

DRAINAGE STRATEGY REPORT

Proposed Light Industrial Units at
Nant y Cafn for Neath Port Talbot
County Borough Council.



Project Reference:

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Client:

ANDREW SCOTT CONSTRUCTION LTD.

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1.0 INTRODUCTION

BHPL has been commissioned as part of Andrew Scott Construction's design team to undertake the civil & structural engineering aspects of the proposed light industrial Unit at Nant-y-Cafn for Neath Port Talbot County Borough Council (NPTCBC). The following drainage strategy report relates to the surface water and foul water drainage for the new development area and has been prepared to support the Planning and SAB Applications for the proposed development, along with any future developments / additional works across the site. The Drainage Strategy Report is limited to the following:

- An overview of the existing site, its drainage, and the current flood risks.
- A feasibility assessment on the SuDS hierarchy surface water destinations.
- A description of the proposed philosophy for managing surface water runoff across the site.
- A review of the six statutory standards and the schemes compliance.
- A description of the proposed philosophy for managing foul water.

2.0 SITE LOCATION

The site is located approximately km north northeast of Nant y Cafn, at National Grid reference SS 873985, see [Figure 2.1](#) below which shows the site area edged in red. Nearest postcode is SA10 9EY.

The site is bounded to the north by an existing development plateau of rough open ground, to the east by farmland, to the south by existing retail units (the closest of which is a pharmacy outlet) and to the west by an existing access road which serves the site and continues north to the development plateau. The Dulais River is located approximately 115m to the east.



[Figure 2.1 – Site Location Plan](#)

3.0 PROPOSED DEVELOPMENT

The proposed development comprises the construction of a new single storey industrial unit which is divided into six individual units. The layout will also provide a total of 18 car parking spaces and vehicular access points to each unit's roller shutter door openings. The new proposed site layout is shown below with some 3D views of the proposed building.



Figure 3.1 – Proposed Site Plan

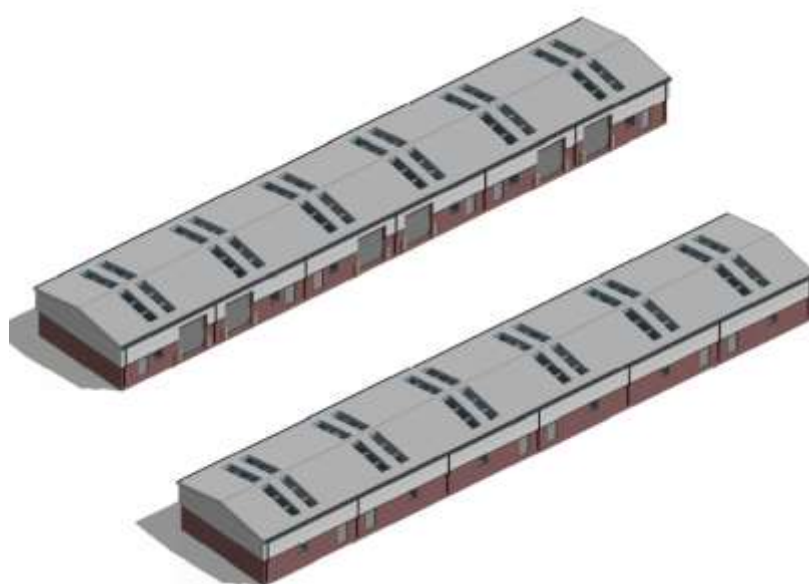


Figure 3.2 – 3D Views of Proposed building, front and rear views

4.0 GEOTECHNICAL AND GEOENVIRONMENTAL SUMMARY

SOCOTEC UK Limited (SOCOTEC) was commissioned in November 2023 by Neath Port Talbot County Borough Council (NPT) to carry out a ground investigation to provide geoenvironmental and geotechnical parameters for the design and construction of additional industrial units at the Glyncorrwg workshops site.

The scope of the investigation was specified by SOCOTEC and comprised 5 boreholes and field testing [hand vane, dynamic probing and dynamic (cone penetrometer), geotechnical, geochemical and geoenvironmental testing plus groundwater and gas monitoring over three-month period. The fieldwork was carried out during December 2023. The scope of the onsite intrusive works undertaken, is given by Fig below.



Figure 4.1 – Site Investigation Testing Location Plan

4.1 GROUND CONDITIONS

The published geological map for the area, (BGS Sheet 231, 1979), and the BGS GeoIndex Onshore online viewer (2024) show the site located on superficial deposits comprising recent Devensian Till, including clay, silt, sand and gravel. Alluvium is shown to be present approximately 80m to the west of the site and follows the northeast southwest trend of the River Dulais.

The Till is underlain by the South Wales Middle Coal Measures Formation composed of coal-bearing siltstones and sandstones. The bedrock is indicated to dip approximately 10 degrees to the south. The nearest recorded coal seam, which appears to be the Red Vein, is located approximately 67m west/southwest of the site. The coal seam is indicated to be offset approximately 64 m south by an inferred north south trending fault, the downthrow of which is unknown. The offset Red Vein coal seam is inferred to continue towards the east and northeast (located approximately 48m south of the site) and is again offset by further inferred faulting, located approximately 45 m southeast and 60m east of the site. There are no mine entries recorded within 20m of the site. However, the site is located within an area for which a license to remove coal by underground methods has been granted. There are currently no planned future underground workings proposed and the Coal Authority report provided also confirms that the site does not lie within the likely zone of physical influence for any planned future workings.

The ground conditions encountered show a general sequence of Till overlying probable Coal Measures (not proven by rotary coring). The site surfacing varies depending on the previous use, with Made Ground encountered near to the constructed roadway entrance, and a thin veneer of Topsoil elsewhere.

Table 4.1 - Summary of Ground Conditions Encountered

Thickness (m)	Top (m)	Top (mOD)	Thickness (m)	Remarks
Made Ground (Colliery Spoil)	0.00	136.9 to 137.3	0.50 to 0.80	Ground surfacing.
Alluvium	-0.50 & 0.80	137.6 to 136.7	0.90	Only in area of possible former infilled stream.
Till	-0.30 to 0.80	136.9 to 136.6	0.90 to 2.70	
South Wales Coal Measures		133.9 to 135.8	Not proven	Depth not proven by rotary coring.

4.2 GROUNDWATER

Three groundwater entries into the boreholes during drilling were recorded as either seepage or slow inflow and are summarised in the table below. It was noted that these may not represent equilibrium due to the short period over which the holes were open and therefore would vary due to seasonal conditions. Groundwater monitoring standpipes were installed in three locations. The results of the monitoring carried out on eight occasions between January and March 2024 are summarised below.

HOLE ID	DEPTH OF STRIKE (m)	RISE AFTER 20 MINUTES (m)	GROUNDWATER DEPTH (mOD)	STRATUM
WSN01	1.74	1.86 (from 2.00m liner depth)	135.6 to 136.3	Till
WSN02	0.60	No Rise	136.3	Made Ground
WSN03	1.60	1.77 (from 2.00m liner depth)	137.2 to 137.7	Alluvium

The response zones within the Till and probable Coal Measures showed a similar pattern over the monitoring period, indicating these may be in continuity with each other. These two wells showed an overall increase in water level. The Alluvium response zone showed a generally shallowing trend, with water ponding at surface on several visits. It remains a possibility that some of the shallow groundwater may be surface run-off as the headworks were flooded on several visits and water may have entered the pipes during the monitoring.

As noted previously it should be appreciated that seasonal fluctuations in groundwater level occur, and other effects such as investigations and constructions activities, and water abstraction may also change groundwater levels.

