Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

ARCADIS Design & Consultancy for natural and built assets

SKANSKA

LLANFOIST - WASTE WATER TREATMENT WORKS - IMPROVEMENTS

Volume 1 Non-Technical Summary

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CONTENTS

1 Introduction

1.1 Project Context

1.1.1 This is the Non-Technical Summary of the Environmental Statement (ES) submitted as part of the planning application for the proposed upgrade to Llanfoist Waste Water Treatment Works (WwTW). The improvement works at Llanfoist WwTW are hereafter referred to as 'the proposed Development'.

1.1.2 The Environmental Statement has been produced by Arcadis (UK) on behalf of the Applicant, Dŵr Cymru Welsh Water (DCWW), which owns and operates Llanfoist WwTW. DCWW is proposing an upgrade to the WwTW in order to improve the condition of the plant and meet increased sewage loads due to planned development within the catchment area.

1.1.3 The proposed Development is located at Grid Reference SO 29995 13306, approximately 500m south of Abergavenny and 500m east of Llanfoist in Monmouthshire. The location of the proposed Development is shown in Figure 1.1, Site Location Plan. The proposed Development would be located within the DCWW land ownership boundary and would include works within the existing WwTW and within a proposed extension to the WwTW boundary to the north west of the existing site. The land that currently surrounds the WwTW is primarily cattle grazed pasture. A full description of the proposed Development is provided in Chapter 3: Description of the Proposed Development.

1.1.4 This Non-Technical Summary for the ES accompanies the Applicant's planning application to Monmouthshire County Council (MCC). It is prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2016 (Ref 1-1) 'the EIA Regulations'.

1.1.5 The Non-Technical Summary describes in non-technical language the findings of the Environmental Impact Assessment, as reported in Volume 2: Environmental Statement.

1.2 Environmental Impact Assessment

1.2.1 A statutory Environmental Impact Assessment (EIA) has been undertaken in accordance with the EIA Regulations. EIA is a process that is undertaken to ensure that information from the developer (i.e. DCWW), consultees and members of the public on the potential likely significant effects, both beneficial and adverse, of a proposed Development are considered in full by the decision-maker prior to a development being granted planning consent.

1.2.2 The EIA has:

- Gathered information on the existing environment and identified environmental constraints and opportunities which may be affected by the proposed Development;
- Identified and assessed potential effects that may arise from the construction, operation, and decommissioning of the proposed Development, and identified whether they are classified as significant effects with respect to the EIA Regulations; and
- Outlined measures and/or design criteria that may be pursued to mitigate potential concerns or environmental effects.

1.2.3 The ES presents the information that the Applicant is required to provide as part of the process of EIA.

1.3 Scoping and Consultation

1.3.1 The scope of the ES was agreed with MCC through a scoping process that defined the study area, the environmental topics to be included in the EIA, and how they should be assessed. This took the form of a Scoping Report which was issued to MCC and key statutory and non-statutory bodies in November 2015. There has been an ongoing dialogue with MCC and other statutory and non-statutory bodies since this time.

1.3.2 The scoping process confirmed that the following topics should be studied in detail within the EIA:

- Ecology and Nature Conservation;
- Archaeology and Cultural Heritage;
- Hydrology and Surface Water Quality;
- Landscape and Visual;
- Transport and Access;
- Noise and Vibration;
- Air Quality and Odour;
- Ground Conditions; and
- Agricultural Considerations.

1.3.3 The findings of the assessments for each of these environmental topics is summarised in Sections 4.2 – 4.10 of this Non-Technical Summary.

1.3.4 Consultation with key statutory and non-statutory bodies is recognised as being critical to the preparation of the ES. It focuses attention on key environmental issues, and opens a dialogue to discuss methodologies for undertaking further investigations and possible mitigation throughout the Development. As such, consultation has formed a key part of the EIA process and has continued through all stages of the design of the Development.

1.3.5 A pre-application submission including an ES and supporting documents was made on 12th August 2016 to MCC and specialist and community consultees. During the pre-application consultation period consultees had the opportunity to review and comment on the approach and findings of the ES and the other supporting documents. In response to the pre-application submission, comments were received from Natural Resource Wales (NRW) only which have subsequently been addressed.

1.3.6 DCWW are committed to public consultation, so in addition to the consultation with statutory and non-statutory bodies, engagement has also been undertaken with the following consultees:

- Llanfoist Community Council;
- Abergavenny Town Council;
- Local Councillors; and
- Abergavenny Civic Society.

2 Need and Alternatives

2.1 Need for the proposed Development

2.1.1 Dŵr Cymru Welsh Water ('DCWW') have identified two main drivers that have contributed to the proposed improvement works at Llanfoist WwTW.

2.1.2 DCWW are consented by Natural Resources Wales (NRW) to discharge treated water to the environment under specific conditions. The proposed Development site assets are reaching the end of their operational life and are not considered suitable to achieve operational consent conditions that would be applied as a result of the increase in wastewater from the anticipated growth in the area as described below.

2.1.3 Llanfoist WwTW currently serves a population equivalent (PE) of approximately 18,000. Population equivalent is a way of expressing the amount of wastewater that reaches the WwTW works, in terms of the number of people it would take to produce the same amount of wastewater. A number of recent and proposed developments around Llanfoist and Abergavenny will be increasing the amount of wastewater entering the WwTW. To meet this increase the proposed improvement works will increase the treatment capacity of the WwTW to a PE of 46,090. The increase in treatment capacity has been designed to accommodate for growth forecasts including residential, commercial and industrial development.

2.2 Alternatives

2.2.1 A 'No Action' alternative was considered by DCWW however under the circumstances described above this was not considered appropriate.

2.2.2 Developing on an alternative site or adding additional capacity elsewhere was also not considered to be a viable option. As the current site receives waste water from a number of different sources or catchments, alternative sites would have to be built upstream in those catchments and would impact on other sensitive receptors. Additionally, DCWW does not have any suitable land available at alternative locations.

2.2.3 The new area of land for the proposed extension at Llanfoist WwTW was selected as it provided a practical and convenient extension of the site given the existing road layout, existing treatment process layout and the necessary integration with the existing machinery; close to the primary settling tanks and the effluent discharge point. It would therefore reduce the need for wholescale redevelopment of the existing WwTW and the increased environmental impacts that would be associated with this.

2.2.4 To address the need for the proposed Development, two main solutions were identified; a new Activated Sludge Plant (ASP) or a Sequencing Batch Reactor (SBR). An exercise was carried out to evaluate advantages and disadvantages of each option. Of these two solutions, the SBR was selected on the basis of having the smallest physical footprint, the lowest whole-life cost and the lowest residual risk for effluent quality.

2.2.5 Additional environmental constraints including proximity to the River Usk and associated ecology, flood risk, and the presence of protected trees have influenced the design of the proposed Development.

