

**CUNNANE STRATTON REYNOLDS**

**Landscape & Visual Impact Assessment Report**

**For**

**Proposed Vartry Reservoir and Water Treatment Plant Upgrade, Co. Wicklow**



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## 1.0 Introduction

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- 1.1 This report has been prepared by Cunnane Stratton Reynolds Ltd landscape architects and town planners. The assessment is in accordance with the methodology prescribed in the *Guidelines for Landscape and Visual Impact Assessment*, 3rd edition, 2013 (GLVIA) published by the UK Landscape Institute and the Institute for Environmental Management and Assessment.
- 1.2 The report has been prepared in parallel with a proposed landscape mitigation plan. An A3 version of this plan (Title: Site Landscaping Sheet 1, Drawing no. 20586-PP-C1-40) is included in Appendix 1 of this report, and submitted separately at a scale of 1:500 on A1. Appendix 2 contains photomontages illustrating the potential visual effects on four locations which are the subject of detailed visual impact assessment in Section 7 of the report.

## 2.0 Methodology

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- 2.1 The methodologies and terminology used in the assessment of landscape and visual effects are described below. A number of key principles prescribed in the GLVIA are worthy of emphasis:
- **Assessment of Both 'Landscape' and 'Visual' Effects:** A key distinction to make in LVIA is that between the landscape effects and the visual effects of development. 'Landscape' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. 'Landscape character assessment' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as 'a resource'. Views and 'visual amenity' refer to the interrelationship between people and the landscape. The GLVIA prescribes that this subject should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.
  - **Use of the Term 'Effect' vs. 'Impact':** The GLVIA advises that the terms 'impact' and 'effect' should be clearly distinguished and consistently used in the preparation of an LVIA. 'Impact' is defined as the action being taken. In the case of the proposed development, the impact would be the introduction to the landscape of the proposed water treatment plant and related works. 'Effect' is defined as the change or changes resulting from that action, e.g. a change in landscape character, or changes to the composition of views in the receiving environment and related effects on visual amenity.
  - **Proportionality of the Assessment:** The EIA Directive on which the practice of Environmental Impact Assessment including LVIA is founded, is clear that the emphasis should be on the identification of likely significant environmental effects. The assessment should be in proportion to the scale of the project and the nature of its likely effects.

### **Landscape Impact Assessment**

2.2 Landscape impact assessment considers the likely nature and scale of changes to the main landscape elements and characteristics, and the consequential effect on landscape character and value. Existing trends of change in the landscape are taken into account. The potential effect is assessed based on measurement of the landscape sensitivity against the magnitude of change which would result from the development:

- **Landscape Sensitivity:** Landscape sensitivity is a function of its land use, landscape patterns and scale, visual enclosure and distribution of visual receptors, scope for mitigation, and the value placed on the landscape. Landscape sensitivity is classified as *high* (exhibits a very strong positive character with valued elements and characteristics that combine to give an experience of unity, richness and harmony, therefore particularly sensitive to change in general), *medium* (exhibits positive character but has evidence of alteration to/degradation/erosion of elements and characteristics resulting in an area of mixed character, therefore potentially sensitive to change in general), or *low* (exhibits generally negative character with few valued elements or characteristics).
- **Magnitude of Landscape Change:** Magnitude of change is a measure of the degree of change to the elements and characteristics of the landscape which would result from the proposed development. It is classified as *high* (total loss of or major alteration to the key elements or characteristics of the landscape, and/or introduction of elements considered totally uncharacteristic in the context of the receiving environment's landscape character), *medium* (partial loss of or alteration to one or more key elements or features, and/or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic in the context of the receiving environment), *low* (minor loss of or alteration to one or more key elements or characteristics, and/or introduction of elements that may not be uncharacteristic in the context), or *negligible* (very minor loss, alteration or introduction of elements of the landscape).

2.3 For both landscape and visual amenity the significance of the effects is classified as high, medium or low based on the measurement of the magnitude change against the sensitivity of the landscape or view, using the following guide:

**Figure 1: Guide to the grading of significance of effects**

		Sensitivity				
		High	Med	Low		
Magnitude	High					High Significance
	Med					Medium Significance
	Low					Low Significance
	Neg*					

\* Negligible

2.4 For landscape, the predicted impact is also classified as beneficial, neutral or adverse based on an evaluation of the likely impact on identified landscape values. This is not an absolute exercise; it is a professional judgement informed by the process of landscape character assessment, particularly landscape values assessment (promoted by the DEHLG *Consultation Draft of Guidelines for Landscape and Landscape Character Assessment*), also taking into account relevant planning policy.

**Visual Impact Assessment**

2.5 Visual impact assessment considers the potential changes to the component elements of views (i.e. the composition), the character of the views, and the visual amenity experienced by visual receptors. The assessment is made for a number of viewpoints selected to represent the receiving environment and the potential visual receptors in that area, and to address any relevant landscape and visual policy for the area such as protected views and prospects.

2.6 For each location or viewpoint the field of view towards the site is described in terms of its key elements and characteristics. The descriptions are illustrated with photographs taken from the viewpoints, and an accompanying photomontage to illustrate the proposed change to the view. The potential visual impact on each viewpoint is assessed based on measurement of the viewpoint sensitivity against the magnitude of change to the view which would result from the development:

- **Viewpoint Sensitivity:** Viewpoint sensitivity is a function of the location and context of the viewpoint, the expectations and occupation or activity of the visual receptor, and the importance of the view. Viewpoint sensitivity is classified as *high* (e.g. users of outdoor recreation facilities or centres of activity focussed on the landscape, and occupiers of residential properties with views affected by the development), *medium* (e.g. people travelling through or past the affected landscape in cars or on public transport, i.e. viewing but not focussed on the landscape), or *low* (e.g. people at their place of work or engaged in similar activities such as shopping, etc., whose attention will be focussed on these activities).
- **Magnitude of Change to View:** Magnitude of change takes into account the extent of the view that would be occupied by the intrusion, e.g. full, partial, glimpse, etc. including the distance of

the viewpoint from the development, the proportion of the development or particular features that would be visible, and whether the view of the development would be static, or a sequence or transient (as seen from a moving vehicle). The magnitude of change to each view is classified as *high* (total loss of or major alteration to the key elements or characteristics of the view, and/or introduction of elements considered totally uncharacteristic in the context of the view), *medium* (partial loss of or alteration to one or more key elements or features, and/or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic in the context of the view), *low* (minor loss of or alteration to one or more key elements or characteristics, and/or introduction of elements that may not be uncharacteristic in the context), or *negligible* (very minor loss, alteration or introduction of elements of the view).