4.3 CONTAMINATION

The site investigation report indicates that no olfactory and visual evidence of hydrocarbon contamination was encountered in any of the exploratory holes. The ground investigation and subsequent assessment have not indicated levels of soil contamination that would represent an unacceptable risk to human health. The analysis of groundwater samples has indicated slight exceedances of the EQS screening levels for cadmium, nickel, zinc and fluoranthene. In general, the risk to surface waters is considered generally low and representative of the wider groundwater conditions and is likely to be mitigated by the construction of hardstanding surfaces that will cover most of the site in the end development and therefore sever the leaching pathway.

4.4 INFILTRATION

Soakaway testing was undertaken at the site with each test being undertaken over a period of between 19 and 22 hours. During this monitoring period the water level in the test pits failed to fall to the 25% effective depth that is required to calculate an infiltration rate. All tests were undertaken in the clay-dominated materials (Made Ground, Alluvium and Glacial Till) which were expected to possess poorer drainage characteristics. Details of the testing undertaken are given below.

	Effective storage depth. No calculation possible.	GROUND
SAN01 0.00-0.80m	No significant fall in water level in 1140 mins. No calculation possible.	Slightly sandy gravelly CLAY. (MADE GROUND over ALLUVIUM)
SAN02 0.00-0.65m	No significant fall in water level in 1140 mins. No calculation possible.	Slightly sandy gravelly CLAY. (MADE GROUND over ALLUVIUM)

Based on the results of these tests, the overall conclusion is that the ground conditions encountered on the site are unlikely to be suitable for the use of infiltration techniques and that alternative drainage methods should therefore be considered.

5.0 PLANNING POLICY AND GUIDANCE

The WG Planning Policy guidance states the following: “flood risk is a material planning consideration”. The Technical Advice Note 15: Development and Flood Risk (TAN15, 2004) also states that “surface water is a material consideration and explains that development should not create additional runoff compared with the undeveloped situation, and redevelopment schemes should also aim to reduce run-off where possible.”

Therefore, the aim of this drainage strategy is to focus on the capture and management of surface water within the site boundary and ensure compliance with the requirements and guidance of the following publications and organisations:

- Technical Advice Note 15 (TAN15)
- Welsh Government Statutory standards for sustainable drainage systems – designing, constructing, operating, and maintaining surface water drainage systems 2018.
- CIRIA Report C753 – The SuDS Manual-v1

Technical Advice Note 15 (TAN15) provides guidance which supplements the policy set out in Planning Policy Wales (PPW) in relation to development and flooding. A precautionary framework is set out which advises caution in respect of new development in areas at high risk of flooding and this is used as a guide for planning decisions. The overall aim of the precautionary framework is to direct new development away from those areas that have a high risk of flooding; and development will only be justified in these areas if it meets the criteria and tests specified in this guidance. The focus of the development is the new industrial unit with a small amount of additional car parking spaces; the development is therefore considered to be a ‘Less Vulnerable Development’.



Figure 5.1 – Extract of NRW's Development Advice Map

Table 5-1. Flood Zone designations, their associated flood risk definition and use with the precautionary framework

Zone	Definition	Use within precautionary framework
A	Little or no risk of fluvial / tidal flooding	Justification test is not applied and do not need to consider further
B	Areas known to have flooded historically evidenced by sedimentary deposits	Used as part of the precautionary approach to indicate where site levels should be checked against the extreme (0.1% annual probability) flood. No need to consider flood risks further if site levels are greater than the extreme flood level
C	Based on Environment Agency extreme flood outline (0.1% annual probability)	Indicates that flooding issues should be considered as an integral part of the decision making by the application of the justification test, including FCA.
C1	Areas of Zone C which are developed and served by significant infrastructure, including flood defences	Indicates that development can take place subject to the application of the justification test, including acceptability of consequences
C2	Areas of Zone C without significant flood defence infrastructure	Indicates that only 'less vulnerable' development should be considered, subject to the application of the justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered

Table 5-2. Development Categories

Flood Zone Definition	Use within precautionary framework
Emergency Services	Hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood.
Highly vulnerable development	All residential premises (including hotels and caravan parks), public buildings (e.g., schools, libraries, leisure centres), especially vulnerable industrial development (e.g., power stations, chemical plants, incinerators), and waste disposal sites
Less vulnerable development	General industrial, employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites

6.0 FLOOD RISK TO DEVELOPMENT

TAN 15 requires that all potential flood sources that could affect the proposed development be considered. This includes flooding from rivers and the sea, directly from rainfall on the ground surface, rising groundwater, and overwhelmed sewers and drainage systems. Flooding from reservoirs, canals, lakes, and other artificial sources should also be considered. There should be demonstration of how these should be managed so that the development remains safe throughout its lifetime, whilst taking climate change under consideration.

BHPL have consulted NRW published flood maps for the area (which are given below) in particular the Flood Map for Planning which is considered to be the most detailed/accurate mapping available.

6.1 FLOOD RISK FROM RIVERS

Figure 6.1 below is an extract from NRW's Flood Map for Planning flood map which indicates the site falls well outside Flood Zones 2 & 3 and therefore the consequences of fluvial flooding need not be considered further.

