

Llwyn Onn Replacement Reservoirs and Replacement Pumping Station

Design and Access Statement

Prepared on behalf of Dee Valley Water

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Rev	Date	Details	Prepared by	Checked by	Approved by
01	29/09/2016	Design and Access Statement	Laura Michael Ian Turkington	Una Somerville	Una Somerville

AECOM
Beechill House
Beechill Road
BELFAST
BT8 7RP

Telephone: +44(0)28 9070 5111

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1. INTRODUCTION

The requirement for a Design and Access Statement (DAS) arises from The Town and Country Planning (Development Management Procedure) (Wales) Order 2012 (as amended), which states that a Design and Access Statement is required for developments which are considered “major” developments. This proposal falls within the major threshold as it comprises more than 1 hectare of land.

The DAS has been prepared in line with the Welsh Government’s Guidance Note on ‘Design and Access Statements’ and has followed the recommended process in its production. It aims to concisely explain the design rationale, site constraints and how access has been achieved.

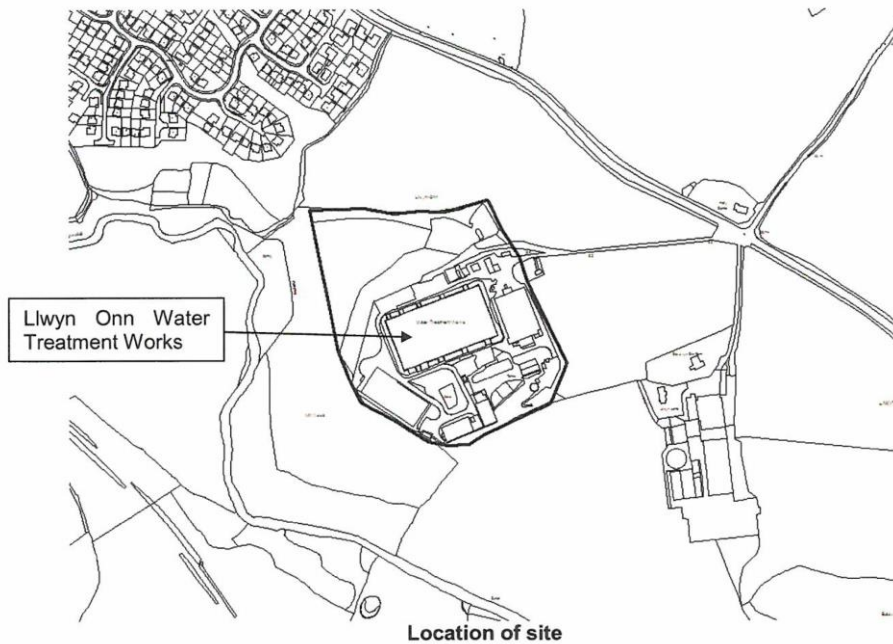


Fig 1.1 Existing site layout

2. SITE ANALYSIS

Llwyn Onn Water Treatment Works was commissioned in September 2013, replacing the old treatment works substantially modified since its original construction in the 1940's to supply a munitions factory. With a capacity of 47.5 Ml/d, Llwyn Onn is Dee Valley Water's main water treatment works, supplying water to Wrexham and the surrounding area. The potable output from the works is currently stored in an 18 Ml reinforced concrete service reservoir. Water is super-chlorinated and lime dosed before entering the reservoir, and dechlorinated with sulphur dioxide and dosed with orthophosphate prior to entering the water distribution system.

Dee Valley Water are under Notice from Welsh Government [Notice under Regulation 29(4) of the Water Supply (Water Quality) Regulations 2010 , Drinking Water Inspectorate Notice Reference DVW 3373] to replace the existing reservoir with a new facility.

The existing reservoir presents a risk of both structural and functional failure; the reservoir's structural condition now requires intervention if it is to continue to serve its water storage function, whilst the reservoir also presents the greatest water quality risk of all Dee Valley Water's stock of service reservoirs owing to the potential for resuspension of deposits within the reservoir arising from abnormal operations. The rationale for the replacement is therefore clear.

Llwyn Onn Water Treatment Works is located approximately 1.5 miles to the south east of Wrexham town centre, off the Cefn Road. The site elevation is approximately 72m AOD (Above Ordnance Datum).