### 3.0 The Receiving Environment

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#### ***Historic Landscape Development***

- 3.1 The Vartry Scheme was developed between 1861 and 1868 to provide a reliable source of clean, filtered water to the city of Dublin. The scheme comprised the damming of the Vartry River and the construction of the embankment to create the reservoir (later known as the Lower Reservoir following the creation of a second, upper, reservoir to the north in the early twentieth century). The water was filtered through the water treatment plant before being piped by tunnel to a tank at Callow Hill, crossing the Dargle and Cookstown Rivers on aqueducts, and continuing to the Stillorgan storage reservoirs before being transported to the city.
- 3.2 The considerable intervention in the landscape is evident on comparison of the first edition Ordnance Survey map (sheet WW018, surveyed 1838, published 1840) with the third edition map (sheets WW018-06 and WW018-07, surveyed 1908, published 1910) – see Figures 2 and 3 overleaf. The first edition shows a typical rural landscape with irregularly shaped fields, a small number of dispersed dwellings and farm buildings, and a single mill on the Vartry River. The Roundwood to Ashford road loops north of this mill to cross the river by a narrow bridge. The third edition map shows the transformation of the landscape, with the introduction of the dam wall (with the Roundwood to Ashford road realigned to run along the wall) forming the reservoir upstream, and the water treatment complex downstream of the wall in the valley.

**Figures 2 and 3: First and third edition Ordnance Survey maps of Vartry**



- 3.3 The water treatment complex, as well as being part of a larger, geographically extensive scheme, itself contained multiple distinct elements, many of which survive today. These include the Gothic Revival valve tower or draw-off tower in the reservoir, which is connected by a tunnel under the embankment to the valve house embedded in the embankment. To the east of the tower is the weir, from which the spillway channel runs beneath a three arched bridge, past the works to meet the original channel of the Vartry River south of the complex. Two rows of filter beds were arranged along either side of two freshwater tanks and a stilling basin (with fountain), in a formal, geometric arrangement. (The original seven filter beds were supplemented by three more in the 1870s, and four more in the early twentieth century, extending the complex to the south). A substantial volume of cut and fill was required in the valley below the dam to accommodate the complex.
- 3.4 Associated Victorian buildings include Vartry Lodge (the former Supervisor's House) to the north-east of the site, a gate lodge to the west corner of the site, and a rusticated granite boat house to the south-west corner of the reservoir. More modest in appearance are the engine house and cluster of outbuildings to the east boundary of the site, the group of three single-storey buildings to the west of the valve house, and the toilet block to the roadside. In the latter part of the 20th century the distinctive chemical treatment building was added to the site in a position at the end of the central axis.
- 3.5 The water treatment complex was extensively landscaped on completion. The third edition map shows a framework of woodland and tree lines enclosing and internally partitioning the site. This woodland framework enclosed a roughly triangular shaped field to the west and south of the complex of filter beds and infrastructure. The subject site is located within this field.

**Plate 1: A view over the water works from the R764 on the dam wall, showing the array of filter beds and the visual enclosure generated by the woodland framework**



**Plate 2: A view of the draw-off tower and the reservoir extending to the north of the water works site**



**Plate 3: A view from within the complex, showing the filter beds in the foreground, the modern chemical treatment building, the enclosing woodland and the grassed dam wall**



**Plate 4: The Vartry complex largely retains its Victorian layout and structures but has been modernised and is an operational utility site**



***The Site of the Proposed Water Treatment Plant***

3.6 The site of the proposed new water treatment plant (WTP - see Section 4 for development description) is the triangular field to the west of the main water works complex. The field was formed as part of the original scheme, by the establishment of a belt of woodland inside its north and west boundaries. The land falls to the east and south across the field, and the topography is disturbed and uneven. The field is at a level several metres above the main water works complex, but well below the level of the dam wall. A ditch runs around the north and east boundaries, draining to the south. The field is part occupied by a number of sludge ponds and a material storage area. The remainder is covered in grassland currently, and occasionally grazed. In the past it has had more extensive and varied use, as shown by the aerial photograph from 2006 below.

***Figures 4 and 5: Aerial photographs from 2006 and 2013 showing the recent usage and condition of the WTP site (image source: Google Earth)***



***Plates 5 and 6: The material storage area in the southern corner of the WTP site, and a change in level illustrating the generally disturbed condition of the site internally***



3.7 The defining feature of the WTP site is the enclosing vegetation. There is a row of trees – mostly Scots pine - along the east boundary between the ditch and the embankment. The trees are at an advanced stage of maturity and an understorey of shrubs and deciduous trees has established beneath and

between them. There is a wider strip of vegetation inside the north and west boundaries of the field, with a greater proportion of deciduous trees including numerous fine specimens of beech. These strips of vegetation can be described a belt of mixed woodland. The boundary vegetation forms an effective visual screen, hiding the field from view from the surroundings.

***Plate 7: The WTP site is enclosed by a belt of mature trees – predominantly conifers on the east boundary (right in the view) and a greater proportion of deciduous trees on the west boundary (left)***



***Plates 8 and 9: Views from within the WTP site showing the mature conifers on the east boundary interspersed with younger deciduous trees and shrubs***



***Plates 10 and 11: The east boundary vegetation forms an effective visual screen as shown in views from the water works and the dam wall. The field – the site of the proposed WTP – is hidden from view***



**Plates 12 and 13: Views from within the WTP site showing the mixed woodland belt including a row of beech trees against the stone wall on the west boundary**



**Plates 14 and 15: Views from west of the WTP site showing the screening effect (in mid-winter) of the mixed woodland belt**



- 3.8 There is a single row of mature trees (mostly deciduous) within the WTP site, extending from the northern boundary approximately 100m into the northern part of the field.

**Plate 16: The row of mature deciduous trees in the northern part of the WTP site**



### ***Landscape Character of the Receiving Environment***

- 3.9 The water works complex is located at the foot of the dam wall of the lower Vartry Reservoir, in rural Co. Wicklow. The reservoir is the defining feature of the landscape in the receiving environment - a body of open water over 3km long and 800m wide, fringed by woodland.
- 3.10 The landscape surrounding the reservoir, including downstream of the dam and the water works complex, is gently undulating and predominantly agricultural in use. The grassland fields are of various size and shape and generally divided by hedgerows although fences and stone walls also occur. Some fields, particularly in lower lying and higher lying areas, have turned to scrub. Some have been converted to conifer plantations. There are treelines along some field boundaries and roads, and enclosing farm houses. There are patches and belts of woodland, mostly associated with historic demesne landscapes. It is a working landscape but has few detracting elements and can be considered to be of high amenity value. Accordingly, it falls within the Area of Special Amenity identified in the Landscape Characterisation of Co. Wicklow. The Wicklow Mountains lie some 5km to the west of Vartry. The mountains are the County's most vulnerable and sensitive landscape, and considered to be of greatest scenic value.
- 3.11 The transport and settlement patterns in the vicinity of the site are sparse. The R764 regional road between Roundwood and Ashford passes to the north of the site, crossing the Vartry dam wall. There is a linear cluster of houses along the road west of the dam. A farm road turns off the R764 giving access to two houses and a farm to the west of the WTP site. To the east of the dam wall a local road turns north off the R764 along the eastern shore of the reservoir. A lesser local road turns south off the R764 a short distance further east and passes some 600m to the south east of the site. There are several farms along this road.