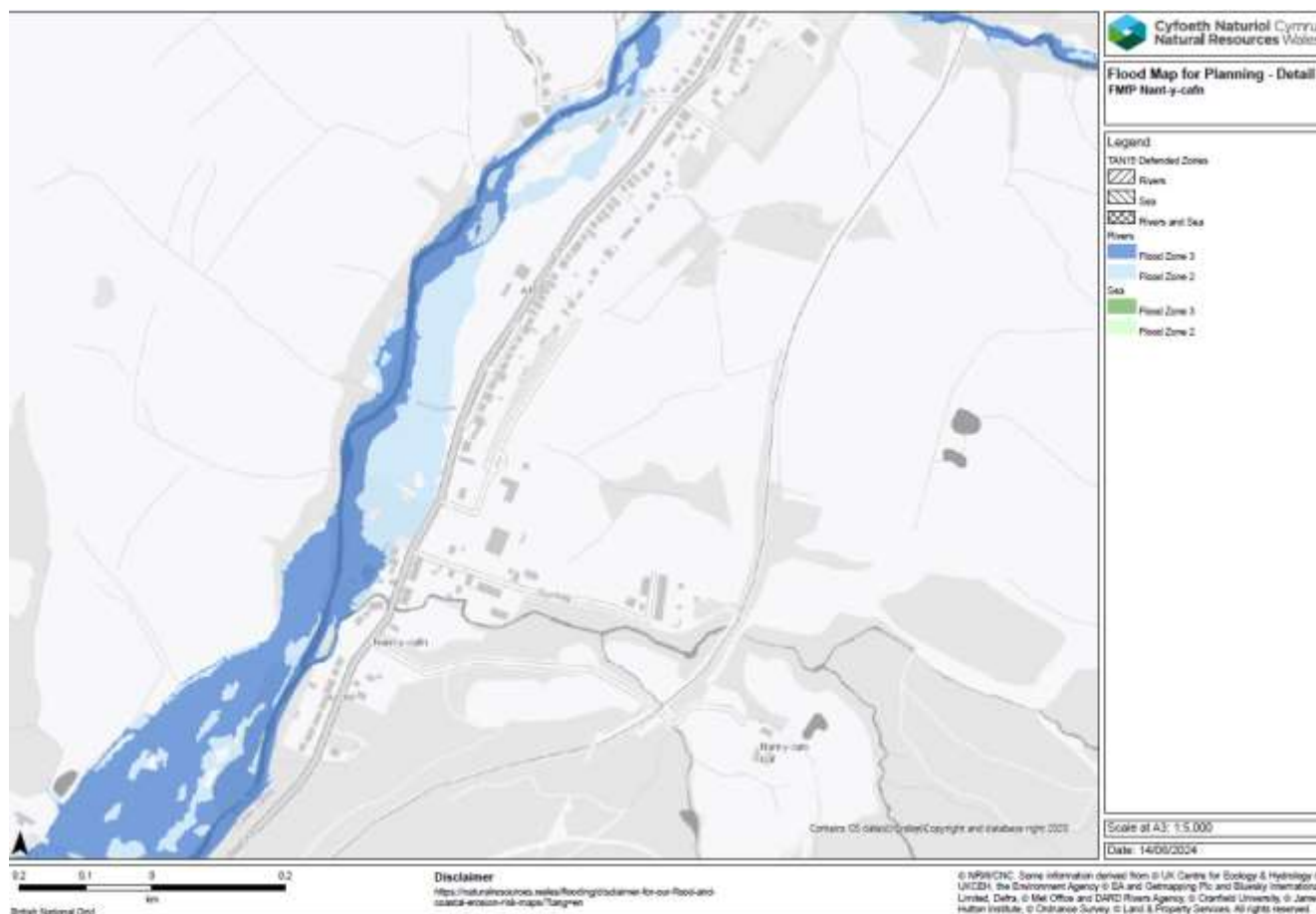
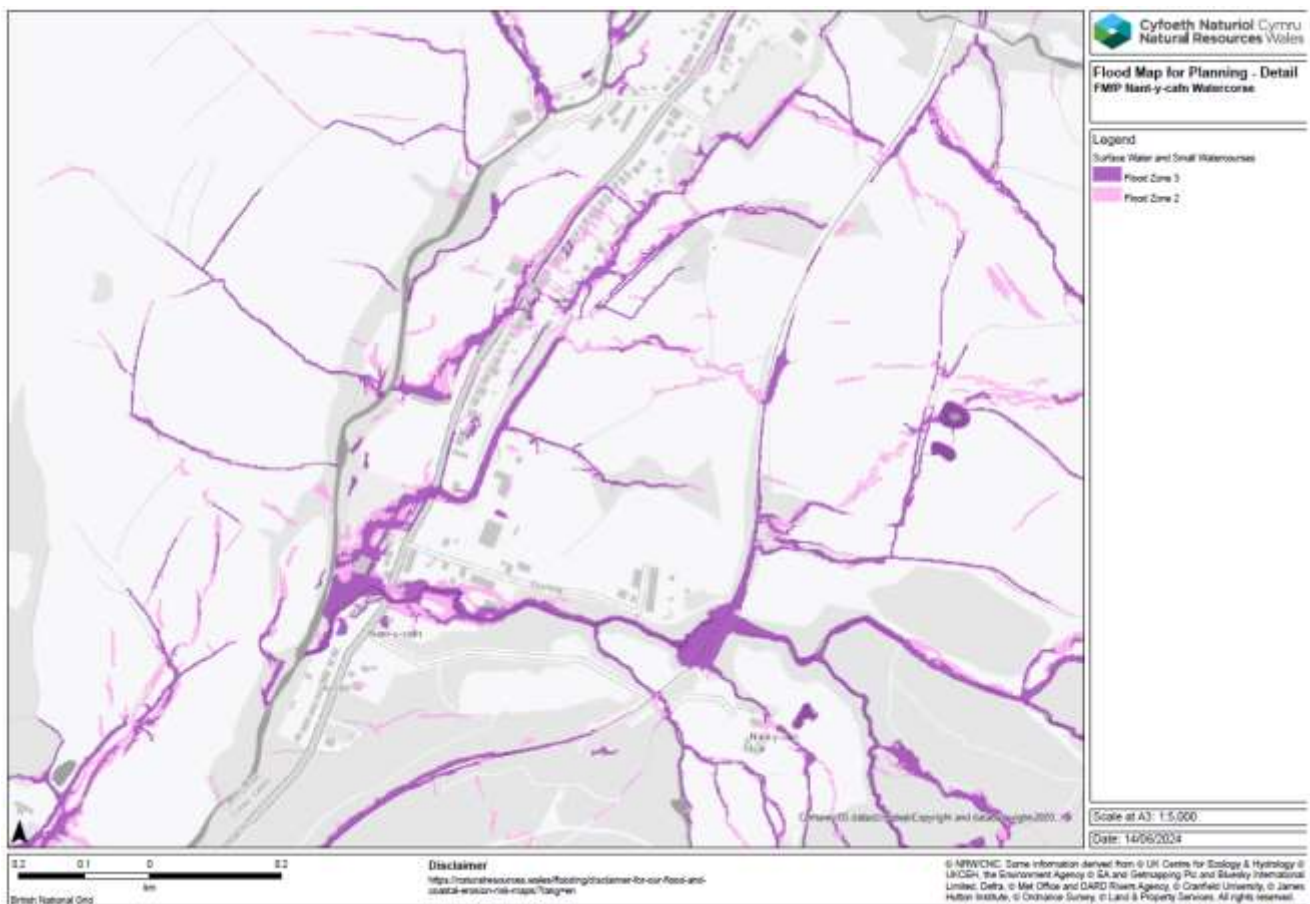


Figure 6.1 – Extract of NRW's Flood Map for Planning (Rivers and Sea)

6.2 FLOOD RISK TO DEVELOPMENT FROM SURFACE WATER AND SMALL WATERCOURSES

Overland flow routes can form from rainfall that fails to infiltrate the surface and travels over ground; this is exacerbated where the permeability of the ground is low due to the type of soil/ geology (such as clayey soils) or urban development. Surface water is also promoted in areas of steep topography which can rapidly convey water that has failed to penetrate the surface. [Figure 6.2](#) below shows NRW's surface water and small watercourses flood risk map layer.

- Flood Zone 3: Areas with more than 1% (1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change
- Flood Zone 2: Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.



[Figure 6.2 – Extract of NRW's Flood Map for Planning \(Surface Water and Small Watercourses\)](#)

With reference to [Figure 6-2](#) above, the site generally falls outside Flood Zones 2 & 3 with a slight flood zone crossing east to west within the southern portion of the site. There is also potential flooding running north to south along the western edge of the site. This horizontal band reflects a previous ditch that crossed the site which has since been culverted by a new 750mm diameter drain which conveys land drainage arising from the west to a new SW drain located in the existing access road. The flood zone shown along the western edge of the site is the new highway access that serves the new development plateau to the north. The new highway has road gullies

and a main surface water drain and therefore intercepts land drainage from the land to the north and conveys it towards the south. We therefore feel the site is at minimal risk of flooding from small watercourses.

6.3 FLOOD RISK FROM SEA

The site lies approximately 18km from the coastline; therefore, as anticipated, NRW's flood risk map for flooding from the sea, indicates no risk of flooding.

6.4 FLOOD RISK TO DEVELOPMENT FROM GROUNDWATER

Ground water flooding occurs where groundwater levels rise above ground surface levels. The geology has a major influence on where this type of flooding takes place; it is most likely to occur in low lying areas underlain by impermeable rocks.

The site investigation works indicate two water strikes at -0.6 & 1.6/1.74m bgl.- The perched water table at -0.6m is within the made ground clayey deposits and as such will be removed as part of the development proposals therefore the ground water level is assumed to be at greater depth at approximately -1.6m bgl. Therefore, we consider the flood risk from groundwater is minimal.

