

Land off Tirbach Road Ystalyfera

1. Introduction

The purpose of this report is to provide an overview of the civil engineering strategy to support an outline planning application for the redevelopment of the former Tirbach Washery, comprising the construction of up to 160 residential dwellings and associated infrastructure works.

It is not intended to support a full planning application or a SAB pre-app submission at this stage.

2. Existing Site Overview and Engineering Constraints

The existing former industrial/commercial site is accessed off Tirbach Road and is bounded by major level changes to the east (uphill) and west (downhill to the river) that impose strict developable land constraints on the site.

Distinct existing level plateaus exist across the site, that are separated by up to a 7m level difference (9m before site re-grading). The existing level constraints dictate the overall site layout, the access/road layout strategy and the proposed level strategy for the proposed development.

The site is currently accessed from a privately owned road, but it will not benefit from a direct permanent road access from that existing site entrance in its proposed final state. It is necessary to provide an independent controlled highway junction from the main road, which is covered in more detail within the transport assessment report.

Existing utilities constraints also exist, such as overhead power lines, water mains and water valve infrastructure that also dictate part of the layout planning.

3. Site Level Strategy

Once the developable land area was identified, the main developable level plateaus were set and the internal road and access route layouts were set out within reasonable limits, while remaining compliant.

There will be a requirement for some boundary retaining walls between 1m and 4m in height, in some parts of the site that are adjacent steeply sloping higher ground, such as the western and northern boundaries.

The existing levels around the proposed drainage basin area is proposed to remain largely as it is, to make use of that as the main drainage attenuation and SuDS feature for the site.

4. Surface Water Drainage and SuDS

The existing site is a mix of concrete and tarmac hardstanding, large areas of gravel/hardcore surface and low level vegetation. Areas that are considered outside of the developable land are relatively densely wooded.

It is evident that a large amount of surface water runoff occurs from this brownfield site, with some land drainage inflows from adjacent higher land occurring.

For the purposes of forming a compliant sustainable drainage strategy the pre-development runoff rate is considered to be equivalent to a predicted greenfield runoff rate for the developable land area. It is the QBAR greenfield runoff rate that is to be used as the discharge limit from the proposed sustainable drainage system for the development.

There currently is a partially infilled small watercourse / ditch, with a pipe link to an existing lowered area that ponds, before discharging out to the river set far below the level of the site, at the eastern boundary. This watercourse route is proposed to be reinstated and the flow maintained through to its current discharge point.

While infiltration drainage is not precluded from the sustainable drainage strategy at this stage, it is not being fully relied upon for the main discharge destination for the development runoff and drainage flows. The main discharge destination will be the river (Afon Twrch), which is where the existing site runoff discharges to now.

The pre-development flow rate shall be the equivalent QBAR greenfield runoff rate for the developable area. The post-development flows will be limited to the pre-development flow rate, for all storm events up to the critical duration 1:100 year + 40% climate change storm. This will be achieved by a combination of at-source storage within individual properties, road-side rain gardens and the main attenuation basin situated in the centre of the development.

Water quality improvement will be achieved by a combination of permeable paved driveways, road-side rain gardens, swales and settlement features within the main attenuation basin.

The drainage system will contribute to an uplift in amenity and biodiversity compared to a traditional pipe, manhole and tank based drainage system.

Individual properties will own the SuDS features within their own demise, such as permeable paved driveways and small raingardens for roof water runoff. SuDS features such as raingardens will be either adopted and maintained by the Local Highway Authority with the road or by the SuDS Approval Body (SAB). The drainage basin would be adopted and maintained by the SAB.

A SuDS concept plan is included as an appendix to this report. At this stage, this is intended to be an outline indication of potential SuDS solutions, to comply with the sustainable drainage legislation and the SuDS standards. The distribution and quantification of SuDS features across the site is subject to detailed design, ahead of a formal SAB application at the appropriate stage.

A drainage strategy and SAB pre-app submission would be completed to support a full planning application.



5. Flood Risk

The site is not within flood risk zone. The flood map indicated that part is within Zone 3, but the river level is some 10m below the site and would not be able to flood in that way.