***Plate 17: The landscape surrounding the Lower Vartry Reservoir is gently undulating and land cover includes grassland, coniferous forest and scrub. The settlement pattern is sparse***



**Plate 18: The Wicklow Mountains lie some distance to the west of the site, too far removed to be affected by the proposed development**



**Plate 19: The settlement pattern in the vicinity of the site is sparse, but there is a cluster of houses just to the west off the R764**



### ***Zone of Visual Influence and Potential Visual Receptors***

- 3.12 Due to a number of factors including the local topography, the presence of the dam/reservoir and the sparse settlement pattern, the number and spatial spread of potential visual receptors of development on the site is limited.
- 3.13 The site is situated to the south of and below the level of the Vartry dam wall. The wall and the water body together constitute a large barrier in the landscape, effectively excluding the area north of the dam wall/R764 from the site's zone of visual influence – see Figure 6 overleaf.

**Figure 6: Illustration of the visibility of the site from the receiving environment (image source: Google Earth)**



- 3.14 The stretch of the R764 crossing the dam, and a stretch of the L5061 north of the junction are designated a 'prospect of special amenity value' in the Wicklow County Development Plan (Schedule 17.9 and Map 17.11). This is the only protected view or prospect potentially affected by the proposed development. The potential effect the view from the L5061 is assessed in Section 12.4.2.3 below (Viewpoint 3).

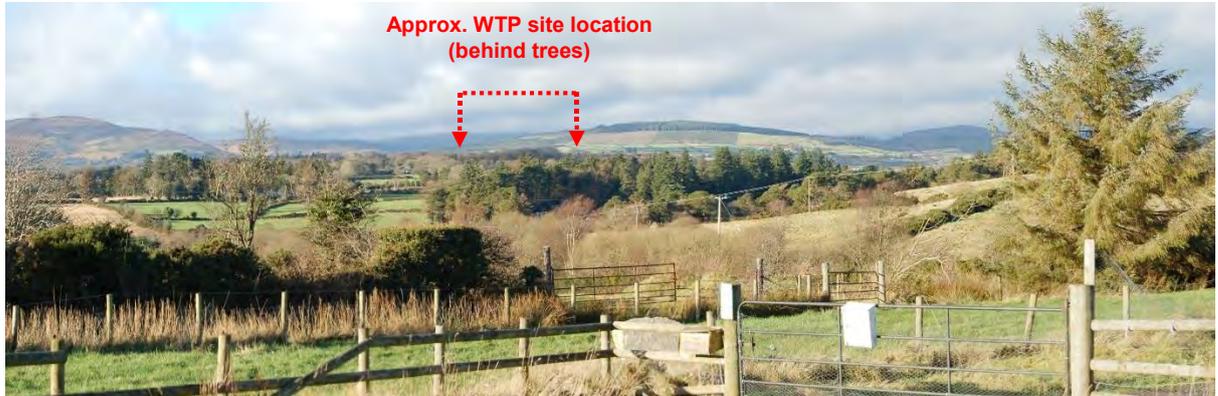
**Plate 20: The view from the L5061 across the reservoir towards the site**



- 3.15 There is an area of high ground to the east of the water works scheme, which along with the broad, dense belt of woodland along the spillway channel, forms a barrier that excludes the landscape to the east from the site's zone of visual influence.
- 3.16 A local road runs around the back (east) of this high ground giving access to a number of farms in the valley to the south of the site. From certain locations along this road, the water works scheme can be

seen, identified by the woodland framework surrounding the scheme. Viewpoint 4 (assessed below) was selected to represent views from this road including the few roadside houses.

**Plate 21: View from local road to south east, in which water works woodland framework is prominent**



- 3.17 There is a cluster of houses immediately to the west of the site, including three houses at which the site (particularly the belt of trees inside the west site boundary) features prominently in views. The residents of these houses are a key group of visual receptors. Viewpoint 2 was selected to represent the views experienced by the residents of these houses.

**Plate 22: View from the access road to west showing the two nearest houses to the site, and the belt of trees inside the site's western boundary**



**Plate 23: View showing the relationship of the site to the nearest house to the west**



- 3.18 The R764 approaches the site from the west (from Roundwood), passes the entrance to the site and continues over the Vartry dam wall. The site is visible along a short stretch of the road when approaching from the west, although the extent of the site (and of any future development on the site) visible is very limited. Approaching from the east along the dam wall the site (particularly the tree on the east site boundary) is visible behind and above the existing water works. This is the view that would be experienced by the most visual receptors. Viewpoint 1 represents this view.

***Plate 24: The view from the R764 approaching from the west, in which the visibility of the development would be limited***



***Plate 25: The view from the R764 on the dam wall to the north east, where the site is relatively exposed***



## **4.0 The Proposed Development**

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- 4.1 The proposed Vartry Reservoir and Water Treatment Plant Upgrade comprises (1) works to the reservoir dam; (2) the construction of a new water treatment plant (and the decommissioning of the existing plant), and related works, and (3) construction of a pumping station and new pipeline to Callowhill.

### **Reservoir Dam Works**

4.2 The works to the reservoir dam include the following:

- **Spillway Channel:** It is proposed to regrade the 170m long spillway channel. This will include the removal of an existing, disused toilet block beside the R764 and the creation of a ramp into the spillway to gain access. The bed of the spillway would then be deepened and graded.
- **Siphon:** It is proposed to install siphon pipes across the dam wall. These would be visible on the upstream face of the dam but covered on the downstream side. A small pumping station is proposed at the bottom of the downstream bank of the dam wall, near the stilling basin.
- **Works to Draw-off Tower:** Various works are proposed to the draw-off tower and the tunnel below the dam but these would mostly be contained within the existing structures.