6.5 FLOOD RISK TO DEVELOPMENT FROM LOCAL SEWERS

Flooding can occur as a result of infrastructure failure e.g., blocked sewers or failed pumping stations. Sewer flooding can occur when the system surcharge due to the volume or intensity of rainfall exceeding the capacity of the sewer, or if the system becomes blocked by debris or sediment.

With reference to [Figure 6.3](#) below, the adopted sewer plan provided by DC/WW indicates a foul water sewer located well away from the proposed development and the site is therefore free from any large public sewers. There are private sewers serving the commercial units to the south of the development, but these are downslope of the site and will not affect the site should they fail/surcharge with any flood waters flowing towards the south away from the development.

In addition to the public sewer records shown above, Landmark Wales Surveys have undertaken a survey of the existing services local to the site; an extract of which can be seen in [Figure 6.4](#) below. The survey information shows that the site to be traversed by two land drains which cross the site northeast to westly direction. The surface water drains make connection to an existing SW drain in the highway which directs flows to the south. Both drains are large in diameter with a 350 diameter pipe and the main line being 750mm dia. These drains appear to only serve land drainage picking up surface water from the development plateau to the north, farmland to the east and the site area itself.

Given these drains are under one ownership (NPTCBC) they are considered to be easily manageable with risks of blockages being minimal.



Figure 6.3 – Extract of DCWW’s Sewer Record

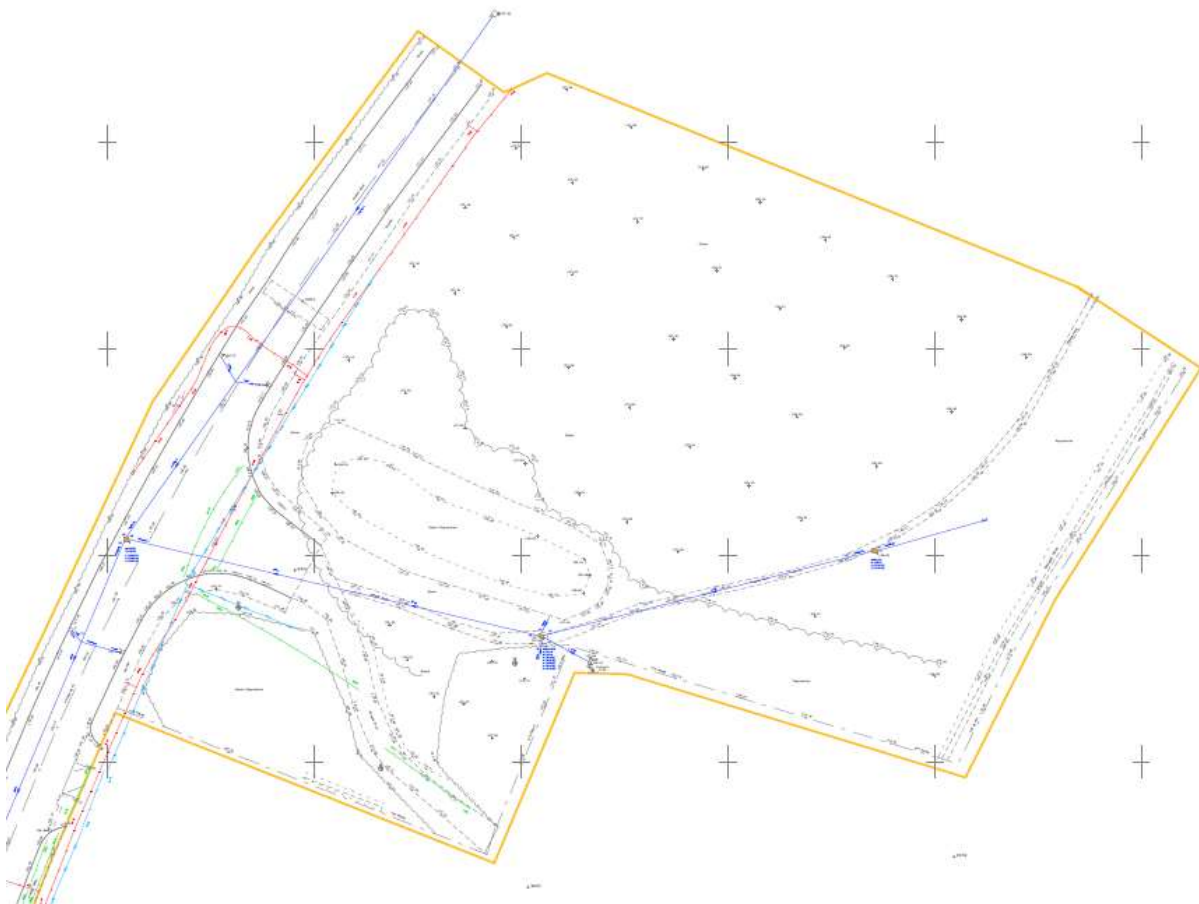


Figure 6.4 – Extract of Landmark Wales’s Site Survey

7.0 PROPOSED SURFACE WATER DRAINAGE

7.1 OVERVIEW

The proposed surface water drainage design will have to consider the sequential approach as defined by the National Planning Policy Framework (NPPF), the Sustainable Urban Drainage Manual and Part H of Building Regulations.

From 7th January 2019, all new developments of more than 1no. dwelling house or where the construction area is 100m² or more, will require Sustainable Drainage Systems (SuDS) for surface water. From this date, SuDS on new developments must be designed and built-in accordance with the Statutory SuDS Standards published by Welsh Ministers and SuDS schemes must be approved by the local authority acting in its SuDS Approving Body (SAB) role, prior to construction work being undertaken. The principles which underpin the design of surface water management schemes to meet the 6 Standards. SuDS schemes should aim to address the following:

- Manage water on or close to the surface and as close to the source of the runoff as possible,
- Treat rainfall as a valuable natural resource,
- Ensure pollution is prevented at source, rather than relying on the drainage system to treat or intercept it,
- Manage rainfall to help protect people from increased flood risk, and the environment from morphological and associated ecological damage resulting from changes in flow rates, patterns and sediment movement caused by the development,
- Take account of likely future pressures on flood risk, the environment and water resources such as climate change and urban creep,
- Use the SuDS Management Train, using drainage components in series across a site to achieve a robust surface water management system (rather than using a single “end of pipe” feature, such as a pond, to serve the whole development),
- Maximise the delivery of benefits for amenity and biodiversity,
- Seek to make the best use of available land through multifunctional usage of public spaces and the public realm,
- Perform safely, reliably, and effectively over the design life of the development considering the need for reasonable levels of maintenance,
- Avoid the need for pumping where possible,
- Be affordable, considering both construction and long-term maintenance costs and the additional environmental and social benefits afforded by the system,

There are six mandatory standards to be achieved within the National SuDS standards, S1 to S6. The following sections demonstrate compliance with each of these standards.