The site is surrounded in the immediate vicinity by woodlands and open farmland and pasture. There are no public footpaths within or in the immediate area of the site. There is currently one access point to the north of the site; entrance to the reservoirs is via the main gate, with an access road to other service buildings within the perimeter fencing (see Fig 2.1).

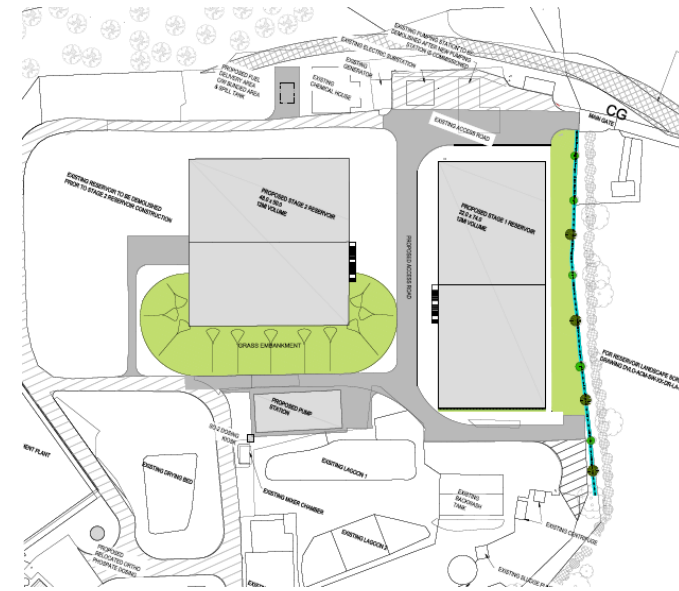


Fig 2.1 Site Location Map of Proposed Works

Proposed works

The works will be constructed within the existing Llwyn Onn site boundary and will comprise:

- Relocation of the orthophosphate dosing point to the outlet from the second stage filters.
- Replacement of the 18Ml storage reservoir with new enlarged storage facilities, two separate service reservoirs; each one approx. 12Ml, the reservoirs are at 72AOD ground level on average; Alterations to the post-contact tank post-lime dosing chamber pipework connection to the existing storage reservoir to suit the new reservoir inlet arrangements, and provision of all necessary pipework to and between the new reservoir compartments;
- Construction of a new pumping station to accommodate the replacement pumps serving the Wrexham and Cinders

distribution systems, together with new pumps to deliver potable water from Llwyn Onn to Bronwylfa Service Reservoir.

- MCC and system controls for the new pumping station and all associated mechanical and electrical works;
- Provision of outlet pipework from the new reservoir compartments to service the new pumping station and to tie into the existing gravity distribution supply, together with sampling and dosing points;
- Connection from the pumping station outlets to the existing distribution pumped mains and to the new Bronwylfa pumping main; Demolition of the existing reservoir once sufficient replacement storage capacity has been provided, to permit construction of a new reservoir/s on the same footprint;
- Demolition of the current pumping station on completion of the new facility.

In summary the proposal is to replace the existing reservoir and associated infrastructure with new state of the art facilities.

3. CONTEXT ANALYSIS

The existing site is 5.2ha hectares in its full extent and has been operating as a reservoir and associated treatment works for over 75 years. The proposed area of development within the site is approx. 2ha.