3 Description of the proposed Development

3.1.1 The existing site layout of Llanfoist WwTW is shown in Figure 1.2. The proposed Development layout is shown in Figure 1.3, and a diagram explaining the future wastewater treatment process at Llanfoist is given in Figure 1.4.

3.1.2 The proposed Development at Llanfoist WwTW will comprise works to increase the WwTW capacity and ensure that current and proposed future consent conditions are met.

3.1.3 The most significant element of the proposed Development is the construction of a two new Sequential Batch Reactors (SBRs) located on an extension to the existing site. The SBRs form part of the secondary treatment process and would replace the process currently undertaken by the existing aeration lanes and final settlement tanks, both of which would be decommissioned and demolished.

3.1.4 The SBRs would be new open topped concrete tank structures with the approximate dimensions 43.6m (L) x 32.3m (W) x 8.5m (to top of distribution chamber railings) (H). There would be four internal lanes within each structure, including walkways, railings, pipework, lifting gear and other equipment mounted on the various external and internal walls to the tanks. Additional new structures associated with each SBR would include the following:

- SBR distribution chamber
- SBR electrical control kiosk
- Blower kiosk housing air blowers to supply air to the SBR to speed up the biological treatment process
- Interstage Pumping Station to transfer primary treated effluent into both SBRs

3.1.5 Due to the increase in incoming flow and load, there will be an increase in sludge production on site and therefore some change to the existing sludge treatment process is required. The sludge holding tanks, digester and lagoons would be drained and decommissioned. Two new sludge storage and screened sludge tanks would be constructed in addition to a new screen and strainpress. Once screened, thickened and dewatered, undigested sludge would be removed from the site to one of DCWW's advanced digestion sites for further treatment.

3.1.6 The inlet works, where sewage arrives at the WwTW, would be upgraded to increase the effectiveness for removal of larger non treatable solids. This would include the addition of a new screen and replacement of the existing grit removal system.

3.1.7 Further to the above, a fourth storm water storage tank would be constructed along with a new standby generator and the installation of a new odour control unit. The proposed Development would also include the extension of the existing flood bund to protect the proposed extension of the WwTW and the SBRs. The height of the bund extension would the same as the existing flood bund.

3.1.8 The existing WwTW security fence would also be extended to include the extension area of the proposed Development. Additional lighting, security systems and CCTV would be installed where required.

3.1.9 New internal access roads would be constructed linking the existing WwTW with the extension area of the proposed Development. A minor access road would also be constructed to gain access to the new sludge processing building.

3.1.10 Landscape planting is proposed around the perimeter of the extension area of the proposed Development site and existing tree cover would, where possible, be retained. A number of proposals for green infrastructure have been put forward, for example, management of invasive species and native tree and shrub planting.

3.1.11 Once construction is complete the WwTW would continue to operate 24 hours a day, 7 days a week. The number of staff based on site and the amount of operational traffic would also return to existing levels.

Construction

3.1.12 Construction of the proposed Development is due to begin in early 2017 and would take approximately 24 months until the improved WwTW is operational. The existing WwTW would continue to operate while the improvement works take place.

3.1.13 The works can be divided into four main phases as detailed in Table 3-1. The works would mainly follow the order detailed in this table however many activities would be carried out simultaneously to reduce the overall length of the construction programme.

Table 3-1 Summary of Construction Phases

Phase	Activity	Date of Commencement	Duration
Phase 1 - Mobilisation and Advance Works	Establishment of site enabling, welfare and site compound and tree/vegetation removal.	Vegetation Removal – Jan 2017 Site Establishment – Apr 2017	1 month
Phase 2 - Construction	Main Works – excavate, pile, civil construction, M&E installation, existing plant upgrades, temporary works associated with above. Also clearing out of redundant plant and demolition of selected structures.	May 2017	18 months
Phase 3 - Commissioning	Commissioning of new inlet works, secondary	May 2018	4 months

Phase	Activity	Date of Commencement	Duration
	process and sludge treatment facility.		
Phase 4 - Handover and Completion	Completion – commissioning, demobilisation, landscaping	Sep 2018	1 month

3.1.14 It is anticipated that there will be approximately 25 staff based on site throughout the construction period, which will be increased to 40 staff during the peak phase of the construction. Typical working hours will be 07:00 to 19:00 hours on Monday to Friday and 07:00 to 14:00 hours on Saturday. On each day noise generating activities will cease one hour before the site closes. The site will be closed on Sundays and Public Holidays. Construction works outside of the times specified would be with prior agreement with the local authority.

3.1.15 A new temporary construction access road would be built that would link the existing WwTW access road to the extension area of the proposed Development. All construction traffic would access the temporary construction access road via the existing WwTW site access from the A4143 (Merthyr Road).

4 Description of Environmental Impacts

4.1.1 This chapter of the Non-Technical Summary explains the outcome of the EIA for the proposed improvement works to Llanfoist WwTW. A map showing the environmental constraints in the local area is shown as Figure 1.5.

4.1.2 The following sections describe the impacts of the proposed Development on each environmental topic listed in paragraph 1.3.2 above. They identify any mitigation measures needed to reduce impacts, and any environmental impacts that are likely to remain after mitigation has been applied.

4.2 Ecology and Nature Conservation

4.2.1 An assessment has been undertaken of the potential effects of the proposed Development on ecology and nature conservation. The assessment has been undertaken in accordance with Guidelines for Ecological Impact Assessment in the UK, produced by the Chartered Institute of Ecology and Environmental Management (CIEEM). This ecological impact assessment has been informed by a desk study, consultation with Natural Resource Wales (NRW) and detailed and targeted ecological field surveys.

4.2.2 The proposed Development would lie close to the River Usk, which is designated as a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) and is of international importance. The primary reasons for designation are the habitats and species present, including otters and a range of fish species. The proposed Development site contains broadleaved plantation woodland and species-rich hedgerows which are used by/suitable for foraging/commuting bats, reptiles and nesting birds. In addition, Invasive plant species Indian (Himalayan) Balsam and Giant Hogweed have been recorded within the proposed Development site.

4.2.3 With the implementation of the embedded design measures (notably a buffer zone between the area of construction or decommissioning and the River Usk, no night time working, implementation of a Project Environmental Management Plan (PEMP), following best practice guidance when working in/near areas of invasive plants, and mitigation informed by appropriate surveys for species such as otter and bats), the impact of construction and decommissioning activities on ecological receptors are not anticipated to be significant. Measures embedded into the scheme design would ensure that operational impacts on the River Usk SAC/SSSI resulting from pollution incidents and changes to water quality, are not considered significant. Similarly, impacts during the operational phase to otter, fish, bats and aquatic vertebrates are all considered to be not significant. There would be no impacts to nesting birds, reptiles, woodland and hedgerows during operation of the WwTW.