7.2 STANDARD S1 – SURFACE WATER RUN-OFF DESTINATION

The Statutory Standards for Sustainable Drainage Systems published by the Welsh Government sets out five priority levels regarding the destination of runoff from sites; see [Table 7-1](#) below:

[Table 7-1. Priority Levels for Surface Water Runoff Destination](#)

Priority Level and Definition	Assessment
Priority Level 1: Collected for use	There is no foreseeable demand for non-potable water on the site throughout its design life; the use of rainwater harvesting is not a viable/ cost-effective part of the solution for managing surface water runoff on the site, taking account of the limited potential water supply benefits of such a system. The only use for the re-harvested water being the toilet facilities. With the typical capital cost of a unit being in excess of £10,000 and yearly maintenance in excess of £500, the payback period would far outweigh the life of the structure.
Priority Level 2: Infiltrate to ground	Soakaway testing was undertaken at the site with each test being undertaken over a period of between 19 and 22 hours. During this monitoring period the water level in the test pits failed to fall to the 25% effective depth that is required to calculate an infiltration rate. Based on the results the overall conclusion is that the ground conditions encountered on the site are unlikely to be suitable for the use of infiltration techniques and therefore not proposed for this site.
Priority Level 3: Discharge to a surface water body	The closest watercourse is the Dulais River situated approximately 220m west of the development. It would be difficult and costly to provide a new SW drain to make connection to the river, even if sufficient falls can be provided. The construction of a new surface water sewer line making connection to the river is not deemed practical.
Priority Level 4: Discharge to surface water sewer.	There is an existing 750mm diameter SW drain crossing the site and discharges to a surface water drain within the adjacent highway. It is therefore proposed to make connection to the existing SW drain with the discharge rate being controlled to 2.5l/s.
Priority Level 5: Discharge to a combined sewer	It is not intended to connect SW drainage to a combined sewer.

7.3 STANDARD S2 – SURFACE WATER RUN-OFF HYDRAULIC CONTROL

Based on the assessment undertaken in [Table 7-1](#) above, the following drainage scheme has been proposed and outlined in [Figure 7-1](#) below; the reader should also refer to BHPL's drainage and external works drawing; referenced 6807-BHP-03-XX-DR-C-(60)301 for details.

The proposed surface water network considers the roof of the new building, and the hardstanding areas fronting the new unit providing a total of 18no. car parking spaces. An extract of the proposed drainage layout is shown below, indicating the new foul and surface water lines and where they make connection to the existing 750mm diameter land drain that crosses the site. A section of the existing 350mm diameter land drain entering the site in the northeast corner will require diversion around the eastern gable end of the new building.



[Figure 7.1 – Extract of BHPL's Proposed Drainage Layout \(Revision P04\)](#)

STRATEGY

The roof area of the new building will be collected and discharged via traditional rainwater pipes to carrier pipes that run parallel with the rear of the building and within the hardstanding area fronting the building. The proposed car parking bays are to be of permeable block paving construction with an impermeable liner; proposed falls across the site or within the sub-base of the permeable paving system will direct collected surface water towards a perforated pipe laid within a locally deepened sub-base granular trench. The access ramps to the building will be constructed using reinforced concrete with flows being directed away from the building to a drainage channel running along the southern kerb line.

Ultimately, all flows from the development's SW drainage network will be conveyed towards a water detention feature, located in the southern portion of the site prior to being directed towards a flow control chamber where flows will be restricted to a maximum flow of 2.5 l/s. Attenuation is provided solely by the detention feature.

HYDRAULIC MODELLING

Calculations have been undertaken using Innovyze’s Microdrainage software, simulating the proposed network for the default storm durations. The calculations have considered the 1:100 return period along with an allowance of 40% for climate and as discussed above, urban creep has not been considered, any future developments will be subject to their own SAB and planning applications and will connect directly to the existing sewer (that this development utilises) with its own restricted flow rate.

A total area of 1,910m² has been used for design; reference should be made to BHPL’s Surface Water Calculations for details, whereby a comparison of peak runoff rates and volumes has been undertaken for the greenfield condition and the proposed layout. The comparison considers the Q2, Q30 and Q100 return periods with an allowance for climate change on the proposed layout only. The runoff volume assessment considers the 360-minute storm duration.

Table 7-2. Design Parameters and Hydrological Characteristics

Design Parameter	Input Value
Rainfall data	FEH_Point_Descriptors_281113_207835_v5_0_1
Global Time of Entry	5 minutes
Runoff Coefficient (Cv)	1 (Summer) & 1 (Winter)
Design Return Periods	100-year + 40%
Statistical Rainfall Storm Durations	15, 30, 60, 120, 240, 360, 480, 960, & 1440 minutes

INTERCEPTION

Interception is the prevention of the runoff from the site for the majority of small (frequent) rainfall events (or for the initial depth of rainfall for larger events). Surface water should be managed to prevent, so far as possible, any discharge from the site for the majority of rainfall events of less than 5mm.

- Interception for the roof area and the impermeable hardstanding areas, namely the footpath and vehicular access areas, will be provided by the water detention feature which is assumed to provide compliance for areas up to 5 times its vegetated area.
- The permeable surfacing will be providing interception for the total area it covers.

With reference to Table G2.1 (see [Table 7-3](#) below) in the Welsh Government statutory standards for SuDS below, interception can be assumed for permeable surfacing and water detention, as described below. An extract of the table has been provided below for reference:

Table 7-3. Extract from Table G2.1: Interception mechanisms with assumed compliance

Systems	Interception methods that can be assumed to be compliant for zero runoff for the first 5mm rainfall for 80% of events during the summer and 50% in winter *.
Permeable Surfaces	All permeable surfaces, whether lined or not, can be assumed to comply provided there is no additional area drained to the permeable pavement. Where the permeable surface also drains an adjacent impermeable area and is lined, compliance cannot be deemed to have been achieved and additional downstream Interception components will be required (*).
Detention Basin	Areas of the site drained to detention basins with a flat unlined base (without specific provision for routing low flows directly to the outlet) can be assumed to comply where the drained impermeable surface area is less than 5 times the vegetated surface area receiving the runoff for any soil type. The area of the basin that is assumed to contribute to interception of runoff should be below the outlet level of the basin.

* Where individual components do not provide sufficient Interception for the area draining to them, Interception capacity can also be provided by downstream components. Detailed calculations will be needed to demonstrate compliance in this case.



Figure 7.2 – Extract of BHPL’s Interception Compliance Drawing

EXCEEDANCE AND OVERLAND FLOW ROUTES

In line with Welsh Government Statutory standards for sustainable drainage systems, flood exceedance routes have been considered below. Flooding of the site can occur as a result of infrastructure failure e.g., blocked sewers; or where the system is subjected to a storm event greater than that designed for. For this particular scheme, and as mentioned above, the hydraulic modelling of the proposed surface water drainage has been developed such that no flooding occurs for the 1 in 100-year return period storm event + 40% climate change.

In the event a storm event occurs that exceeds the designed capacity or failure of the network, surface water will fill and overtop the water detention basin in the south east corner of the site, the sole attenuation infrastructure associated with the proposed network and the low point on the developed site.

Upon overtopping the water detention basin, overland flows will be directed to the west and south-west by the natural topography of the site. Flows will be directed towards to the existing highway whereby flows will continue south, contained within the kerb lines of the highway. Ultimately, flows will be collected by the road gullies positioned on either side of the highway.

