver

delay; pedestrian delay; pedestrian amenity and fear and intimidation and that the traffic impact was acceptable.

The traffic generated during the operational phase will be as present for the site. The assessment concluded that there will be no traffic related operational impacts from this development.

11.8 ECOLOGY

Chapter 12 of the EIS sets out the methodology used in the Ecology assessment, describes the existing environment and discusses potential impacts of the proposed development, i.e. the impacts that could possibly occur in the absence of mitigation. It also describes the avoidance and mitigation measures to be incorporated into the proposed development to avoid or reduce the significance of the potential impacts that have been identified and details any residual impacts that may occur despite mitigation.

A desktop assessment was carried out to determine existing records in relation to habitats and species present in the study areas. This included research on the NPWS metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the development area.

The second phase of the assessment involved a site visit to establish the existing environment in the footprint of the proposed improvement works. The baseline ecological survey was carried out on 27th August 2015 by an experienced ecologist. Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2011).

Bat activity surveys were carried out May – July 2016 to identify the areas of highest bat activity within the survey area and to identify which species use these for commuting and foraging. The methods used followed those outlined in the Bat Surveys Good Practice Guidelines by the Bat Conservation Trust (2016).

A series of eight surveys of wintering waterbirds were carried out on the reservoirs between September 2015 and March 2016, at approximately monthly intervals.

The proposed covered storage of a section of the reservoir has the potential to result in minor adverse impacts upon several ecological receptors; treelines, fish and birds, which range from a Site to Local level of ecological value. Wintering bird surveys carried out at the site has indicated that the waterbodies are of minor value and the proposals will not have any significant effects on bird populations.

Avoidance measures and mitigation measures, which have been detailed within this report have been designed to, as far as possible eliminate or mitigate any negative ecological effects of the proposed scheme. It is not anticipated that there would be any significant adverse residual effects upon receptors of ecological value.

Several enhancement measures have also been recommended and will ensure that the favourable conservation status of bats, birds and other notable species will be improved, both within the local area and on the site in accordance with Irish Water's Biodiversity Policy.

It is therefore considered that the scheme is in line with the local planning policies within the Dún Laoghaire-Rathdown Development Plan 2010 – 2016 (adopted October 2010)

and any residual impacts on aquatic habitats and species will be temporary and insignificant.

11.9 HYDROLOGY, FLOOD RISK AND WATER QUALITY

Chapter 13 of the EIS assesses the likely impacts of the proposed development on the hydrology of local watercourses as well as the effects of the works on flood levels.

The existing Carysfort-Maretimo stream along the eastern boundary of the site and the Carysfort-Maretimo Stream on the northern boundary are heavily culverted throughout their catchment. No EPA or local authority water quality monitoring data are available for the streams.

A Stage 1,2 and 3 Flood Risk Assessment has been prepared in accordance with OPW Guidelines (*The Planning System and Flood Risk Management Guidelines for Planning Authorities*, 2009) and this is presented in Appendix G.

The following conclusions are made:

1. Risks have been analysed for six different flood sources. The flood risk to the development from the sources is considered low.
2. The Carysfort-Maretimo stream, to which the development discharges, has a history of flooding. Improvement works have been carried out in recent years to alleviate the flooding.

During the operational phase, an automated dechlorination plant will be deployed to deal with reservoir overflow events. Overflow events are prevented in the main by level sensors which will prevent water from rising above the design top water level.

Intense rainfall events will be attenuated through the surface water drainage attenuation pond detailed in Section 3.1.5. This has been designed for a 1:200 year flood capacity. In the event of a more significant flood event the attenuation pond will overtop into the landscaped area and be retained within the existing exterior embankments. The rate of discharge of flood waters to the Carysfort-Maretimo Stream will be controlled through a discharge pipe and hydro-brake to ensure that the flow does not exceed the greenfield (pre-development) flow rates as required by: *Dun Laoghaire-Rathdown County Council County Development Plan 2016-2022. Appendix 15 'Environmental Infrastructure Policies and Objectives' of the Sandyford Urban Framework Plan*. The design has also taken into account possible blockages occurring on the existing surface water system.

The implementation of mitigation measures as detailed above will ensure that there is a minimal impact on surface waters in the area from this proposed development.

11.10 GEOLOGY AND HYDROGEOLOGY

Chapter 14 of the EIS prepared by Nicholas O'Dwyer Ltd. assesses the likely impacts of the proposed development on the geology of the site and hydrogeology of the surrounding area.