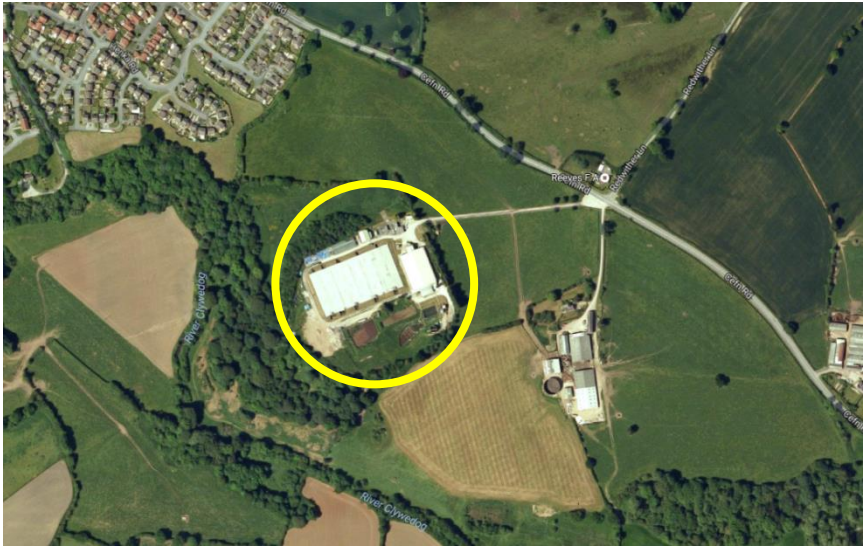


Fig 3.1 Aerial image showing site location

The site is located outside of the local town boundary, and within a designated 'green barrier' area (see Section 4). It is not bounded by existing houses or other development, however, there is a nearby residential area on the edge of town situated along the Cefn Road to the north west of the site, as well as an individual rural property and a local farm to the east and south east of the site (see Fig 3.1 above). The site is adjacent to a large Special Landscape Area known as Mill Wood.

The site is identified in Wrexham's LANDMAP Special Guidance as being within the Welsh Maelor Landscape Character Area 13a. This area is particularly valuable for nature conservation and informal recreation. In visual terms, the area is typified by undulating estate farmland and trees, with designed parks and gardens and a general abundance of hedgerows and hedgerow trees. Buildings are generally traditional red brick farmsteads, with many barns now converted to residential uses. The

landscape quality of the area is also affected by the A483 and pylons to the west.

It is anticipated that local community consultation will include those in the vicinity of the development such as local farmers particularly the farmhouse and associated buildings located to the south east approx. 160 m away and other neighbouring residential properties on the outskirts of Wrexham Town and through established networks or community fora.

4. POLICY CONTEXT

The aim of this section is to provide an overview of the development within the statutory planning context, considering national, regional and local design policy, and including relevant supplementary planning guidance.

WREXHAM UNITARY DEVELOPMENT PLAN 1996-2011

The Wrexham UDP is the main point of reference for relevant local area policy for the proposed development, which falls within its jurisdiction. It seeks to provide a framework for local decision making and the reconciliation of development and conservation interests in order that land use changes proceed coherently and with maximum community benefit. Relevant policies that have been taken into consideration in this application are included in the following section. As Fig 4.1 illustrates, the site is located within the Green Barrier, which relates to Policy EC1. The site is also located close to but outwith a Development and Flood Risk Area, however, the site is also on elevated ground and should not be at risk of flooding.

The relevant policies relating to the proposed development are as follows:

Policy PS2

Development must not materially detrimentally affect countryside landscape/townscape character, open space, or the quality of the natural environment.

Policy GDP1

All new development should:-

a) Ensure that built development in its scale, design and layout, and in its use of materials and landscaping, accords with the character of the site and makes a positive contribution to the appearance of the nearby locality. *The proposal is a replacement and an upgrade of existing facilities.*

b) Take account of personal and community safety and security in the design and layout of development and public / private spaces. *There is no public access to the facility.*

c) Make the best use of design techniques, siting and orientation in order to conserve energy and water resources. *It is a replacement proposal making best use of the existing site constraints and opportunities.*

d) Ensure safe and convenient pedestrian and vehicular access to and from development sites, both on site and in the nearby locality. *There is no public access to the facility, authorised personnel only will be accessing the site.*

e) Ensure that built development is located where it has convenient access to public transport facilities, and is well related to pedestrian and cycle routes wherever possible. *There is no public access to the facility.*

f) Ensure the safety and amenity of the public and safeguard the environment from the adverse effects of pollution of water, land or air, hazards from industry and quarrying, and associated noise, odour or vibration arising from development. *No EIA is required as noted in March 2016 Council Opinion. As a replacement proposal there is the betterment to the general population in the form of improved water quality that will arise from the upgrading of the existing facilities.*

g) Secure public services (e.g. gas, water, electricity) to development at minimum public cost. *Existing services are already available at the site.*

h) Safeguard sites and areas of nature conservation and wildlife interest, and to provide new habitats where there is an unavoidable loss of existing habitats and areas of wildlife interest. *No ecological impact is anticipated that would cause harm.*

i) Ensure that development does not result in, or is subject to, flooding, soil erosion, landslides or contamination, either on or off the site. *None anticipated.*

j) Have regard to the need to safeguard those areas that possess a strong Welsh cultural and/or linguistic identity from development that

could harm this identity. *Not a relevant criterion in this instance as it's an upgrade of an existing facility.*

k) Secure the development of sustainable communities, through the promotion of the economic, social and environmental well-being of the area. *The very upgrade itself of the existing facilities will achieve this.*