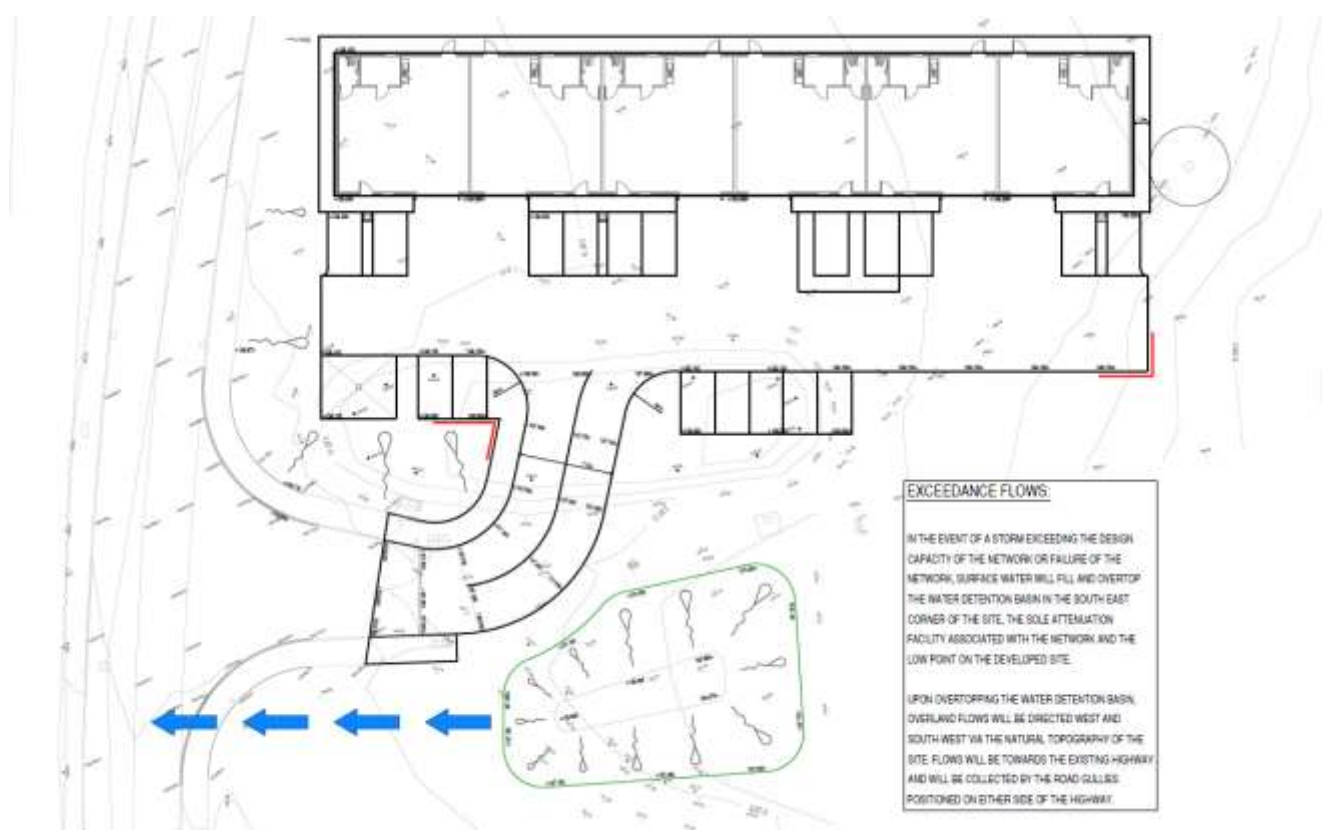


Figure 7.3 – Extract of BHPL's Exceedance Flow Drawing

7.4 STANDARD S3 – WATER QUALITY

Unless stated otherwise references made in this section are to CIRIA C753, SuDS Manual 2015. The approach to water quality risk management has been selected from Table 26.1 Approaches to water quality risk management, the selected design method extracted from the table is presented below.

Table 7-3. Extract of C753's Table 26.1 (Approaches to water quality risk management)

Design method	Hazard characterisation	Risk reduction	
		For surface water	For groundwater
Simple Index Approach	Simple pollution hazard indices based on land use (Table 26.2)	Simple SuDS hazard mitigation indices (Table 26.3)	Simple SuDS hazard mitigation indices (Table 26.4)

Pollution hazard indices for the proposed land uses have been selected from C753's Table 26.2 (Pollution Hazard Indices) for the different land use classifications, see [Table 7-6](#) below:

Table 7-4. Extract of C753's Table 26.2 (Pollution hazard indices for different land use classifications)

Land use	Hazard level	TSS	Metals	Hydrocarbons
Commercial roof	Low	0.30	0.20	0.05
Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, home zones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day	Low	0.50	0.40	0.40

Indicative SuDS mitigation indices for discharges to surface water have been selected from C753's Table 26.3 (Indicative SuDS mitigation Indices for Discharges to Surface Waters), see [Table 8-7](#) below:

Table 7-5. Extract of C753's Table 26.3 (Indicative SuDS mitigation indices for discharges to surface waters)

Feature	TSS	Metals	Hydrocarbons
Permeable pavement	0.7	0.6	0.7
Water Detention Basin	0.5	0.5	0.6

Consequently, water quality is deemed to be provided through the use of the permeable surfacing & the vegetated water detention basin.

7.5 STANDARD S4 & S5 – AMENITY & BIODIVERSITY

The landscape proposals for the SuDS elements have been developed with input from the teams Ecologist and Landscape Architect “*CAMBIUM Landscape Architecture I Arboricultural Consultancy*” to best deliver a suitable visual amenity and biodiversity gain for the site, appropriate to the site context and wider environmental proposals, balanced with site constraints, species, and opportunities. Reference should be made to **CAMBIUM Landscape Architecture I Arboricultural Consultancy** drawings and specifications for details.

Amenity Value

The SUDs feature at Nant Y Cafn comprise of permeable block paving, below ground crates, a swale feature, and a detention basin. The swale and basin will ensure water is kept at or close to ground surface thus promoting amenity benefits.

The proposed swale and basin are visually prominent within the site and from the adjacent access road. The swale and basin sides will be topsoiled with site won topsoil to ensure the existing seed bank within the marshy grassland is retained on site. The sides will also be overseeded with a native wetland meadow mix and managed as a wetland meadow to ensure amenity benefits. The bases will then be overseeded with a bespoke wildflower and grass mix as specified by NPT Wildlife Ecologist.

The on-going management and maintenance of the swale that includes rotational clearance of the swale and basin bases will ensure the SuDS feature enhances the visual character of the site.

Biodiversity

The proposal has been drawn in conjunction with NPT Wildlife Ecologist. The aim of re-using site won topsoil is to retain the seed bank within the marshy grassland on site and to ensure the soils used for the swale and basin support the local species.

In addition to the above, a native wetland meadow mix is proposed for overseeding the swale and basin sides and a bespoke wildflower and grass mix is proposed for the swale base.

The management proposals for meadows and rotational cutting/clearance of the swale base will ensure that local species will also be able to colonise the swale whilst maintaining the features functionality.

The proposed swale/detention feature will therefore support and promote natural habitat and species whilst also contributing to the delivery of local biodiversity objectives.

Relevant information in support of Amenity & Biodiversity values are given by CAMBIUM Landscape Architecture I Arboriculture Consultancy drawings, as listed below, to which reference should be made for further detail.

- ISU-CAM-XX-XX-DR-L-0003 Nant Y Cafn Soft Landscape Proposals
- ISU-CAM-XX-XX-RP-L-0003 Nant Y Cafn Landscape M & M Plan
- ISU-CAM-XX-XX-RP-L-0005 Nant Y Cafn Green Infrastructure Statement

7.6 STANDARD S6 – DESIGN OF DRAINAGE FOR CONSTRUCTION AND OPERATION & MAINTENANCE

The proposed surface water drainage strategy primarily uses SuDS features to collect runoff at surface level before directing flows below ground to a traditional, gravity fed, piped network. The SuDS solution has been designed in accordance with the SuDS Manual and good practice guidance and is generally served by shallow SuDS features.

No inherent safety issues have currently been identified with the proposed scheme and any issues which arise will be addressed via designer's risk assessments during the remainder of the design process.

Typically, SuDS features require little maintenance and can be inspected visually. With regard to the traditional, below ground pipework, suitably positioned access points are proposed to all elements in the form of inspection chambers and manholes, allowing for regular inspection and maintenance work in line with the frequency stipulated in BHPL's Drainage Maintenance Plan.