### **New Water Treatment Plant**

4.3 The development of the new water treatment plant would comprise the following main works:

- **Construction of New WTP:** It is proposed to build a new water treatment complex including a treatment building (area 4670m<sup>2</sup>, 93m long by 52m wide, and 11.8m tall), sludge plant and settling tanks (up to 12.5m in height), in the field to the west of the existing water treatment works. The structures would be located in a hard standing in a cutting up to 4m below the existing ground level of the field. An access road to the plant is proposed from an existing gate in the north west corner of the field, off the R764 near the western end of the dam wall.
- **Decommissioning of Existing WTP:** The existing water treatment works, including the 16 no. open filter beds, would be decommissioned upon completion of the new WTP. It is proposed that the original seven filter beds (no.s 1-7), two freshwater tanks (no.s 15 and 16) and the stilling basin be retained and kept full of water. Should the retention of the beds full of water prove impractical after a period due to excessive/unsustainable maintenance requirements, they would be filled with earth and grassed. The original layout and structure of the water works would thus be retained, but the water removed. It is proposed that the seven southern-most filter beds (no.s 8-14) – constructed in two phases of extension to the original layout - will be removed and the area used for permanent storage of earth.
- **Permanent Earth Storage:** There is a requirement to permanently store up to 45,000m<sup>3</sup> of earth within the water works complex following the development. This surplus earth will be generated by excavation for the new WTP, as well as excavation of the spillway channel and new pumping station (see below). The earth would be formed into a large, designed mound (see Section 5 below) occupying the area of filter beds no. 8-14 in the southern part of the site. The earth mound presented on Drawing no. 20586-PP-C1-40 (Appendix 1) and illustrated in the photomontage PM\_C (Appendix 2) shows the maximum potential height (i.e. 45,000m<sup>3</sup> of earth). The final design/height will be determined by the actual volume of excavated material required to be stored.
- **Construction Compound and Temporary Earth Storage:** There is a requirement for the earth to be stored off-site for the period of construction of the proposed works. A field nearby to the north east of the site has been identified for this purpose. It would also accommodate the contractor's compound including temporary offices in prefabricated structures, vehicle and

equipment storage, etc. The triangular field is located in the corner at the junction of the R764 and the L5061, east of the dam wall, between the roads and the reservoir which lies to the north and west. The temporary earth mound in this field would be up to 5m high.

### ***New Pumping Station***

- 4.4 A new pumping station is proposed in the south eastern part of the water works scheme, at the existing outlet from the Vartry site, in the steeply sloping wooded area east of the spillway. The building and access/hard standing area, including a bridge over the spillway, would be located in a cutting in the slope.

## **5.0 Proposed Mitigation Measures for Landscape and Visual Effects**

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- 5.1 A proposed landscape mitigation plan has been prepared in parallel with the LVIA process. An A3 version of the plan (Title: Site Landscaping Sheet 1, Drawing no. 20586-PP-C1-40) is included in Appendix 1 of this report, and submitted separately with the planning application at a scale of 1:500 on A1. The proposed landscape mitigation measures seek to address two key elements of the proposed development, namely the new WTP, and the permanent earth storage.

### ***New Water Treatment Plant***

- 5.2 The field the site of the proposed WTP is already enclosed on all sides by mature vegetation, a row of conifer trees along the east boundary and a belt of woodland species along the north and west boundaries. It is proposed to (a) retain and protect this vegetation during construction, and (b) supplement this vegetation with new woodland planting, infilling gaps where they exist between the existing trees and widening the belts considerably.

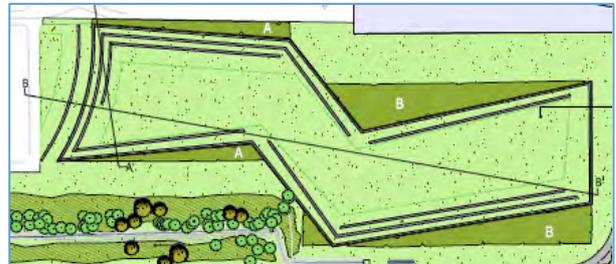
- ***Protection of existing vegetation:*** It is proposed that a solid hoarding 2m in height be erected inside (site-side) of the identified root protection zone of the belt of woodland inside the west and north boundaries of the field. The root protection zone should be identified by a qualified arborist and the erection of the hoarding supervised by the arborist.
- ***Supplementary woodland planting:*** It is proposed that the existing woodland belts and the treeline be supplemented with targeted infill planting of woodland species (favouring the existing predominant species, i.e. beech and Scots pine) to enhance these existing landscape features. It is further proposed that the belts of vegetation be broadened into the site to effectively surround the water treatment plant with woodland – completely screening the new WTP and also improving biodiversity, habitat connectivity and a range of associated ecosystem services. The proposed species mix includes shrubs and trees, evergreen and deciduous species. All are native or naturalised species.

- 5.3 The proposed WTP building has been architecturally designed to minimise its presence in the landscape. The mass of the building - which is substantial at 93m in length, 52m wide and nearly 12m

high - is visually broken up by vertical divisions/recesses in the elevations. The modular units formed by the recesses are variously coloured grey, green or brown. The colours of the cladding are intended to blend into the surrounding vegetation (existing and proposed). The roof has a low pitch, limiting the overall height of the building to 11.8m despite the wide span.

**Permanent Earth Storage**

5.4 The proposed permanent earth storage mound has been designed with consideration of its potential visibility and visual effects, and the context landscape which is complex.



- The mound occupies an area made up of two rectangles end-to-end and offset (the area of the two extensions of the original array of filter beds).
- The rhomboid shaped mound sits within this area, part enclosed by (therefore appearing to rise out of) strips of planting.
- The northern edge of the mound, which presents to the historic water treatment complex, the dam wall and R764 (and associated visual receptors) is curved at its base. The concave curve in the mound responds to the curve in the base of the dam wall around the stilling basin, which is also reflected in the alignment of the road that leads to the chemical treatment building adjacent to the mound.
- The northern face of the mound rises steeply at a gradient that is intended to reflect the steep slope of the dam wall.
- By contrast the southern face of the mound which presents to the surrounding countryside is gently sloped, deliberately undramatic.
- At the base and across the faces of the mound there are bands of gabions filled with rocks. These are intended to reinforce the structure of the mound and its distinctive form.
- The strips of planting alongside west and east faces of the mound are deliberately sculptural in their plan form and their species selection. They are intended



to soften the form of the mound and diminish its visual presence in time, but also to interpret the geometry of the historic waterworks landscape (more so than the planting around the new WTP, which is intended primarily for screening and to provide habitat).

Note, the section elevation above indicates the maximum height of the proposed mound (i.e. 45,000m<sup>3</sup> of earth). The final design/height will be determined by the actual volume of excavated material.

## 6.0 Potential Landscape Effects

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6.1 The assessment of potential landscape effects considers the sensitivity of the landscape resource and the magnitude of landscape change which would result from the development.

### ***Landscape Sensitivity***

6.2 Landscape sensitivity is a function of its land use, landscape patterns and scale, visual enclosure and distribution of visual receptors, scope for mitigation, and the value placed on the landscape (which might be indicated by landscape policy). The following characteristics of the site and environs are relevant:

- The site is an existing water treatment complex, and the site landscape is entirely a product of the water scheme.
- The scheme was constructed in the latter half of the 19<sup>th</sup> century and retains numerous elements from its original design and construction. However the site is an operational utility complex in the 21<sup>st</sup> century, and has been modernised over time including by the modification of old structures and the addition of new structures;
- The component elements of the landscape of Vartry and surrounds are of widely varying form and scale, from the expanse of the reservoir and surrounding hills, to the industrial scale and forms of the dam wall and water treatment works, to fields ranging from small to large;
- The site is enclosed and internally divided by belts of mature trees which were planted as part of the original water works scheme, and this vegetation generates a high degree of visual enclosure;
- Due to a number of factors including the topography of the site and surrounds, and the rural location, the number of potential visual receptors to the development is limited;
- The site falls into the 'Northern Mountain Lowlands' 'Area of Special Amenity'. This classification is third in the hierarchy of six categories of landscape vulnerability in the County Wicklow.