On the flood map for planning, some predicted surface water flooding associated with the partially filled watercourse is noted, which will be effectively managed within the site but reinstating it through to its existing discharge point.

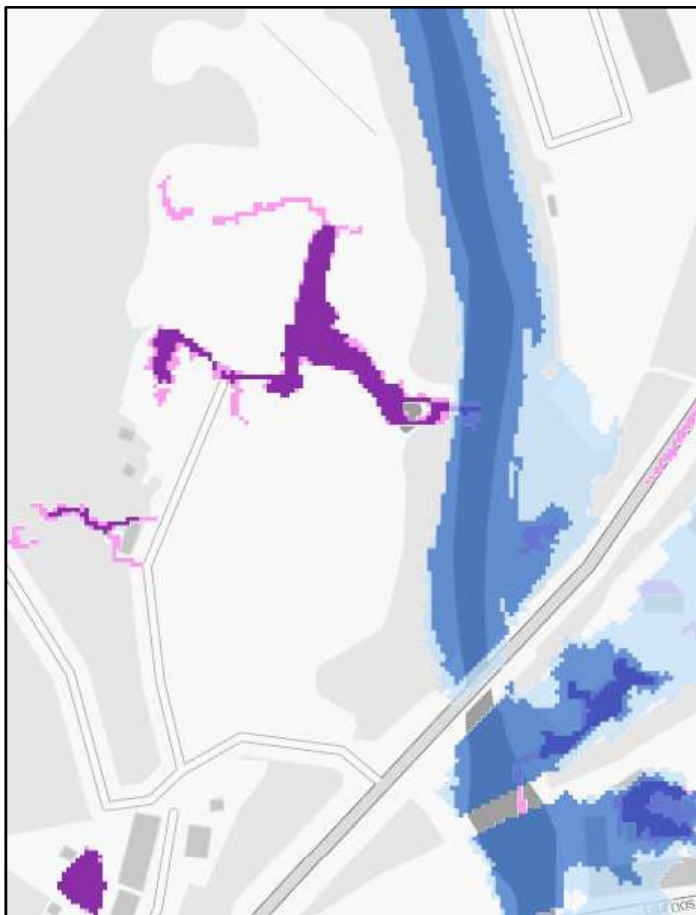


Figure 1. Flood Map for Planning

6. Foul Water Drainage

There are no public foul or combined sewers within the immediate vicinity of the development site.

Consultation with Dŵr Cymru Welsh Water (DCWW) has been carried out to determine a suitable point of connection from the proposed on-site foul drainage system.

DCWW has confirmed a suitable foul drainage connection point at Tirbach Road, which is around 105m from the proposed on-site foul water pumping station. The proposed foul water flow would be in the order of 5l/s. A summary of correspondence and key statements on this is presented below.

DCWW Statement PPA0006974 08/08/22 - Foul Water Drainage – Sewerage Network

"We have considered the impact of foul flows generated by the proposed development and concluded that flows can be accommodated within the public sewerage system. We advise that the flows should be connected to the foul sewer at or downstream of manhole SN77091201 located to the Southwest."

DCWW Statement PPA0006974 08/08/22 - Foul Water Drainage – Sewage Treatment

"The proposed development would overload the Wastewater Treatment Works. No improvements are planned within Dŵr Cymru Welsh Water's Capital Investment Programme."

If you wish to progress this development, then it will be necessary for a feasibility study to be undertaken on the Wastewater Treatment Works at the developer's expense. The conclusion of this study will determine any improvement works required. The costs for undertaking this study must be paid for by the developer."

Response from DCWW 22/09/22 - Foul Water Drainage – Sewage Treatment

"On the strict understanding the proposals will drain south via Tirbach Road to the Trebanos WwTW catchment, I would advise there will be no requirement to proceed with the feasibility study."

A traditional adoptable, gravity foul water drainage system is required across the site, to serve all properties. This will connect to a single adoptable pumping station, that will pump via a 100m long rising main to the agreed connection point at Tirbach Road. The pumping station, rising main and sewer connection is likely to be done via a sewer requisition agreement with DCWW.

A schematic layout of the main foul drainage system is included in Appendix B.