Maintenance plans and anticipated costs for remedial works for the filter trenches along with the traditional drainage elements have been stipulated within BHPL's Drainage Maintenance Plan, referenced: 6807-BHP-03-XX-RP-C-(50)010, whilst maintenance responsibilities of the various SuDS features and drainage across the site will be the responsibility of Neath Port Talbot Council.

8.0 PROPOSED FOUL WATER DISCHARGE

New gravity sewers are to be provided to serve each unit. Each unit has a WC, wash hand basin and a kitchen sink. A new foul sewer is to be provided to the front of the building with all flows being generated, being directed to the south and to make connection to the existing foul water manhole that serves the adjacent pharmacy retail unit. The existing FW sewer network to the south is a private system owned & maintained by Neath Port Talbot CBC.

APPENDIX A

BHPL Drawing Ref 6807-BHP-03-XX-DR-C-(50)301 – Proposed Drainage Layout

BHPL Drawing Ref 6807-BHP-03-XX-DR-C-(60)301– Proposed External Works Layout

BHPL Drawing Ref 6807-BHP-03-XX-DR-C-(60)305 – Proposed External Finishes Plan

Landmark Surveys Wales Ltd- Nant y Cafn Utility Survey.

Dwr Cymru / Welsh Water Sewers Records Map.

Flood Map for Planning - Detail
FMfP Nant-y-cafn

Legend

TAN15 Defended Zones

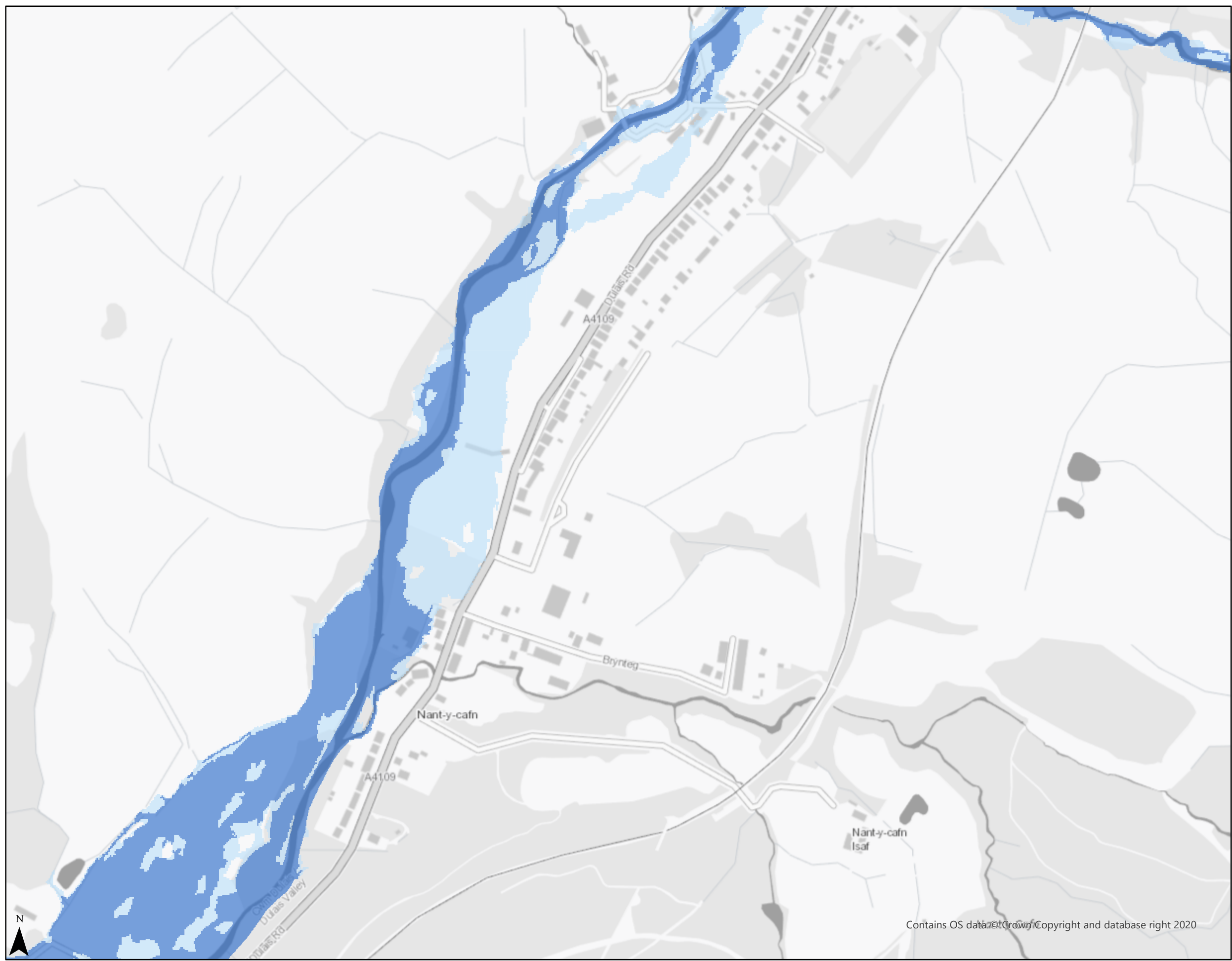
-  Rivers
-  Sea
-  Rivers and Sea

Rivers

-  Flood Zone 3
-  Flood Zone 2

Sea

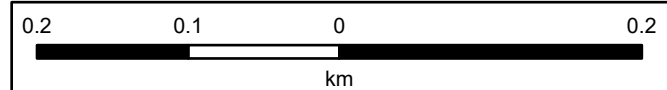
-  Flood Zone 3
-  Flood Zone 2



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Scale at A3: 1:5,000

Date: 14/06/2024



British National Grid

Disclaimer

<https://naturalresources.wales/flooding/disclaimer-for-our-flood-and-coastal-erosion-risk-maps/?lang=en>