6.3 In summary, the landscape sensitivity to the change proposed can be considered medium (GLVIA definition: exhibits positive character but has evidence of alteration to/degradation/erosion of elements and characteristics resulting in an area of mixed character, therefore potentially sensitive to change in general).

### ***Magnitude of Landscape Change***

6.4 Magnitude of landscape change is a measure of the degree of change to the elements and characteristics of the landscape. The proposed development is comprised of several distinct areas/elements of works, of various nature, scale and location within the existing water treatment scheme, and with different potential to cause landscape change.

- ***Spillway Channel:*** The regrading of the 170m long spillway channel would include the removal of a disused and unsightly toilet block beside the R764 and the creation of a ramp into the spillway to gain access. The bed of the spillway would then be deepened and graded. There would be localised loss of vegetation associated with the removal of the toilet block and creation of the

access ramp, but the majority of the vegetation along the length of the spillway banks would be unaffected. These works would cause a high magnitude of change to the directly affected landscape during construction (a small area, considered at landscape scale) and a low magnitude of change after construction and restoration of the affected landscape. Visual receptors to the change would be limited to users of the R764 in the immediate vicinity of the spillway, and views of the works would be fleeting. The loss of a small number of trees from the roadside area would be balanced by the removal the derelict toilet block, which is a detractor in the landscape.

- **Siphon:** The siphon pipes would be visible on the upstream face of the dam but covered on the downstream side. Their presence in the landscape and their prominence in views would be limited, and the introduction of pipes (only a small part of which may be visible) to a dam wall at a water treatment complex can be considered a negligible change. The new pumping station located at the bottom of the dam wall would be located near the stilling basin and close to two existing buildings of similar scale. Within the extensive and complex landscape of the scheme, the introduction of this building would constitute a low magnitude of change. Visual receptors of the change would be limited to users of the R764 along a short stretch, and any views of the building would be fleeting.
- **Works to Draw-off Tower:** The works proposed to the draw-off tower and the tunnel below the dam would largely be contained within the existing structures. No significant landscape or visual effects would remain after the construction period.
- **New Water Treatment Plant:** The WTP would fit into a single field, with no alteration of the boundaries of the field and limited loss of vegetation (only the single row of trees within the field is proposed to be removed). The topography of the field would be altered (cut) in order for the plant to function hydraulically, also having the effect of lowering the structures in the landscape thus minimising their protrusion/visual presence. The field itself would be changed permanently by the introduction of the large building and associated infrastructure. The effects would be limited to the field however, and the field is an integral and functioning part of the existing water treatment scheme/landscape. Therefore the landscape change resulting from the WTP during construction and operation can be considered low.
- **Decommissioning of Existing Plant:** It is proposed to retain the original filter beds no. 1-7 and the freshwater tanks (no.s 15 and 16) full of water although no longer functioning as filters. Should this prove impractical due to excessive maintenance requirements, these filter beds will be filled with earth and grassed over. While this would have no effect on the spatial pattern and structure of the original array of filter beds, the distinctive and attractive water element would be removed from the landscape of the water treatment complex. The character of the landscape would be altered and the change would be appreciable from the R764 for a significant stretch of the dam wall. The magnitude of change can be considered medium.
- **Permanent Earth Storage:** The new permanent earth mound, constructed in the area currently occupied by filter beds 8-14, would significantly alter the landscape pattern and the topography of the water treatment complex. The mound would be visually exposed to the R764 along the dam wall. The landscape change arising from this element of the works would be medium.

- **Construction Compound and Temporary Earth Storage:** These works would be located outside of the existing water treatment scheme, and exposed to the adjacent R764 and L5061 which along the affected stretch are designated a 'prospect of special amenity value' in the Wicklow County Development Plan. The large earth mound, as well as prefabricated structures, vehicles and movements of vehicles, are inherently unsightly in a rural context. They would be located between the road and the reservoir, obstructing the view of the reservoir along the affected stretch. For the period of their presence these works would constitute a high magnitude of change to the directly affected landscape, and a high magnitude of change to views locally. The effects would be adverse. The effects would be temporary however and after completion of construction and restoration of the landscape there would be no residual effects.
- **New Pumping Station:** The new pumping station is proposed to be located at the existing outlet from the Vartry site, in the steeply sloping wooded area east of the spillway. The building and access/hard standing area, including a bridge over the spillway, would be located in a cutting into the slope. The development would be screened to north, east and south by the enclosing topography and woodland; it would be visible only from within the scheme. Therefore the magnitude of change, at a landscape scale, can be considered low.

6.5 In summary, the proposed works would collectively result in a high magnitude of change during the construction period. After construction several of the lesser works (the reservoir dam works and the new pumping station) would result in a low to negligible change in the landscape. The WTP itself would result in limited change (low magnitude). The greatest change would result from the possible grassing over of the retained filter beds should their maintenance full of water prove impractical, as well as the removal of filter beds no. 8-14 and the installation of the earth mound in their place. Overall the change to the landscape can be considered of medium magnitude.

#### ***Significance of Potential Landscape Effects***

6.6 Considering the sensitivity of the landscape and the magnitude of change proposed, the significance of the potential landscape effects can be classified as medium. The changes would take place in and be confined to the landscape of a functioning water utility, although that landscape does have cultural historic and visual amenity value. The effects could be considered neutral if the retained filter beds are maintained full of water. If the water is removed the overall effects on the landscape would be adverse.

## **7.0 Potential Visual Effects**

7.1 The assessment of a development's potential effect on views and visual amenity involves assessment of a number of viewpoints selected to represent key visual receptors in the receiving environment. Based on the analysis of the receiving environment and potential visual receptors above (paragraphs 3.12 – 3.18) four viewpoints were selected for detailed visual impact assessment informed by photomontages of the proposed development (refer to Appendix 2).

7.2 In the assessments below, for each viewpoint the existing view is described identifying its key elements and characteristics; the sensitivity of the view is discussed; the proposed change to the view is described (with reference to the photomontages); and a conclusion is drawn as to the significance of the potential visual effects.

7.3 **Viewpoint A: L5061 Local Road and Protected Prospect (Refer to PM\_A, Appendix 2)**

- **Existing View:** In the view west from the road the open water of the reservoir extends into the middle distance, fringed with woodland. There are rolling hills around the lake and mountains in the distance. To the left of the field of view the dam wall can be seen above the water line, with the bridge to the draw-off tower projecting into the water.
- **Viewpoint Sensitivity:** The viewpoint represents a prospect of special amenity value. The viewpoint sensitivity is high.
- **Proposed Change:** The proposed works, except for those to the draw-off tower) would be hidden behind the dam wall. There would be negligible change to the view.
- **Summary:** No significant effect.