7. Watermain Constraint

The proposed site access road will need to cross over the 500mm diameter trunk water main in the location shown below:

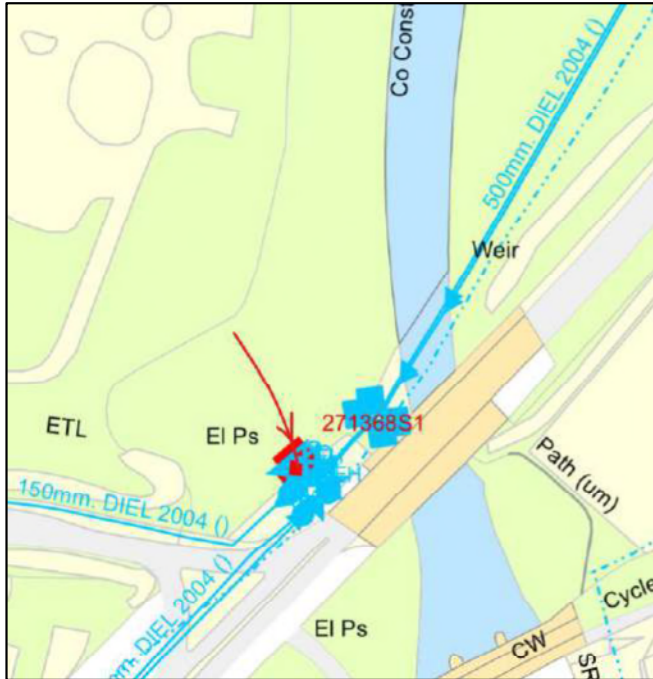


Figure 2. Extract of DCWW Asset Map indicating trunk water main

The alignment of the road has been set to avoid a direct clash with an existing concrete slab containing some water valve infrastructure.



Figure 3. Extract of Layout Clouding the Concrete Slab

Dŵr Cymru Welsh Water have confirmed the following restrictions and requirements in relation to the water main easement. These will be considered in detail during the design stage ahead of a planning application being made. There is no development other than the road and footpath in the direct vicinity of the trunk water main.

The development of the site with the 500mm trunk water main located as shown on the attached plan will involve certain conditions which must be strictly adhered to. These are:

- No structure is to be sited within a minimum distance as above from the centre line of the pipe. The pipeline must therefore be located and marked up accurately at an early stage so that the Developer or others understand clearly the limits to which they are confined with respect to the Company's apparatus. Arrangements can be made for Company staff to trace and peg out such water mains on request of the Developer.
- Adequate precautions are to be taken to ensure the protection of the water main during the course of site development.
- If heavy earthmoving machinery is to be employed, then the routes to be used in moving plant around the site should be clearly indicated. Suitable ramps or other protection will need to be provided to protect the water main from heavy plant.
- The water main is to be kept free from all temporary buildings, building material and spoil heaps etc.
- The existing ground cover on the water main should not be increased or decreased.
- All chambers, covers, marker posts etc. are to be preserved in their present position.
- Access to the Company's apparatus must be maintained at all times for inspection and maintenance purposes and must not be restricted in any way as a result of the development.
- No work is to be carried out before this Company has approved the final plans and sections.