Policy EC1

Within Green Barriers, development will only be granted planning permission if it is for agriculture, forestry, essential facilities for outdoor sport and recreation, cemeteries and other uses of land which maintain the openness of the Green Barrier and do not conflict with the purpose of including land within it. The proposal is not in conflict with this policy as it's a replacement and upgrade.

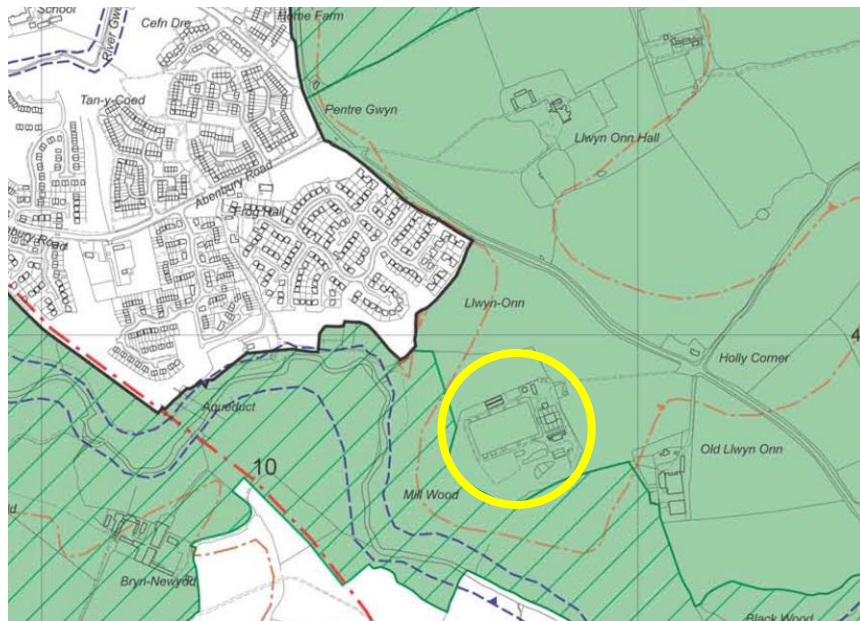


Fig. 4.1 – Land zoning map from UDP (site location highlighted in yellow)

	Settlement Limit / Ffin Anheddiad - PS1
	District Shopping Centre / Canolfan Siopa Cylch - S5
	Employment / Gwaith - E1, E2, E7
	Commercial Offices / Swyddfeydd Masnachol - E7
	Green Barrier / Ffin Gwyrdd - EC1
	Special Landscape Area / Ardal Tirlun Arbennig - EC5
	Biodiversity Conservation / Cadwraeth Bioamrywiaeth - EC6
	Conservation Area / Ardal Cadwraeth - EC7, EC8
	Development and Flood Risk / Datblygiad a Perygl Llif - EC12
	Community and Leisure Facilities / Cyfleusterau Cymunedol ac Adoliant - CLF2
	Housing / Tai - H1
	Mixed Use and Regeneration Areas / Ardaloedd Defnydd Cymysg ac Adfywio - H14
	Walking/Cycling Route / Llwybr Cerdded/Beicio - T10
	Protection of Mineral Resources / Diogelu Adnoddau Mwynau - MW9
	Minerals Buffer Zone / Cylchfeydd Rhagod Mwynau - MW11

Policy EC4

Development proposals should provide for the conservation and management of hedgerows, trees, orchards, woodland, wildlife and other natural landscape and water features, and include new planting in order to enhance the character of the landscape and townscape. Development which results in the loss or significant damage to valuable trees, important hedgerows or ancient woodland sites will not be permitted. A landscape plan has been provided showing retention and supplementary planting as required.