4.2.4 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.3 Archaeology and Cultural Heritage

4.3.1 An assessment has been undertaken which considers potential effects of the proposed Development on the cultural heritage resource (the heritage assets). A heritage asset comprises a building, monument, site, place, area, or landscape, including archaeological remains (both known and potential), positively identified as having a degree of significance meriting consideration in the planning process. This assessment has been undertaken in accordance with guidance produced by the Chartered Institute for Archaeologists, CADW and English Heritage.

4.3.2 Heritage assets potentially affected by the proposed Development were identified as unknown archaeological remains located within the proposed Development site, Abergavenny Conservation Area, and the settings of Blaenavon Industrial World Heritage Site, Blaenavon Landscape of Outstanding Interest, Abergavenny Castle, Abergavenny Roman Fort scheduled monument, Abergavenny Gardens and Linda Vista Gardens. Impacts on unknown archaeological remains within the proposed Development site would be mitigated by a staged programme of archaeological works during construction. Whilst Abergavenny Conservation Area and the settings of other heritage assets have the potential to be affected during construction and operation, design measures in the form of woodland and hedgerow planting would limit longer term impacts.

4.3.3 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.4 Hydrology and Surface Water Quality

4.4.1 An assessment has been undertaken of the potential effects of the proposed Development on hydrology and surface water quality. The assessment considers in particular the potential effects of the proposed Development on the flood risk, surface water quality and water resource attributes of surface water receptors.

4.4.2 The proposed Development is located in the River Usk catchment and the River Usk that flows approximately 80m to the north east of the existing WwTW. The Welsh Government Flood Maps indicate that the proposed Development site is located within an area at high risk of flooding from the River Usk. In comparison, risk of flooding from surface waters, tidal sources, groundwater and artificial sources such as reservoirs is considered a lesser or no risk. The stretch of the River Usk located within the 1km study area defined for this assessment encompasses two Water Framework Directive (WFD) waterbodies or ‘river stretches’. One of the relevant waterbodies is upstream of the proposed Development and therefore potential effects have been considered to the waterbody ‘Conf. River Gavenny to Confl. Olway Brook’ only. Available data indicates that this stretch of the River Usk

achieves Moderate Overall Ecological Status and is designated as Failing for Chemical Status (2015). There are no additional surface water receptors with the potential to be affected within the application boundary or wider study area.

4.4.3 During construction, adherence to procedures for site evacuation in response to a NRW Flood Warning would limit the magnitude of the impacts of fluvial flooding on the proposed Development. Any surface water collected during the construction phase of the proposed Development would be treated using appropriate sustainable drainage system techniques. The design incorporates a buffer zone between the nearest area of temporary works and the River Usk that would help to safeguard surface water quality against the effect of sedimentation. Construction pollution prevention measures would be employed to avoid or mitigate the potential for effects on the water quality of the River Usk.

4.4.4 Flood modelling has indicated that on completion of the construction of the flood bund there would be decreases or no change in baseline flood levels downstream of the site and upstream only very small increases in water levels (generally less than 10mm). During the operational phase of the proposed Development flood risk would be linked to minor water level increases on third party land resulting from the minor loss of floodplain storage attributed to the proposed Development. A Flood Management Plan (FMP) would be implemented to mitigate residual fluvial flood risks on site. Discharges to the River Usk would be made in accordance with a revised discharge consent issued by Natural Resources Wales (NRW). All controls and thresholds would be agreed with NRW, the permitting authority, preventing adverse effects on the surface water quality of the River Usk.

4.4.5 During the decommissioning phase, removal of the perimeter flood bund and hard stand cover would restore floodplain storage, ground permeability and the surface water runoff regime to conditions very similar to the baseline. Potential effects on surface water quality during the decommissioning phase of the proposed Development are anticipated to be similar to the construction phase. Any decommissioning activities would be expected to be undertaken in accordance with future best practice pollution prevention measures.

4.4.6 An assessment of the cumulative effects resulting from other planned developments coinciding with the proposed improvements to the WwTW indicates that whilst there is potential for cumulative impacts on the River Usk (Conf. Gavenny to Conf. Olway Brook reach), with implementation of appropriate flood risk mitigation and pollution prevention measures there would be negligible cumulative effects.

4.4.7 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.5 Landscape and Visual

4.5.1 A landscape and visual impact assessment has been undertaken in accordance with Guidelines for Landscape and Visual Impact Assessment, produced by the Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA).

4.5.2 Part of the proposed Development site is located within the Abergavenny Conservation Area, on its south western edge. The proposed Development site is located over 1km from the Brecon Beacons National Park and Blaenavon World Heritage Site. In broad terms the proposed Development site is located within the low lying, riparian landscape through which the River Usk passes. The existing Llanfoist WwTW partly defines the site, with land cover in the immediate site vicinity comprising enclosed farmland. The urban edges of Llanfoist and Abergavenny, together with transport corridors of the A465 and A40, are situated nearby. Theoretical visibility of the proposed Development extends northwards beyond Abergavenny to slopes of the Sugar Loaf (in the Brecon Beacons

National Park), eastwards to Ysgyryd Fach hill, southwards along the Usk Valley to hillsides at Llanover (in the Brecon Beacons National Park), and westwards to the slopes of Blorenge (in the Brecon Beacons National Park). However, vegetation cover in the landscape would restrict views of the proposed Development from most locations.

4.5.3 Construction and decommissioning activities associated with the proposed Development, namely the movement of plant/vehicles and the creation of material stockpiles, would constitute temporary elements within the local landscape and views. Following construction, proposed infrastructure would be apparent in the locality. However, the proposed Development site is largely defined by existing waste water infrastructure and the wider surroundings include urban influences. In addition, existing vegetation and proposed planting would serve to strengthen existing landscape characteristics, limit visibility of the proposed Development, and integrate the proposals with the surrounding landscape and views.

4.5.4 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.6 Transport and Access

4.6.1 An assessment of the likely impact of the proposed Development on transport and access has been undertaken during the construction, operation and decommissioning phases. A key part of this was consultation with MCC Highways Officers and Welsh Government.

4.6.2 The baseline has been established through consultation and traffic data collection. Site survey work has been undertaken to identify the sensitivity of receptors situated along the proposed access routes. The study area has been defined by identifying potential construction routes to the proposed Development where total traffic flows or increases in HGV flows could be greater than 10% (for specifically sensitive areas) or 30% for all other links. The proposed Development site would utilise the existing site access from the A4143 to the WWTW. The access would form the only access and egress point for the proposed Development and would be used by both light vehicles and HGV traffic. The preferred route for HGV traffic travelling to the proposed Development from the west and east would be via the A465 and A4143 and from the A40 from the north, which has been selected to minimise the effect on the local highway network by following the trunk and principal road network for the majority of the route. The routes would not require any alterations to the public road network. Light vehicle traffic (mainly construction workers accessing the proposed Development) would not be constrained to the HGV route and would also be able to access the proposed Development site from any route.