7.4 **Viewpoint B and C: R764 on the Vartry Dam Wall (Refer to PM\_B and PM\_C, Appendix 2)**

- **Existing View:** In the view south from the R764 (on the dam wall) the grassed embankment falls away steeply in the foreground to the edge of the water treatment complex. The grid of rectangular filter beds extends into the distance, interspersed with buildings (of various form and scale) and other infrastructure, and enclosed by tall, dense banks of vegetation on both sides. The reflection of the sky and vegetation in the surface of the filter beds is an attractive feature of the view. Rolling hills form the distant horizon to the south. The site of the proposed new WTP is obscured by the vegetation on the east site boundary, which forms part of the bank of vegetation enclosing the existing water works. The landscape of the scheme presents an interesting and attractive scene viewed from the road; however the eye is also drawn to the view north across the road (away from the site) - to the open water of the reservoir, the surrounding hills and the distant mountains.
- **Viewpoint Sensitivity:** The viewpoint represents a prospect of special amenity value. The viewpoint sensitivity is high.
- **Proposed Change:**
  - The location of the proposed WTP is peripheral to the focal point in the view, namely the array of filter beds. The plant would be largely screened by the retained vegetation on the east boundary of the field, limiting its visual effect. The proposed new woodland planting to supplement the retained vegetation would in time completely screen the plant.
  - If the original filter beds no. 1-7, the freshwater tanks and the stilling basin are maintained full of water the composition and character of the view would be largely retained. If they were grassed over the character of the view would be adversely altered, although the layout and structure of the filter beds would be retained.

- The new earth mound would be visible beyond the retained filter beds, in the middle distance, occupying the area of filter beds 8-14 (the later extensions to the array). This would appear as a semi-structured grass mound with bands of stone-filled gabions across the face, and strips of planting along the sides.

The cumulative changes to the landscape would result in a low or medium magnitude of change to the view, depending on whether or not the water is retained in filter beds no. 1-7, 15 and 16.

- **Summary:** No detracting element would be introduced to the landscape in the view from the dam wall. The new WTP would be hidden and the earth mound although visible in the middle distance would not be unsightly. The composition and character of the view would only be adversely affected if the water is removed from the filter beds nearest to the dam. The significance of the visual effects would be medium and neutral if the water is retained, and medium adverse if the filter beds are grassed over in the future.

#### 7.5 **Viewpoint D: House to West of Site (Refer to PM\_D, Appendix 2)**

- **Existing View:** An access road runs south from the R764 outside the west boundary of the WTP site giving access to a house in the adjacent field, then turning west to give access to one other house and a farm further west. The WTP site lies immediately to the east of the house (the subject of this viewpoint assessment). In views east from the house (and the domestic environment, i.e. the garden and access road, etc.) the belt of woodland inside the west site boundary – marked by a low stone wall - is the dominant feature. It largely hides the remainder of the Vartry site from view. In views south from the house (including the views from within the house, which orientates north-south), the belt of woodland frames a view of rolling fields divided by hedgerows, with a forest-covered hill forming the horizon.
- **Viewpoint Sensitivity:** Representing a domestic location, the viewpoint sensitivity is high.
- **Proposed Change:** During the construction period the activity, materials and machinery on the WTP site would be partially visible through the retained woodland vegetation. This would constitute a medium magnitude of change. On completion, the proposed building and plant would initially be partially visible through the trees, protruding above the edge of the cut. As the proposed supplementary woodland planting inside the west boundary matures the plant would be completely screened, at which stage the change would be negligible.
- **Summary:** With the proposed mitigation measures implemented, the significance of the visual effects at this location would be medium and adverse during construction, and low and neutral in the medium term as the new vegetation matures.

#### 7.6 **Viewpoint E: Local Road at Farm Entrance South East of Site (Refer to PM\_E, Appendix 2)**

- **Existing View:** In the view from a farm entrance off the local road to the south east of the site (the most visually exposed location south of the site), the foreground is occupied by small fields divided by fences, hedgerows and treelines. An undulating landscape of grassland fields and scrub extends into the middle distance. The existing water works complex can be identified by

the large patch of mature conifer trees which merges with a belt of woody vegetation across the secondary (middle distant) horizon. The Wicklow Mountains form an undulating distant horizon.

- **Viewpoint Sensitivity:** Representing a domestic (farm) location, the viewpoint sensitivity is high.
- **Proposed Change:** The proposed new WTP would not be visible; it would be screened by retained vegetation around the field. The proposed permanent earth storage mound in the southern part of the site would protrude marginally in the view, in the middle distance. The shallow slope of the southern face of the mound, and the proposed planting around the mound, would soften its presence in the view from this angle. The magnitude of change would be low to negligible.
- **Summary:** There would be no significant effect on the composition, character or quality of the view. The significance of the visual effects at this location would be low, and neutral.

## 8.0 Conclusions

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- 8.1 The site of the proposed development is an operational water treatment complex. The landscape of the site and environs was changed profoundly by the development of the water infrastructure in the mid 19<sup>th</sup> century, and the change continued through the 20<sup>th</sup> century with periodic modifications and additions to the infrastructure to keep up with the demand for water. The most valued features of the Vartry landscape, including the expanse of the reservoir, the array of filter beds, the diverse architectural features, the altered topography and the mature woodland, are all products of the process of development of the water scheme.
- 8.2 The proposed works are a continuation of this process, although the construction of new internal water treatment plant and the decommissioning of the old plant including the filter beds, would represent a significant departure from the landscape's evolution until now.
- 8.3 The internalisation of the water treatment system involves the introduction of a large building, tanks and associated infrastructure to the site. These elements are unavoidably industrial in appearance and scale, and are unsightly relative to the historic Victorian features. However the siting of the new WTP within the Vartry complex would minimise the adverse visual effect of the plant. Proposed mitigation measures including the architectural treatment of the building and extensive new screening vegetation to supplement existing trees would further limit its landscape and visual effects. The proposed WTP itself would have no significant adverse effects on the landscape or views beyond the short term.
- 8.4 The introduction of the sculpted earth mound to the area currently occupied by filter beds 8-14 would significantly alter the landscape pattern and the topography of the water treatment complex. However the mound has been sited within the complex to minimise its visibility from the surroundings, and designed to respond to key elements of the context landscape. It would change the composition of the

landscape and a limited number of views, but it is considered that it would have a neutral effect on landscape character and visual amenity.