Policy EC6

Development either within or close to sites of biodiversity interest will only be permitted where it can be clearly demonstrated that the need for the development outweighs the need to safeguard the intrinsic nature conservation value of the site. Where such development is permitted, damage should be kept to a minimum, and compensatory measures should be provided. Measures to improve the biodiversity value of sites and enhance their natural conservation interest and landscape quality including the establishment of local nature reserves, will be supported.

Planning Policy for Wales – Edition 8

Planning Policy Wales (PPW) sets out the land use planning policies for the Welsh Government on a wide range of issues and is supported by a number of Technical Advice Notes.

Chapter 12 of the PPW makes reference to Infrastructure and Services, including water supply, and has particular regard to sustainable development and climate change. The key objectives relating to the proposed development are:

- *to protect and improve water resources through increased efficiency and demand management of water, particularly in those areas where additional water resources may not be available;*
- *to ensure that appropriate sewerage facilities are provided to convey, treat and dispose of waste water in accordance with appropriate legislation and sustainability principles;*
- *to ensure that appropriate facilities are established to prevent/re-use, prepare for re-use, recycle, recover and, where necessary, safely dispose of waste, so as to meet the Welsh Government's objectives for waste management;*
- *to ensure that the vulnerability of infrastructure to severe weather events is minimised and that infrastructure is designed to cope with higher average temperatures and increasing risk of storm surges, drought and flooding.*

With regard to water infrastructure developments key paragraphs from the PPW are as follows:

12.2.1 In development plans and when considering development proposals local planning authorities should promote increased efficiency and demand management of water resources, particularly in those areas where additional water resources may not be available, taking into account the effects that a changing climate may have over the lifetime of development.

12.4.1 The adequacy of water supply and the sewage infrastructure are material in considering planning applications and appeals. The need to

balance the growing demand for water with the needs of the environment is crucial. Even where there is theoretical capacity, timely investment in infrastructure is required to ensure that new development does not adversely affect water supplies, water quality or sewerage. These issues require early identification when locating future development. Local planning authorities should therefore encourage the use of sites where existing water supply and/or drainage provision problems can be solved and seek to avoid the use of sites where adequate water supply and/or drainage provision is unlikely to be achieved.

Technical Advice Notes

The Planning Policy for Wales is supported by 23 Technical Advice Notes (TAN). The TANs relevant to the proposed development are discussed below.

TAN5: Nature Conservation and Planning

TAN 5 demonstrates how local planning authorities, developments and key stakeholders in conservation can work together to deliver more sustainable development with regard to the natural environment. The Llwyn Onn site, as previously stated, is located within a green barrier and the proposed development has regard to the environmental impact on the natural environs, with mitigation measures in place as discussed in Section 5. TAN 5 states that when deciding planning applications that may affect nature conservation, Local Planning Authorities should:

- *pay particular attention to the principles of sustainable development;*
- *contribute to the protection and improvement of the environment, seeking to avoid irreversible harmful effects on the natural environment;*
- *promote the conservation and enhancement of statutorily designated areas;*
- *ensure that appropriate weight is attached to designated sites of international, national and local importance;*
- *protect wildlife and natural features in the wider environment;*
- *ensure that all material considerations and adequate information are taken into account about the potential effects on nature conservation; and*

- *adopt a step-wise approach to avoid harm to nature conservation; through mitigation and compensation measures and look for new opportunities to enhance nature conservation.*

TAN12: Design

TAN 12 places an emphasis upon encouraging and giving guidance for both inclusive and sustainable design for those involved in development. It encourages a holistic approach to good design, centred on five key tenets: Movement, Access, Character, Community Safety and Environmental Sustainability. Given the nature of the proposed development, it will not be in public use; however these elements were of particular focus to varying degrees in the design stages of the project. Paragraph 5.12 of TAN12 gives specific reference to the design of buildings for employment, emphasising the *‘need to embrace high environmental standards, low carbon aspirations and minimise the need for artificially cooled buildings’*. Paragraph 5.12.2 also states:

‘... robust design, high quality materials, flexibility of exterior and interior layout and appropriate landscape treatment such as earth form or planting, can help to integrate new business premises into their surroundings, minimise the need to artificially cool buildings and allow for easier conversion by successive occupiers. Service and utility features, exposed and imaginatively detailed, may in many cases provide elements of interest in otherwise plain facades’.