4.6.3 A Construction Traffic Management Plan (CTMP) has been prepared and would be implemented during the construction phase in order to minimise any adverse effects of vehicular movements associated with the proposed Development on the surrounding highway network. The traffic assessment considered the likely impact of an increase in construction traffic using local roads. During the peak of construction it is estimated that the total number of vehicle movements generated during the construction phase on the peak day of construction is estimated to be 170 two-way movements. The effects on the road network are considered to be minor, at worst. There are not anticipated to be any significant effects during the operation of the proposed Development due to the low volumes of operational traffic required. The effect on traffic on the surrounding routes from the decommissioning phase is assessed as being minor.

4.6.4 A number of developments have been identified which could give rise to cumulative traffic effects, due to their close proximity to the proposed Development and common access routes. However, an assessment of the potential cumulative effects has determined that such effects would be minor.

4.6.5 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.7 Noise and Vibration

4.7.1 An assessment of the likely noise impacts from the proposed Development has been undertaken for the construction, operation and decommissioning phases. Construction noise impacts were assessed in accordance with guidance in BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites. Guidance in BS 4142:2014 Methods for Rating Industrial and Commercial Sound was used to determine the impacts of noise from the operational plant to be installed at the WwTW.

4.7.2 The baseline noise climate has been quantified during a number of visits to site to undertake short term and long-term noise monitoring surveys. The baseline surveys were agreed with the local Environmental Health officer (EHO). The general noise climate is that of a semi-rural location, and predominantly includes road traffic noise, with contributory sounds from local human activity including residential/domestic sounds and natural noise for example; animal sounds and wind in the trees. Due to the separation distances involved, noise impacts are expected to be limited at residential properties directly to the south, west and north. Properties to the east and north east, are potentially more exposed, particularly those located at height within multi-storey properties.

4.7.3 During construction and decommissioning, Best Practicable Means (BPM) would be adopted to manage and mitigate construction noise impacts. Typical mitigation measures would include selecting quieter construction plant and less intrusive construction methods, use of acoustic screening and location of noisy plant away from the site boundary where appropriate. The proposed Development is subject to a number of embedded design measures to control noise. These factors include the selection and procurement of inherently 'quiet' equipment to take into account the health and safety of operatives who would be employed at the proposed Development as well as to minimise the emission of sound into the greater environment. With appropriate mitigation in place, as outlined above, there are not anticipated to be significant noise impacts resulting from the proposed Development. Furthermore, the positioning of external noise sources such as pumps would be at low level (ground level where possible), and the enclosure of particularly noisy equipment within purpose built buildings or acoustically rated enclosures. The regular maintenance and cleaning of existing and proposed plant and equipment operating at the proposed Development, would be integrated into the standard operation procedures for the site.

4.7.4 An assessment of the cumulative effects of other planned development coinciding with the proposed extension to the WwTW has been made and indicates that with the implementation of appropriate mitigation measures it is considered that there would be negligible cumulative noise impacts.

4.7.5 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.8 Air Quality and Odour

4.8.1 An assessment of the likely air quality and odour effects at sensitive locations during the construction, operation and decommissioning phases of the proposed Development has been undertaken. Potential air quality effects resulting from fugitive dust during construction were assessed in accordance with the Institute of Air Quality Management (IAQM) methodology. Potential odour effects during operation were assessed by quantifying conditions both with and without the proposed Development in place using dispersion modelling.

4.8.2 Baseline air quality and odour conditions in the vicinity of the proposed Development site have been defined from a number of sources. Air quality concentrations in the vicinity of the site are predicted to be below the relevant air quality objectives. In terms of odour, there have been few odour complaints in the vicinity of the site in recent years. Although this indicates existing odour conditions are acceptable, this may be partially due to local residents becoming desensitised to impacts over time.

4.8.3 With embedded mitigation measures implemented, there would not be significant residual air quality effects from dust generated by demolition, earthworks, construction and track-out activities. The results of odour modelling indicate that odour levels would reduce at the majority of identified receptors as a result of the proposed Development.

4.8.4 An assessment of the cumulative effects of other planned development coinciding with the proposed improvement works at Llanfoist WwTW has been undertaken. With the implementation of appropriate mitigation measures and a low number of receptors within the vicinity of the site, it is considered that there would not be any significant cumulative air quality effects.

4.8.5 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.9 Ground Conditions

4.9.1 An assessment has been carried out which considers the potential effects of the proposed Development on ground conditions (including geology, hydrogeology, geotechnical conditions), and contamination associated with the previous historical use of the site and surrounding area. The assessment has been carried out in accordance with current guidelines and best practice approaches, with due regard for relevant legislation and policy.

4.9.2 The published geology of the proposed Development site comprises alluvium deposits of clay, silt, sand and gravel and ground investigations indicate that ground conditions are consistent with this. Desk study and ground investigation have established that groundwater is likely to be present beneath the proposed Development site, at a relatively shallow depth. In terms of previous historical use, ordnance survey plans indicate that the existing WwTW was constructed around 1901, prior to which the site was in agricultural use.

4.9.3 The proposed Development has been designed with due regard to ground conditions, a Project Environmental Management Plan (PEMP) and Site Waste Management Plan (SWMP) would be put in place prior to the commencement of the construction phase, and good practice methods would be employed throughout the operation phase to mitigate potential impacts on receptors. In particular, the contractor would prepare detailed method statements and protocols for activities such as excavation and dewatering, storage of fuels, chemicals and oils, vehicle washing, pollution control and emergency contingency, during construction.

4.9.4 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

4.10 Agricultural Considerations

4.10.1 An assessment has been undertaken of the potential effects of the proposed Development on land quality and the agricultural use of the land. The assessment has been carried out in accordance with current guidelines and best practice approaches.

4.10.2 Agricultural land in Wales is graded between 1 and 5. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use, and Grade 5 is very poor quality land. The land at Llanfoist WwTW is currently grazed, and is classified as Grade 3 land. Information is not available to confirm which sub-grade (3a or 3b) the land is, although it will to some degree be limited by flooding and high groundwater levels. However, for the purposes of this assessment it is assumed it is the higher grade (sub-grade 3a).

4.10.3 The main effect of the proposed Development identified would be the permanent loss of 1.4ha (0.9ha for permanent built development and 0.5ha for woodland planting) of agricultural land. Whilst it is not possible to mitigate for this effect, embedded mitigation, as set out in the Project Environmental Management Plan (PEMP), will ensure the appropriate handling, storage and re-use of topsoil and subsoil materials and minimise the risk of generation of silt-laden runoff from the construction site.

4.10.4 Given the land is in the ownership of DCWW, the permanent land take area is limited and that grazing will continue on land adjacent to the proposed Development, the effect on the farm business is considered to be neutral. There is a proposed change from cattle to sheep grazing on the land surrounding the proposed Development site which will have benefits in terms of the protection and stability of the river bank.

4.10.5 Overall, effects of the proposed Development, during construction, operation and decommissioning, are considered to be not significant, with respect to the EIA Regulations.