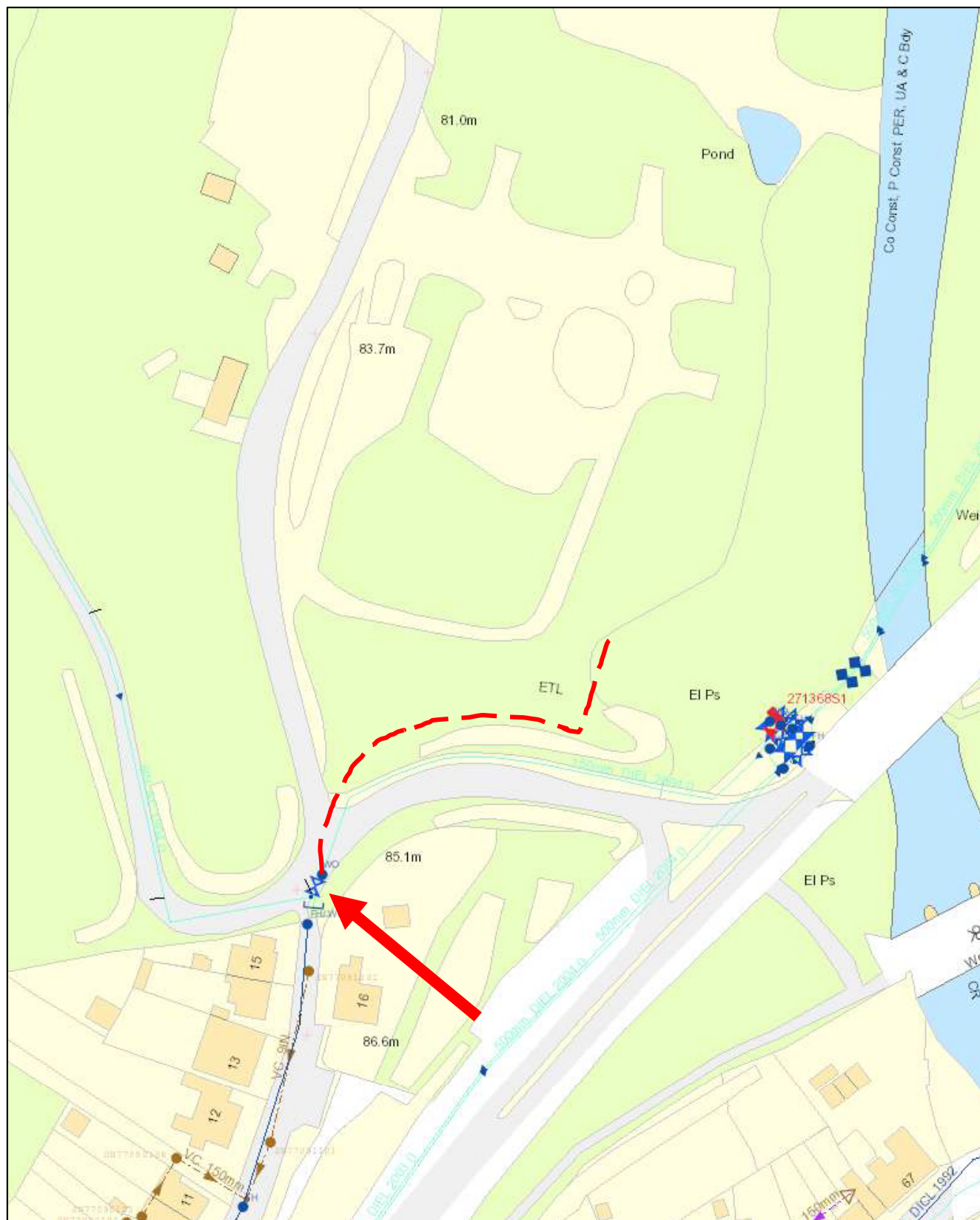
8. Next Stages and Approvals

Following PAC, the following pieces of civil engineering design work are required, to support a full planning application:

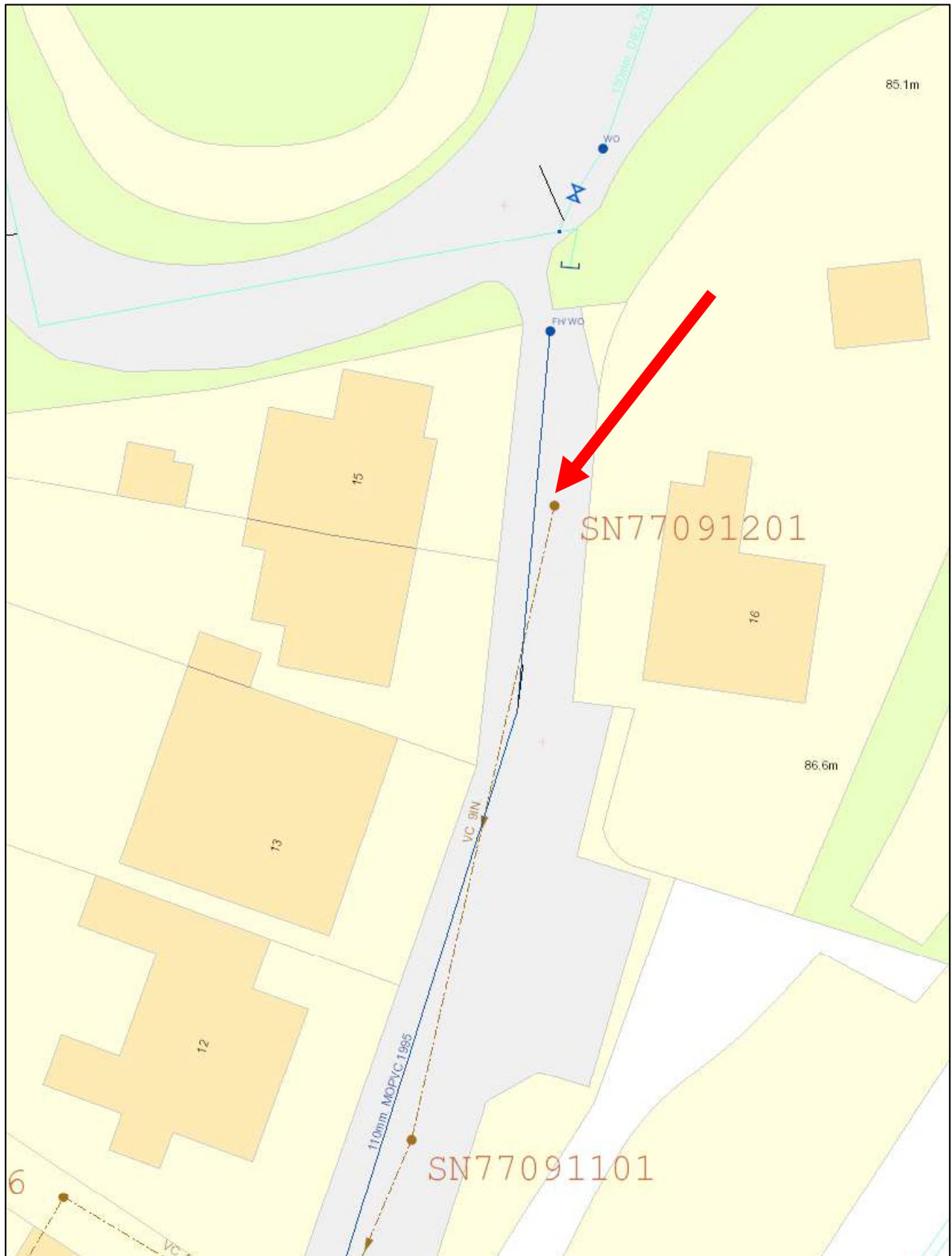
- Technical design of site levels, drainage and SuDS
- Drainage strategy report
- SAB pre-app submission, return of SAB comments and incorporation into the proposals
- Agree the principles of the DCWW sewer requisition
- Agreement highway access layout, including water main crossing



Appendix A - Off-site Drainage



Location of permitted foul sewer connection point and indicative route of requisitioned rising main from new pumping station



Location of permitted foul sewer connection point

Appendix B - Plot Level Strategy





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Skantec Limited
Third Floor, Wharton Place, 13 Wharton Street
Cardiff
CF10 1GS
Tel: +44 (0)2920 023665
www.skantec.com/uk

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OUTLINE CIVIL ENGINEERING STRATEGY

Project No.
332710131

Revision
P01

Drawing No. 22699-STN-XX-XX-DR-C-0004

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Appendix C - SuDS Concept Plan





Example: Landscaped Attenuation Basin

A photograph of a landscaped attenuation basin. In the foreground, there is a pond with reeds and a grassy slope. In the background, there are several red brick houses with white window frames. The sky is overcast.

Example: Rain Garden



PERMEABLE PAVED PARKING BAYS AND DRIVEWAYS THROUGHOUT



Example: Residential permeable block paving



Example: Residential estate
road-side rain garden



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