- 8.5 It is currently proposed that after decommissioning, the original array of filter beds (no.s 1-7), the freshwater tanks (no.s 15 and 16) and the stilling basin will be retained and kept full of water. These water features at the base of the dam wall (refer to Plate 1, page 6) are collectively the defining element of the water treatment complex landscape. Their retention, as proposed, would maintain the character of the site, and its visual interest and amenity.
- 8.6 It is acknowledged by the applicant that the retention of these beds full of water may become impractical and unsustainable over time if excessive maintenance is required. In that case they would be filled with earth and grassed over. The removal of the open water element from the Vartry complex would change the character of the landscape locally, and adversely affect the view from the R764, the stretch of which over the dam wall is designated a 'prospect of special amenity value' in the Wicklow County Development Plan.
- 8.7 There would be adverse landscape and visual effects resulting from the proposed location of the contractor's compound and temporary earth storage area in a field to the north east of the site. The field is bordered on two sides by the R764 and the L5061 and the roads along the affected stretch are designated a 'prospect of special amenity value'. The contractor's compound and the earth mound would be unsightly themselves, and would obscure the reservoir in the view from the road adjacent to the field. The adverse effects on the landscape and visual amenity would be of high significance, locally, for the period of construction until the affected lands are restored to agricultural use.
- 8.8 In conclusion, the proposed development would result in some adverse landscape and visual effects in the locality of all works throughout the construction phase. Beyond the construction period the residual effects of the contractor's compound and the works to the reservoir dam and the pumping station would be minimal. The proposed new WTP, despite its scale and industrial nature, would have minimal landscape and visual effects. The associated permanent storage mound for earth excavated on site would also be an acceptable intervention in the already complex, functioning utility landscape. The potential for significant adverse effects on landscape and visual amenity arises from the prospect of grassing over the original array of filter beds, removing the water element from the landscape below the dam wall. This is not currently proposed, but the possible future requirement to do so exists. This scenario should be avoided if possible.

**Appendix 1** Proposed Landscape Mitigation Plan  
(Title: Site Landscaping Sheet 1, Drawing no. 20586-PP-C1-40)



PLANTING SCHEDULE			
<b>Individual Tree Mix</b>			
%	Plant Name	Ht/Spread/Girth	Density
40	Quercus petraea	2.5 - 3.0m 14-16m	As shown
30	Fraxinus excelsior	2.5 - 3.0m 14-16m	As shown
20	Fagus sylvatica	2.5 - 3.0m 14-16m	As shown
5	Quercus ilex	2.5 - 3.0m 14-16m	As shown
5	Pinus sylvestris	2.0 - 2.5cm RB	As shown
<b>Screening Mix - Trees*</b>			
%	Plant Name	Ht/Spread/Girth	Density
5	Alnus glutinosa	1.5-1.8m ht	3m centres
10	Betula pendula	1.5-1.8m ht	3m centres
10	Fraxinus excelsior	1.5-1.8m ht	3m centres
5	Larix decidua	60-90cm c.g	3m centres
25	Quercus petraea	1.5-1.8m ht	3m centres
20	Fagus sylvatica	1.5-1.8m ht	3m centres
5	Picea abies	60-90cm c.g	3m centres
20	Pinus sylvestris	60-90cm c.g	3m centres
* planted at 3m centres in random drifts of 5-25no.			
<b>Screening Mix - Woodland shrubs*</b>			
%	Plant Name	Ht/Spread/Girth	Density
15	Corylus avellana	60 - 90cm	1m centres
10	Cornus sanguinea	60 - 90cm	1m centres
30	Crataegus monogyna	60 - 90cm	1m centres
10	Prunus spinosa	60 - 90cm	1m centres
5	Acer campestre	60 - 90cm	1m centres
5	Euonymus europaeus	60 - 90cm	1m centres
10	Viburnum opulus	60 - 90cm	1m centres
15	Ilex aquifolium	45 - 60cm	1m centres
* planted at 1m centres in random drifts of 5-55no.			
<b>Sculptural Tree Block A</b>			
40	Thuja plicata	60 - 90 cm	2m centres
60	Larix decidua	60 - 90 cm	2m centres
<b>Sculptural Tree Block B</b>			
100	Fagus sylvatica	60 - 90 cm	2m centres

REV	DATE	DESCRIPTION	D	C	A

**PLANNING**

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O.S. MAP 3904

**LEGEND**

- EXISTING TREES
- INDIVIDUAL TREE MIX
- SCREENING MIX
- SCULPTURAL TREE BLOCKS MIX A & MIX B
- EXISTING & NEW MEADOW/GRASSY AREAS INCORPORATING MIXED FLORA
- GABION RETAINING WALLS

**GENERAL NOTES**

- All landscaping shall be planted in accordance with the planning drawings.
- All landscaping will be implemented in accordance with the specification documents.
- All landscaping will be carried out by a competent landscape contractor and in accordance with the BS3936.
- Topsail will be supplied in accordance BS3882. All trees will be planted in to a 90cm<sup>3</sup> of topsail.
- Trees sizes will be as scheduled.
- Soft landscaping will be implemented no later than the first planting season after completion of each stage of construction.
- Following the completion of all construction works, a 3 year management plan is to be prepared to ensure the longevity of the existing and newly planted landscape. The landscaping will be maintained by the contractor for a minimum 12 months defects liability period, and thereafter for 12 month running periods.

**CLIENT**  
IRISH WATER

**PROJECT**  
VARTRY WATER SUPPLY PROJECT  
WATER TREATMENT PLANT UPGRADE

**TITLE**  
SITE LANDSCAPING  
SHEET 1

SCALES	DRAWN	CHECKED	APPROVED
1:500 @A1 1:1000 @A3	A.M	K.Gallagher	J.Oliver
	DATE	DATE	DATE
	15-03-16	15-03-16	15-03-16

DRAWING NO. 20586-PP-C1-40

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## **Appendix 2** Photomontages for Viewpoints A-E, prepared by D3D Ltd



Name	Camera Locations	<b>IRISH WATER</b>	
Status	N/A		
Scale	Not to Scale		
<b>Vartry Water Supply Project</b>		Rev: 0	