5 Conclusion

5.1.1 The assessment has followed the process required by the EIA Regulations. It has assessed likely impacts and concludes that the proposed improvement works would result in environmental effects that are not significant with respect to the EIA Regulations.

6 References

Ref 1-1 Welsh Government (2016) Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations.

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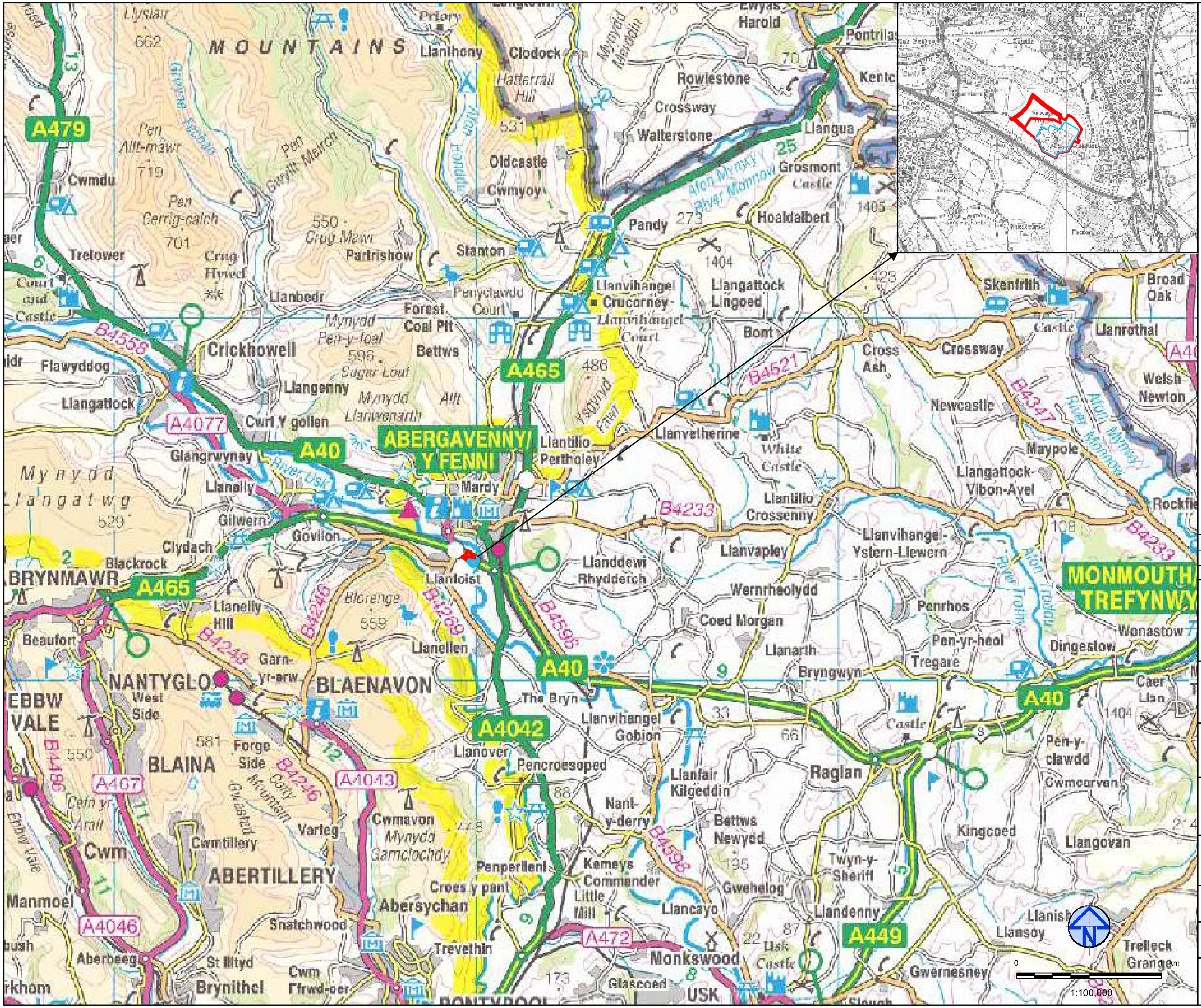
APPENDIX A: Figures



A3

DRAWING DETAIL IS INDICATIVE AND ISSUED FOR INFORMATION PURPOSES ONLY.

KEY

- Planning Application Boundary
- Proposed Permanent Built Development Boundary

NOTES:
THIS MAP IS BASED UPON THE ORDNANCE SURVEY MATERIAL.

Rev.	Date.	Drawn.	Description.	Chkd.	Appd.	Date.
04	10-08-16	D.S	Revision 4	M.L	C.D	10-08-16
01	02-11-15	D.S	Revision 1	M.L	R.D	02-11-15

Client
Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

ARCADIS

Project Name.
LLANFOIST WASTE WATER TREATMENT WORKS

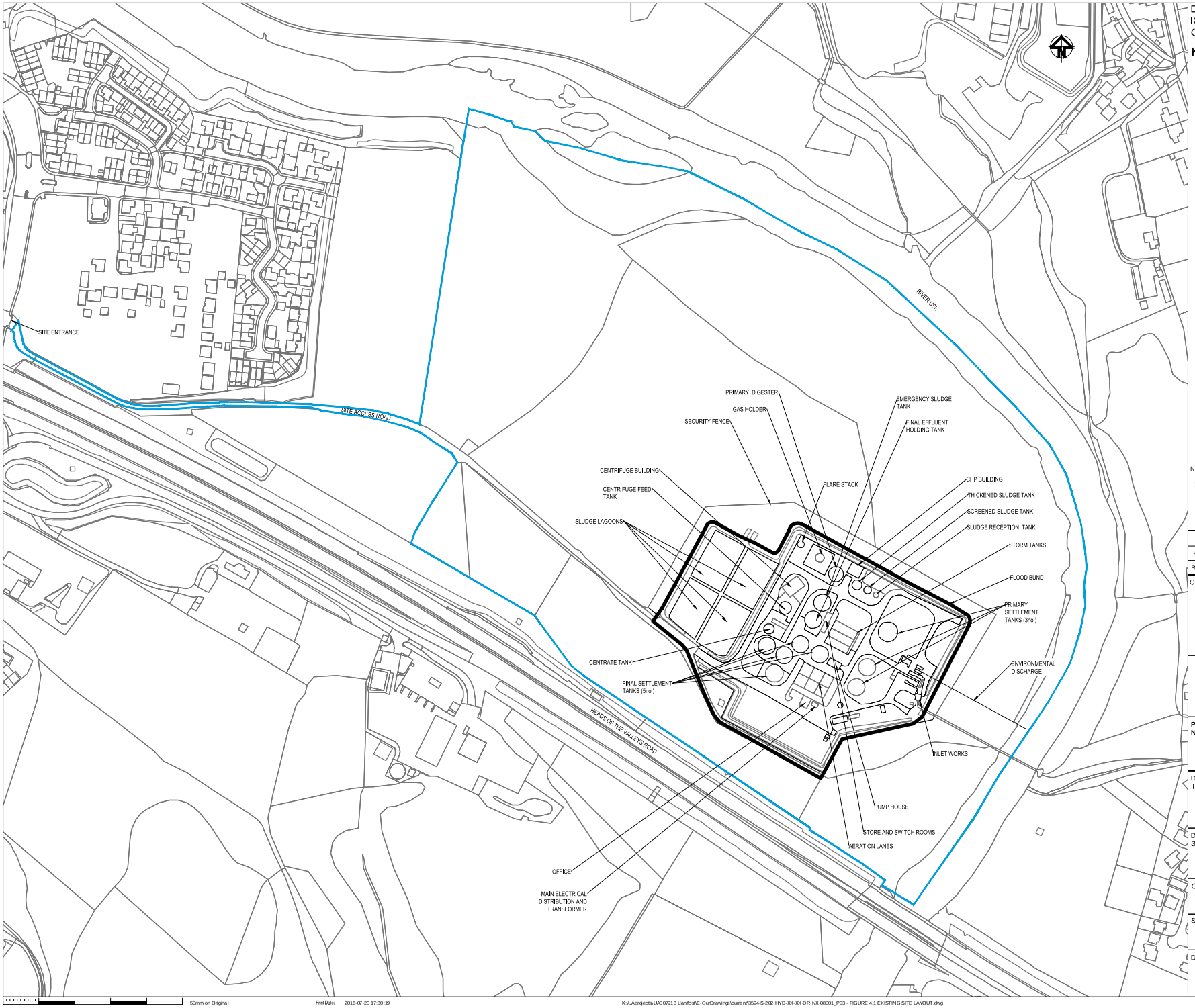
Drawing Title.
FIGURE 1.1
SITE LOCATION PLAN