The considerations given to design in the proposed development are discussed fully in Section 5.

TAN15: Development and Flood Risk

Paragraph 11.25 of TAN 15 gives specific reference to flooding in relation to dams and reservoirs. While the site at Llwyn Onn does not involve a dam there is a large storage reservoir in operation. The guidance in TAN15 states that:

‘The implications for development in the vicinity of canals and other artificial water bodies are twofold. Firstly, since the concept of a flood plain is not applicable, waterside development or redevelopment of previously developed land may not face the same flood-risk constraints as development alongside a river ... Dams

and reservoirs pose a similar potential for possibly large-scale flooding. A precautionary approach should be adopted at vulnerable locations and the precautionary methodology applied in consultation with the canal operator or dam/reservoir owner’.

TAN21: Waste

In relation to construction and demolition waste, the Welsh Government has introduced a requirement to produce Site Waste Management Plans. Amongst other things, Site Waste Management Plans should set out how waste will be prevented, managed and disposed as part of taking forward construction projects.

In conclusion, the proposal accords with the planning policy context at all levels of the hierarchy.

EIA Screening

In relation to the current proposal, a screening opinion was sought from Wrexham Council. It concluded that the proposal would not give rise to environmental impacts of more than local significance and therefore there was no justification for an Environmental Impact Assessment to be undertaken. This was signed by Lawrence Isted Head of Community Wellbeing and Development and dated 22nd March 2016.

5. DESIGN PRINCIPLES

The design of the development has considered the objectives of good design, identified in TAN 12: Design, and been planned in accordance with the guidelines necessary for reservoir development. Design has been considered under the following categories: Character and Context, Access and Movement, Community Safety and Environmental Sustainability.

Whilst most Design and Access Statements relate to built development, the primary purpose of the subject proposal is for a replacement reservoir and pumping station. As such, the design considerations included here for this development will be specifically tailored to apply to this particular built form.

The following factors have influenced the project design:

- Replacement functions
- No external impacts
- Reservoirs standards
- Site constraints – limited space available
- Water levels must be set to ensure water supply to customers within the local area

5.1 Character and Context

The original reservoir and pumping station, built in the 1940s, is now at an end of life stage and requires updating to modern standards and efficiencies. As such, the design of the project has taken into consideration the original design of the reservoir and how it can be best improved for 21st century requirements. The design of the facility has taken into consideration the previous visual impact of the reservoir and the changes are not considered significant. The new reservoir copings will be approx. 3m higher than the current reservoir coping, however, this is 4m lower than the ridge line of the now demolished water treatment building (which will form the proposed stage 1 reservoir site) and 3m lower than the recently constructed water treatment building which

replaced it. The overall appearance of the reservoirs will be similar to that which currently exists on the site. As such the scale and amount of development of the proposed works is comparatively similar to what is currently in operation on the site.

Given the nature of the proposed development, there will be no access to the facility other than authorised staff members and engineers visiting the site. A perimeter fence will continue to border the entire site and will ensure that the facility is permanently enclosed and will be monitored by surveillance (see Section 5.3).

The development will utilise 'soft landscaping' around the perimeters of the reservoir to lessen the industrial appearance of the site. 'Green screens' will be used to minimise the overall impact of the development, in particular the walls of the reservoirs (see Fig 5.1).



PRECEDENT IMAGE -
HEDERA HELIX GREEN SCREEN

Fig. 5.1 Example of green screening

As well as the 'green screening', the perimeter of the site will be landscaped to integrate with the surrounding countryside, with native hedgerows being proposed on the eastern border of the facility. Furthermore, a low maintenance grass mix will be installed on the stage 2 reservoir southern facing embankment to further soften the visual impact.

5.2 Access and Movement

Given that the site and the proposed development is a reservoir and water treatment works, there will be no access to the facility other than by authorised staff members and engineers visiting the site. There are no proposals to alter the external access arrangements. There is one access track serving the site, running westwards up from Cefn Road to the north-east corner of the operational Llwyn Onn site

The proposed development is situated on a main road, Cefn Road, out of Wrexham town and is on local bus routes (Routes 1E and 42), allowing this more sustainable form of transport to be used to access the site. A local bus stop, Llwyn Onn Estate, is situated just north of the site.