The reservoir is underlain by granitic and other intrusive bedrocks from the Dinantian period. There are no mapped regional faults within the local area. As the site is a reservoir there are no subsoils or soils present within the construction area. There are no sites of geological heritage within the perimeter of the site boundaries.

The existing site is a reservoir body which is open and it is assumed to be in hydraulic continuity with the underlying bedrock aquifer. The bedrock is classified by the Geological Survey of Ireland as a Poor Aquifer – Bedrock which is generally unproductive

except for local zones (PI). There are no wells or groundwater protection zones identified on the National Groundwater Database within the catchment area to the site. As a result of the low permeability nature of the bedrock aquifer the potential recharge within the future reservoir site would be limited.

A range of potential construction impacts related to excavation and contamination of groundwater and impacts to groundwater flow paths have been identified. Planned mitigation measures will reduce these impacts significantly. Many of the mitigation measures below have been based on CIRIA (Construction Industry Research and Information Association, UK) technical guidance on water pollution control and on current accepted best practice.

If the mitigation measures detailed above are implemented it is expected that there will be no significant adverse direct or indirect impacts on groundwater and the underlying geology as a result of the construction or operation of the proposed development.

11.11 MATERIAL ASSETS

Chapter 15 of the EIS evaluates the potential impacts that the proposed development will have on Material Assets during both the construction and operation phases. This section deals with the resources of economic value e.g. utilities, in the vicinity of the proposed Scheme including the following areas:

- Property and Land use;
- Local Settlement;
- Transport and Utilities;
- Natural Resources; and
- Waste Resources.

The proposed works are wholly within the existing site and no additional property or land purchase is proposed. There are no known utilities which could be impacted by the development proposals. The proposed development retains the existing use of the site as a water services infrastructure for the purpose of storing treated drinking water. Other issues which may influence the desirability of an area and therefore property values include the availability of a reliable, high quality source of drinking water. In this regard the proposed works may have a positive impact on local settlements. Furthermore a reliable, high quality source of drinking water is required to support development in the region and to attract inward investment and the creation of employment opportunities. It is considered that the proposed works may have a long term positive impact on property values and local settlement.

The area of the reservoir is served by a strong network of local utility infrastructure. As a result no potential impacts to utilities are expected from the proposed development.

11.12 INTERACTIONS

All aspects of the environment are interrelated to some extent and Chapter 16 of the EIS deals with significant interactions and interdependencies between these environmental aspects.

Overall, the proposed development will lead to a positive interaction with Human Beings. During its operational life, the proposed development will ensure the availability of high quality safe drinking water supply for the existing and future populations of the Dún

Laoghaire-Rathdown and south Dublin areas and facilitate future growth and demand for treated water supply through the area.

As with any infrastructure Scheme, the permanent presence of a infrastructure can alter the landscape environment of an area, thereby giving the potential for locally negative impacts in terms of Landscape and Visual and the Construction Phase and Human Beings. Mitigation measures have been proposed in Chapter 8 to alleviate the predicted impacts and interactions with the above environmental aspects.

The implementation of mitigation measures, as detailed Chapter 13 Hydrology and Chapter 14 Geology and Hydrogeology, will ensure that there is minimal impacts from the Construction or Operational Phases of the Scheme on surface waters in the area and therefore minimal or negligible interactions will occur between environmental aspects e.g. Hydrology and Ecology or Material Assets.

Apart from its physical presence and once the mitigation measures as detailed in the EIS are implemented, no on-going negative impacts on the environment are anticipated from the operation of the Scheme.

12.FURTHER INFORMATION

Copies of the Environmental Impact Statement are available for examination at the locations detailed in the published newspaper notices. The Environmental Impact Statement is also available for purchase in hardcopy or CD format from: -

Planning Authority
Dún Laoghaire-Rathdown County Council
County Hall, Dún Laoghaire, Co. Dublin

Prices are as shown in the published newspaper notice.

13.WHAT HAPPENS NEXT?

Construction of the Stillorgan Reservoir Upgrade project is dependent on planning approval from Dún Laoghaire-Rathdown County Council. Written submissions in relation to the likely effects on the environment of the proposed development and the implications of the proposed development for proper planning and sustainable development in the area may be made to Dún Laoghaire-Rathdown County Council. Dates for the receipt of submissions are as shown in the published newspaper notice.

These written submissions will be considered by the planning authority in making their decision on whether or not to approve the development with or without modifications. The decision of the planning authority will be published in one or more newspapers circulating in the area, including where appropriate, particulars of any modifications to the proposed works.