Drawing Status.
INFORMATION

Checked.	Approved.	Date.
D.S	R.D	02-11-2015
Scale.	**Designer.**	**Rev.**
1:100,000	D.S	04

Drawing Number.
3594-S-202-HYD-XX-XX-DR-XX-10028

COORDINATE SYSTEMS: OSGB36 NATIONAL GRID



DRAWING DETAIL IS INDICATIVE AND ISSUED FOR INFORMATION PURPOSE ONLY.

A3

KEY

- DWCC Land Ownership Boundary
- Existing Site Boundary

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OHERWISE STATED.
2. ALL LEVELS ARE SHOWN IN METRES RELATIVE TO AOD
3. DO NOT SCALE FROM THIS DRAWING

Rev.	Date.	Drawn.	Description.	Chkd.	Appd.	Date.
P1	06MAY16	R.G	FOR INFORMATION	M.C	M.T	06MAY16

Client

Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

ARCADIS

Project Name.

LLANFOIST WASTE WATER TREATMENT WORKS

Drawing Title.

FIGURE 1.2
EXISTING SITE LAYOUT

Drawing Status.

INFORMATION

Checked.	Approved.	Date.
R.G	M.T	08JUN16
Scale.	**Designer.**	**Rev.**
1:3000	A.H	P1

Drawing Number.

3594-S-202-HYD-XX-XX-DR-NX-08001

50mm on Original

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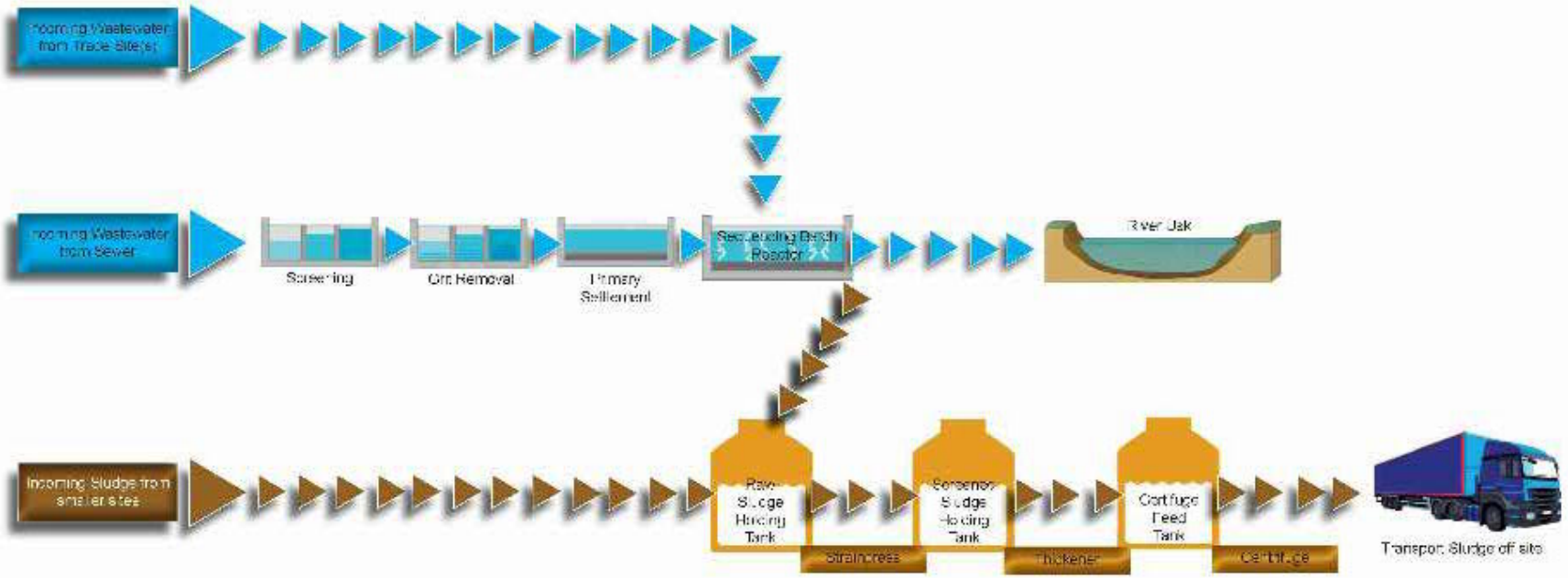
K:\UA\projects\UA00791.3 Llanfoist\E-OurDrawings\current\3594-S-202-HYD-XX-XX-DR-NX-08001_P03 - FIGURE 4.1 EXISTING SITE LAYOUT.dwg



Llanfoist WwTW
Preliminary Treatment

Wastewater arriving at the works from the sewer is screened to remove any large objects which will not be broken down in the treatment process, and could also block or damage the treatment equipment. Following screening, grit is settled out, washed and removed from the process.

Primary Treatment

Wastewater then passes into settlement tanks where solid waste settles at the bottom of the tanks. The settled solids are referred to as primary sludge, this is removed and passed to the sludge treatment process. The settled wastewater passes on to the next stage.