Name	PM_A
Status	Existing
Reference:	
<b>Vартy Water Supply Project</b>	
Rev:	0

**IRISH WATER**





Name	PM_A
Status	Proposed
Reference:	
<b>Vарту Water Supply Project</b>	
Rev:	0

**IRISH WATER**





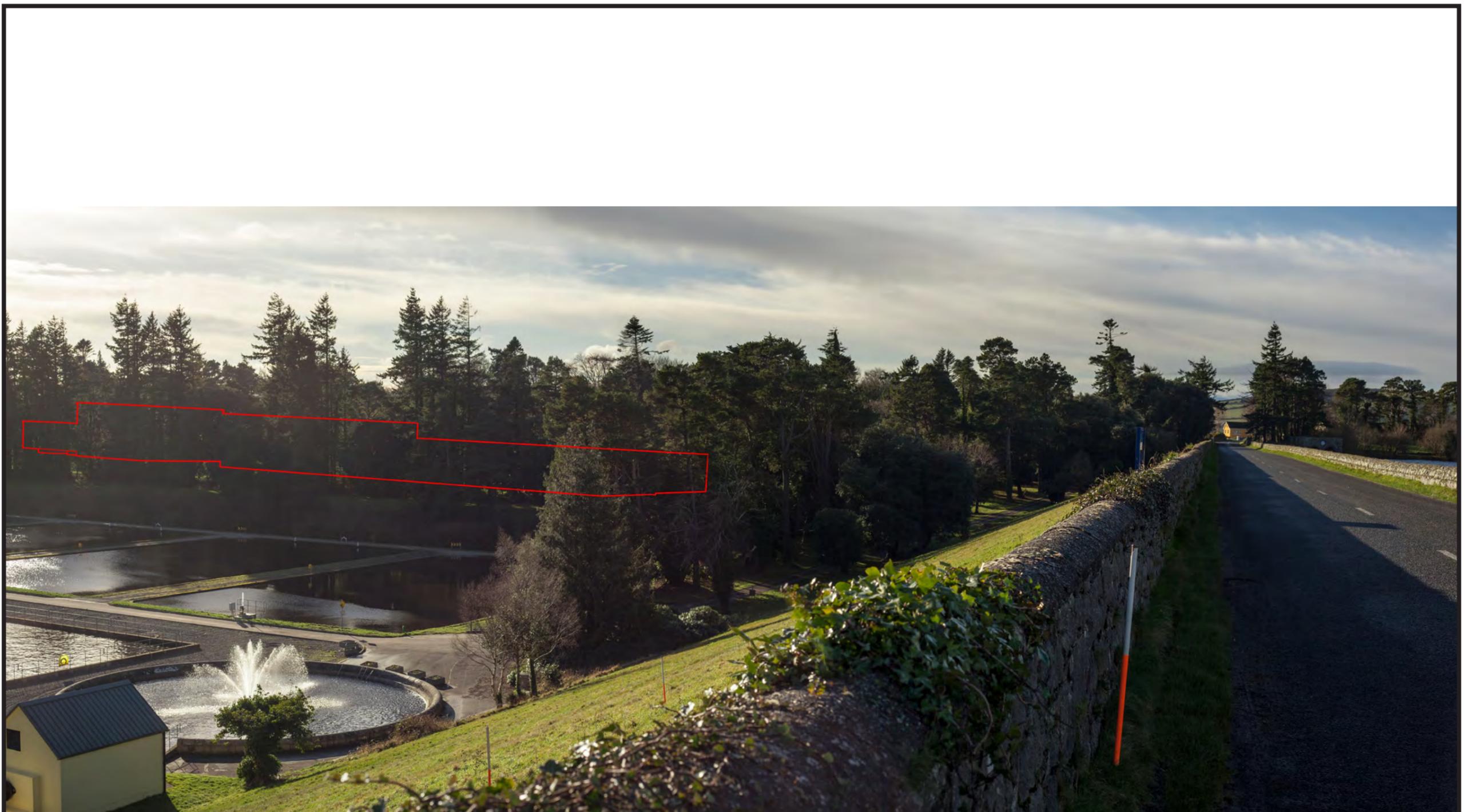
Name	PM_B
Status	Existing
Reference:	
<b>Vartry Water Supply Project</b>	
Rev:	0

**IRISH WATER**

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Geo Surveying |  
Aerial Mapping |  
Computer Modelling |



Name	PM_B
Status	Proposed
Reference:	
<b>Vartry Water Supply Project</b>	
Rev:	0

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Aerial Mapping |  
Computer Modelling |



Name	PM_C
Status	Existing
Reference:	
<b>Vartry Water Supply Project</b>	
Rev:	0

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Aerial Mapping |  
Computer Modelling |



Name PM\_C  
Status Proposed  
Reference:

**Varry Water Supply Project**

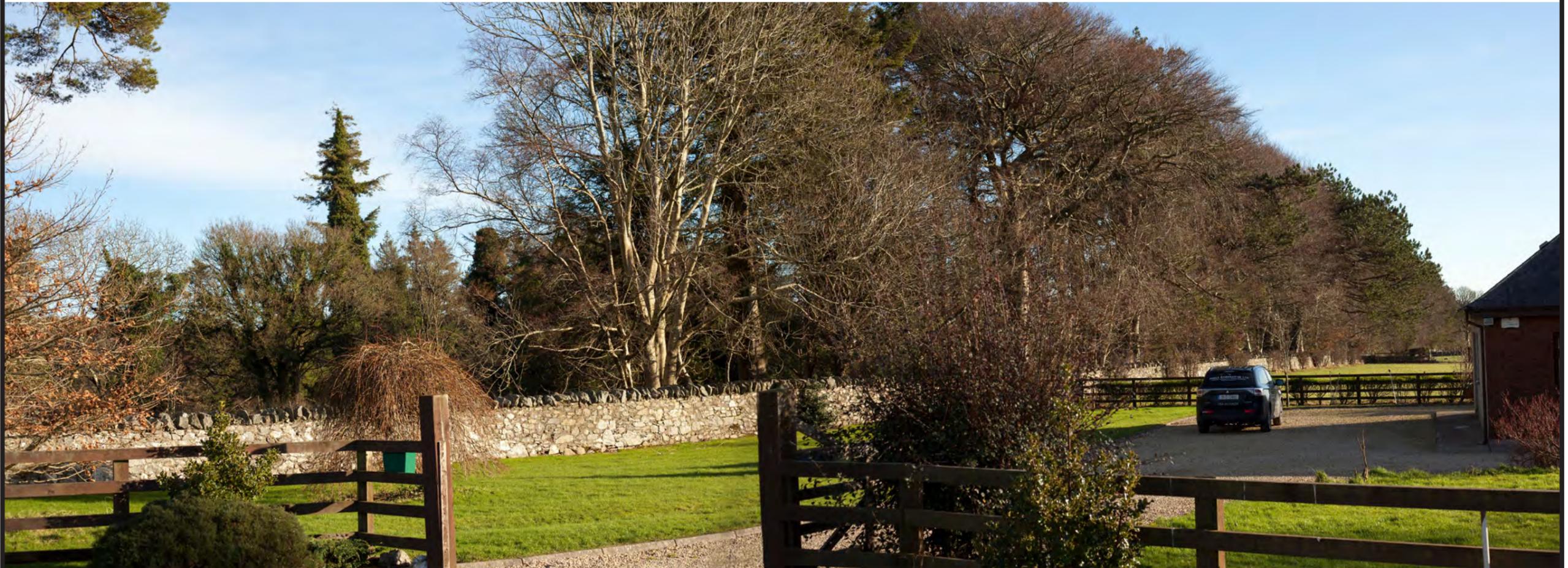
Rev:  
**0**

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Aerial Mapping |  
Computer Modelling |



Name PM\_D  
Status Existing  
Reference:

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Name	PM_D
Status	Proposed
Reference:	
<b>Vatry Water Supply Project</b>	
Rev:	0

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Status Existing  
Reference:

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Name PM\_E  
Status Proposed  
Reference:

**Vatry Water Supply Project**

Rev:  
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