The final layout of the access routes around the works for vehicles and pedestrians and new landscaping, tying into the existing site roads, footpaths and landscaping shall be in accordance with the operations and maintenance needs and meet the requirements of the environmental studies and all stipulations of Wrexham CBC's planning approval when received.

The layout shall allow for safe access to, from and around all process areas and water storage facilities within Llwyn Onn, and shall provide suitable turning, delivery and parking areas for all vehicle types.

5.3 Community Safety

Given that the site and the proposed development is a reservoir and water treatment works, there will be no access to the facility other than authorised staff members and engineers visiting the site. Essential security measures will be in place to ensure that there will be no unauthorised access to potentially dangerous areas of the site, ensuring community safety. Furthermore, a range of measures will be implemented to ensure the safety of employees working on the site and visitors to the site, which is outlined below.

The proposed works at the Llwyn Onn site will be in conformance with the "Standard for Security Arrangements for Operational Assets (SSAOA) Version 2 2015". Additionally, security of the reservoirs will conform with Water UK: 'Specification for the Security of Service Reservoirs'. This will apply during both construction and operational stages.

Alarm systems shall be installed on the reservoir hatches and all accesses into the pumphouse. A sophisticated alarm system will be installed throughout the site and pumphouse which will comply with SEAP requirements. The existing security control and monitoring system at Llwyn Onn shall be enlarged so that at least one dedicated alarm panel shall receive the sensor signal from each installation (e.g. hatch, door), the method of communication matching the existing means of communication. The upgraded systems will forward on any alarms to the Control Room and Alarm Receiving Centre (ARC) at Packsaddle, ensuring a fast and efficient response to any emergencies.

Additional CCTV cameras shall be positioned as necessary so that access points into the pumphouse and the reservoir hatches are visible. An internal camera shall be provided within each room of the pumphouse. The camera images shall be visible live in the Dee Valley Water control rooms at Packsaddle and within the plant building of Llwyn Onn treatment works.

Cameras mounted on poles shall be accessible for maintenance without the use of a mobile access platform. The existing security fenceline shall be maintained throughout the works and reinstated immediately if damaged during the course of the works.

5.4 Environmental Sustainability

The reservoirs will be built with a combination of cement and ground granulated blast-furnace slag (GGBS) to reduce the amount of cement being used in the construction of the reservoirs, thus maximising the recycling of surplus resources from iron production in the construction of the reservoir, reducing the carbon footprint and demonstrating an efficient use of natural resources.

The construction waste from the excavation of the reservoirs will be deposited on site and will be planted out with appropriate local flora, which will enhance the biodiversity of the site and will also assist in the landscaping of the perimeter of the development, softening the overall aesthetic of the site.

All waste generated as a result of the works shall be managed in accordance with the highest tiers of the waste hierarchy (prevention, minimisation, re-use, recycling and recovery). A Site Waste Management Plan (SWMP) will be implemented throughout the design and construction period that complies with national regulatory requirements for waste disposal, and will include project-specific targets for waste recovery, reused and recycled content, and waste reduction.

Landfill objectives have been set in relation to the proposed works with the aim to reduce waste and use materials efficiently, and to reduce waste to landfill in line with the principals of Waste and Resources Action Programme's (WRAP) Construction Commitments: Halving Waste to Landfill. To do this, the following project-specific targets have been set:

- Recover a minimum of 70% [and aim to exceed 80%] of construction materials where technically and commercially viable;
- Recover a minimum of 80% [and aim to exceed 90%] of demolition, strip-out and excavation materials (where applicable), where technically and commercially viable;
- Ensure that at least 10% of total material value derives from reused and recycled content in new construction, select the top opportunities to exceed this figure without increasing the cost of materials, and report actual performance.

6. CONCLUSION

The scale and amount of development of the proposed works is comparatively similar to what is currently in operation on the site. The replacement nature of this important public interest development should be crucial to its determination in the planning application process.

The Design and Access Statement covers all the required elements necessary, it demonstrates how the proposal complies with planning policy, what parameters helped shape the design of the proposal and how the facility will be accessed. It also clearly demonstrates the wider public benefit of improving water quality in the Wrexham area.

APPENDIX A – EXISTING SITE PHOTOGRAPHS – LLWYN ONN