Additional pre-screened and primary treated wastewater from other trade sites will join with wastewater from the onsite primary treatment stage. This will occur at a point just prior to the secondary treatment stage.

Secondary Treatment

Secondary treatment at Llanfoist WwTW involves a Sequencing Batch Reactor (SBR) process. Wastewater within four large tanks is subject to cycles of aeration, settlement and decanting. The aeration promotes the growth of microorganisms to remove harmful biological matter that escapes primary treatment.

After a period of aeration the suspended microorganisms in the tank are allowed to settle and the clear treated water from the top of the tank is decanted and discharged to the watercourse. The mass of microorganisms in the tanks will increase during each cycle. In order to maintain the required amount, a portion is removed to the sludge process each cycle.

Sludge Treatment

The primary sludge and secondary sludge from the SBR is combined with additional sludge brought to the site from smaller wastewater treatment sites in the local area.

The combined sludges are passed through a strainpress to ensure that there are no rags or plastics remaining. Excess water is then removed from the sludge by a thickener unit and then a centrifuge unit. The resulting sludge is transported off site where it will be further treated to produce electricity and be recycled into a soil conditioner.

DRAWING DETAIL IS INDICATIVE AND ISSUED FOR INFORMATION PURPOSE ONLY. A3

KEY

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OHERWISE STATED.
2. ALL LEVELS ARE SHOWN IN METRES RELATIVE TO AOD
3. DO NOT SCALE FROM THIS DRAWING

Rev.	Date.	Drawn.	Description.	Chkd.	Appd.	Date.
P1	06MAY16	R.G	FOR INFORMATION	M.C	M.T	06MAY16

Client

Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

ARCADIS

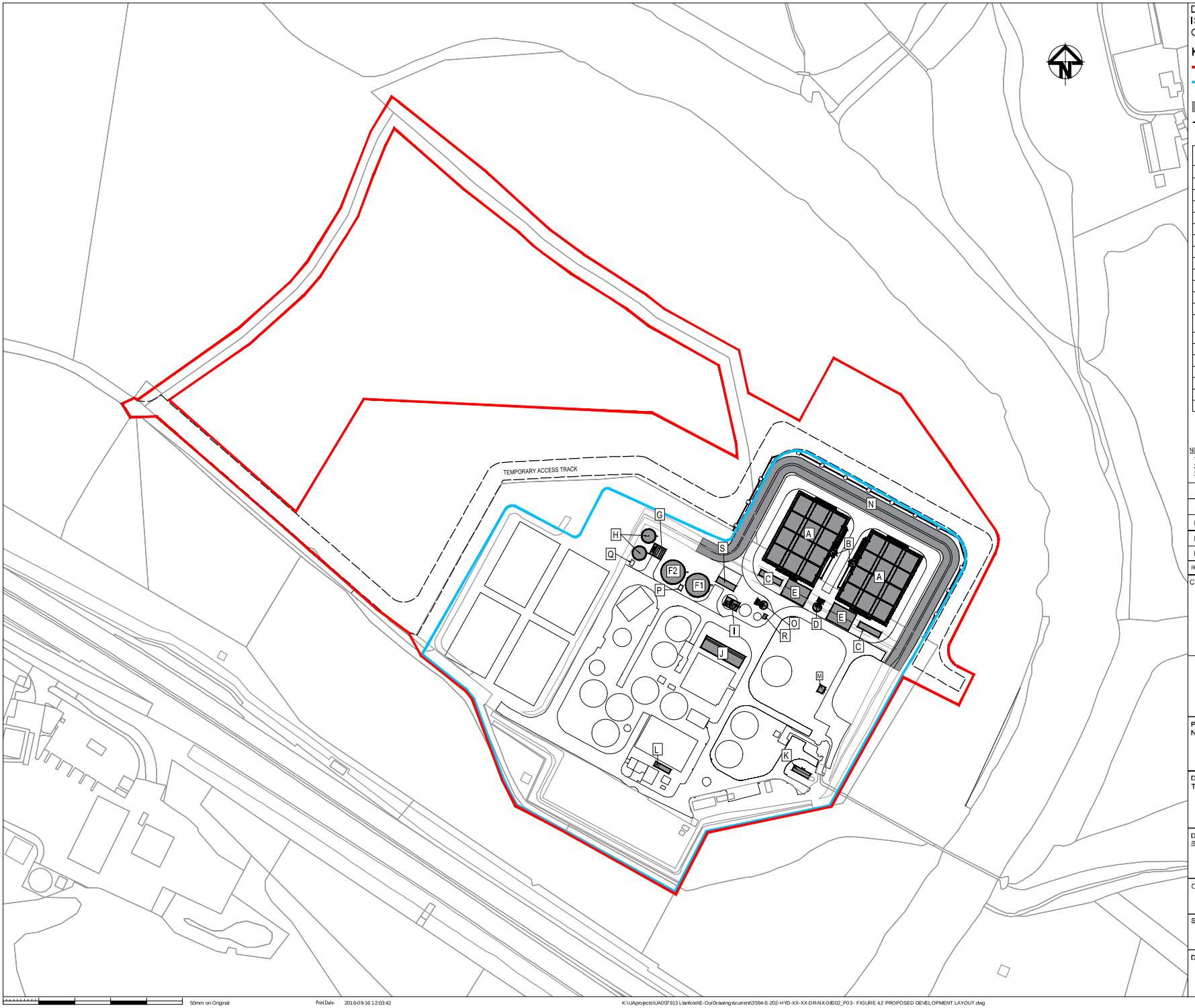
Project Name.
LLANFOIST WASTE WATER TREATMENT WORKS

Drawing Title.
FIGURE 1.4
WASTE WATER TREATMENT PROCESS

Drawing Status.
INFORMATION

Checked.	Approved.	Date.
R.G	M.T	20JUL16
Scale.	**Designer.**	**Rev.**
NTS	C.D	P1

Drawing Number.
3594-S-202-HYD-XX-XX-DR-NX-08533



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A3

KEY

- Planning Application Boundary
- Proposed Permanent Built Development Boundary
- Proposed Structures
- Proposed security fence to match and tie into existing fenceline

LIST OF PROPOSED STRUCTURES	
REF No.	STRUCTURE
A	SEQUENCE BATCH REACTOR - SBR
B	SBR DISTRIBUTION CHAMBER
C	SBR MCC KIOSK
D	INTERSTAGE PUMPING STATION
E	BLOWER BUILDING
F1	SLUDGE STORAGE TANK No. 1
F2	SLUDGE STORAGE TANK No. 2
G	STRAINPRESS
H	SCREEN SLUDGE STORAGE TANK
I	ODOUR CONTROL UNIT
J	STORM TANK
K	INLET WORKS MCC KIOSK
L	GENERATOR, FUEL TANK AND BUND ARRANGEMENT
M	FINAL EFFLUENT WASTEWATER PS
N	FLOOD BUND
O	SLUDGE RECEPTION PS
P	STRAINPRESS FEED PS
Q	CENTRIFUGE FEED PS
R	ROTOMAT SLUDGE SCREEN
S	MCC KIOSK

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METERS RELATIVE TO AOD.
3. DO NOT SCALE FROM THIS DRAWING

Rev.	Date.	Drawn.	Description.	Chkd.	Appd.	Date.
P5	14SEP16	R.G	NEW LAYOUT	D.H	R.D	14SEP16
P4	20JUL16	R.G	NEW REDLINE	D.H	R.D	20JUL16
P3	08JUN16	B.S.M	FOR INFORMATION	Y.F	M.T	08JUN16
P2	07JUN16	B.S.M	FOR INFORMATION	Y.F	M.T	07JUN16
P1	05NOV15	Y.F	FOR INFORMATION	A.H	M.T	05NOV15

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Project Name.
LLANFOIST WASTE WATER TREATMENT WORKS

Drawing Title.
FIGURE 1.3
PROPOSED DEVELOPMENT LAYOUT

Drawing Status.
INFORMATION

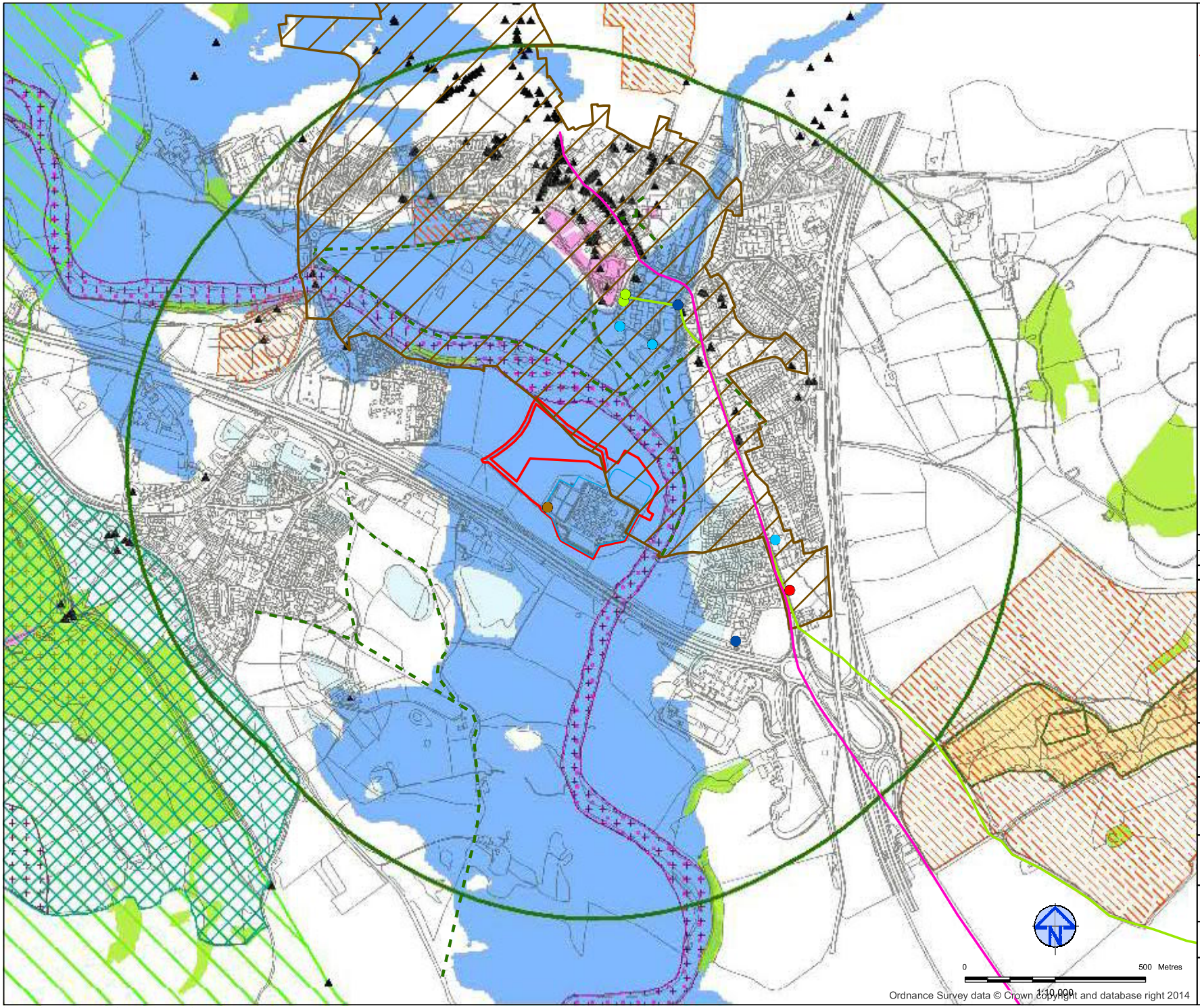
Checked.	Approved.	Date.
M.C	R.D	08JUN16
Scale.	Designer.	Rev.
1:2000	R.G	P5

Drawing Number.
3594-S-202-HYD-XX-XX-DR-NX-08002

50mm on Original

Print Date: 2016-09-16 12:03:42

K:\UAprojects\UA07913 Llanfoist\E-OurDrawings\current\3594-S-202-HYD-XX-XX-DR-NX-08002_P03- FIGURE 4.2 PROPOSED DEVELOPMENT LAYOUT.dwg



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A3

KEY

- Planning Application Boundary
- Proposed Permanent Built Development Boundary
- 1000m Buffer
- Public Right of Way within near Site Location

Designated Historic Assets

- Listed Buildings
- World Heritage Site
- Scheduled Monuments
- Parks and Gardens
- Gardens and Kitchen Gardens

Archaeological features

- Neolithic
- Bronze Age
- Medieval
- Post-Medieval
- Modern
- Unknown

Environmental Designations

- Ancient Woodland Inventory
- Sites of Special Scientific Interest
- Special Areas of Conservation
- National Parks
- Abergavenny Conservation Area

Planning Policy Wales TAN 15 Flood Risk Areas

- Zone B
- Zone C2

Rev.	Date.	Drawn.	Description.	Chkd.	Appd.	Date.
P1	20JUL16	D.S	INFORMATION	M.L	R.D	20JUL16

Client

Capital Delivery Alliance
Cynghrair Cyflawni Cyfalaf

ARCADIS

Project Name.

LLANFOIST WASTE WATER TREATMENT WORKS

Drawing Title.

FIGURE 1.5
ENVIRONMENTAL CONSTRAINTS
(1KM BUFFER)

Drawing Status.

INFORMATION

Checked.	Approved.	Date.
L.H	R.D	02-11-2015
Scale.	**Designer.**	**Rev.**
1:10,000	D.S	P1

Drawing Number.

3594-S-202-HYD-XX-XX-DR-NX-10043

0 500 Metres

1:10,000

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