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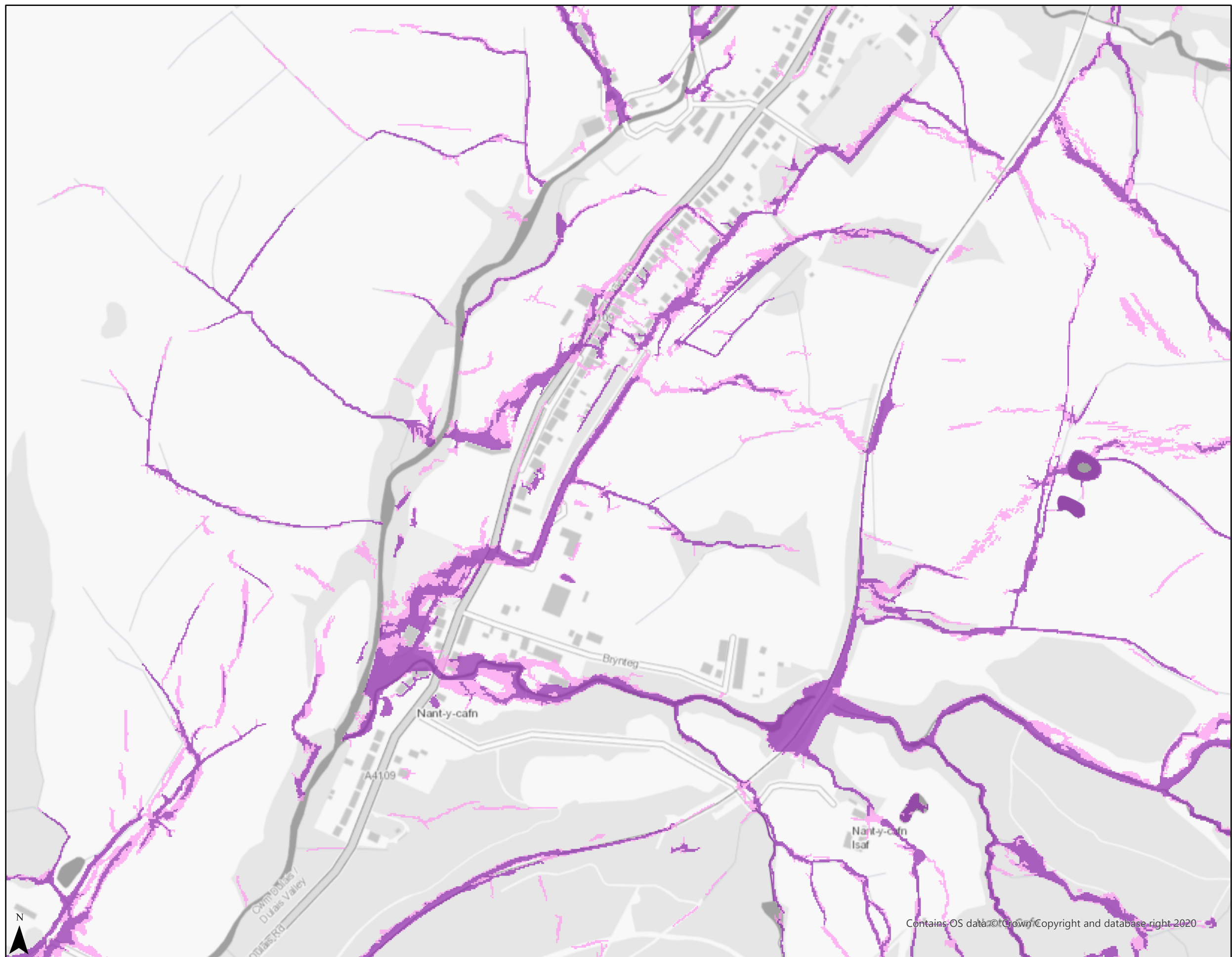
Flood Map for Planning - Detail
FMfP Nant-y-cafn Watercourse

Legend

Surface Water and Small Watercourses

 Flood Zone 3

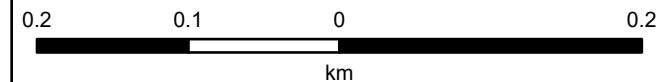
 Flood Zone 2



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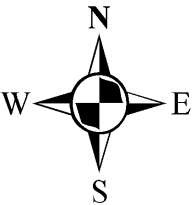
<https://naturalresources.wales/flooding/disclaimer-for-our-flood-and-coastal-erosion-risk-maps/?lang=en>

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Dŵr Cymru
Welsh Water

Nant Y Cafn Workshops Dulais Road (A4109)
Nant Y Cafn



LEGEND(Representative of most common features)

- Waste network:

 - Foul chamber
 - Surface water chamber
 - Combined chamber
 - Combined sewer overflow
 - Special purpose chamber
 - Treatment works
 - Pumping station
- VC 360 mm.
 - VC 225 mm.
 - VC 100 mm.
 - VC 150 mm.
 - VC 90 mm.
- Outfall
 - Lamphole
 - Storm Overflow
 - Rising main
 - Gravity sewer
 - Private sewer
 - Private sewer subject to Sect. 104 adoption agreement
 - Private Sewer Transfer
 - Lateral Drain
 - Inspection Chamber
- NB: Sewer symbol colour indicates the type.

 - RED - Combined
 - GREEN - Surface Water
 - BROWN - Foul
 - Purple - Former S24 sewers (for indicative purposes only)

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF) . It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

EXACT LOCATIONS OF ALL APPARATUS
TO BE DETERMINED ON SITE.

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Map Ref: 281084,207820
Map scale: 1:1000
Printed by: Zara Howells
Printed on: 05 Apr 2024

UTILITY SURVEY DRAWING KEY

Abbreviations and Symbols

DOT - End of trace	BD - Back drop
DTT - Unable to trace	CL - Cover level
ET - Post trace	CRU - Crown level
EJ - Empty duct	IL - Invert level
FR - Taken from records	SIL - Silt level
ARI - Assumed route	SUL - Surface level
VJ - Verbal Information	WL - Water level
ITL - Unable to lift	BL - Base level
D - Diameter in mm	UTR - Unable to read
CD - Depth to crown	UTS - Unable to survey
DD - Depth to depth	FW - Foul water sewer
ED - Electrically derived depth	CW - Combined water sewer
CD - Depth to crown	SW - Surface water sewer
DD - Depth to invert	GPR - Ground penetrating Radar
DD - Depth to silt	NFI - No further information

	Cable TV
	High Voltage
	Low Voltage
	Electric Cable
	CCTV Cable
	Comms/Data
	Fire Line
	Empty Duct
	Traffic Light Cable
	Gas
	Heating Pipe
	British Telecom
	Unknown Utility
	Water
	Foul Water Sewer
	Combined Water Sewer
	Surface Water Sewer
	Rising Main
	Utility Survey Extents

UTILITY SURVEY SITE NOTES

- Record information has been obtained by the client for the survey area.
- Where it has not been possible to detect the utility using EML or GPR techniques, this record information has been added to the drawing.
- Electronically derived depths are obtained from EML and are measured from the ground level to the center of the utility.
- Crown depths are obtained using GPR and are measured from the ground level to the top of the utility.
- Recommend trial excavations in critical areas to confirm the results of the utility survey.

Disclaimer

General Notes

Electro-magnetic techniques and/or ground penetrating radar have been used in the location of underground services. The results are not infallible and trial excavations should be carried out to confirm service identification, positions and depths. Although all reasonable practices have been undertaken to detect buried services, the information cannot be guaranteed. The methods of the survey does not differentiate between live and dead services, and as such all services should be treated as live. Where services are non-metallic, these would be located with GPR. However services are likely to go undetected, if they are smaller than 2 inches, or below 2 meters. Where we have been unable to trace a service, we may show an assumed route. This is not to be treated as exact.

Vertical & Horizontal Position

Vertical position (depth) is approximate to the trace. Drains may have been detected using a tracing wire, and the depth indicated could be between the bottom and top of the pipe. Horizontal position is indicative to the centre of the utility/service, and should not be taken as exact.

Warranty

Paint marks may fade, no warranty is given in respect of the durability of the paint marks. Therefore this drawing should be used as the primary reference for the survey results. This drawing does not provide an absolute representation of the sub-surface. Utilities have been detected using non-invasive technologies only, and the performance can be adversely affected by ground, weather and site conditions. Therefore some utilities may be undetectable. While Landmark Surveys uses reasonable procedures to detect all utilities, it does not guarantee 100% detection will be achieved. Services at depths greater than 2m, will not be detectable.

Where a utility is shown on this drawing as a single line, this may represent multiple utilities. Where service records have been provided, Landmark Surveys will endeavor to match results in the field. However some results may coincidentally match a provided service location. This could result in false information being provided. Sewer and manhole details will be critical to the project design. Landmark Surveys would recommend that entry into the chamber be undertaken using a specialist team qualified for confined space entry.

respective of the information provided by a utility survey and statutory plans, excavation work should be undertaken with extreme caution and in accordance with HSE guidelines - HSG47 Avoiding danger from 'Underground services'.

Sep 29

REVISIONS/UPDATES & ASSOCIATED DETAILS			
No	Details	By	Date



THE SURVEY PEOPLE
www.lmswalesltd.co.uk — enquiries@lmswales.co.uk — Tel: 01554 821599

TITLE

Seven Sister Utility Survey

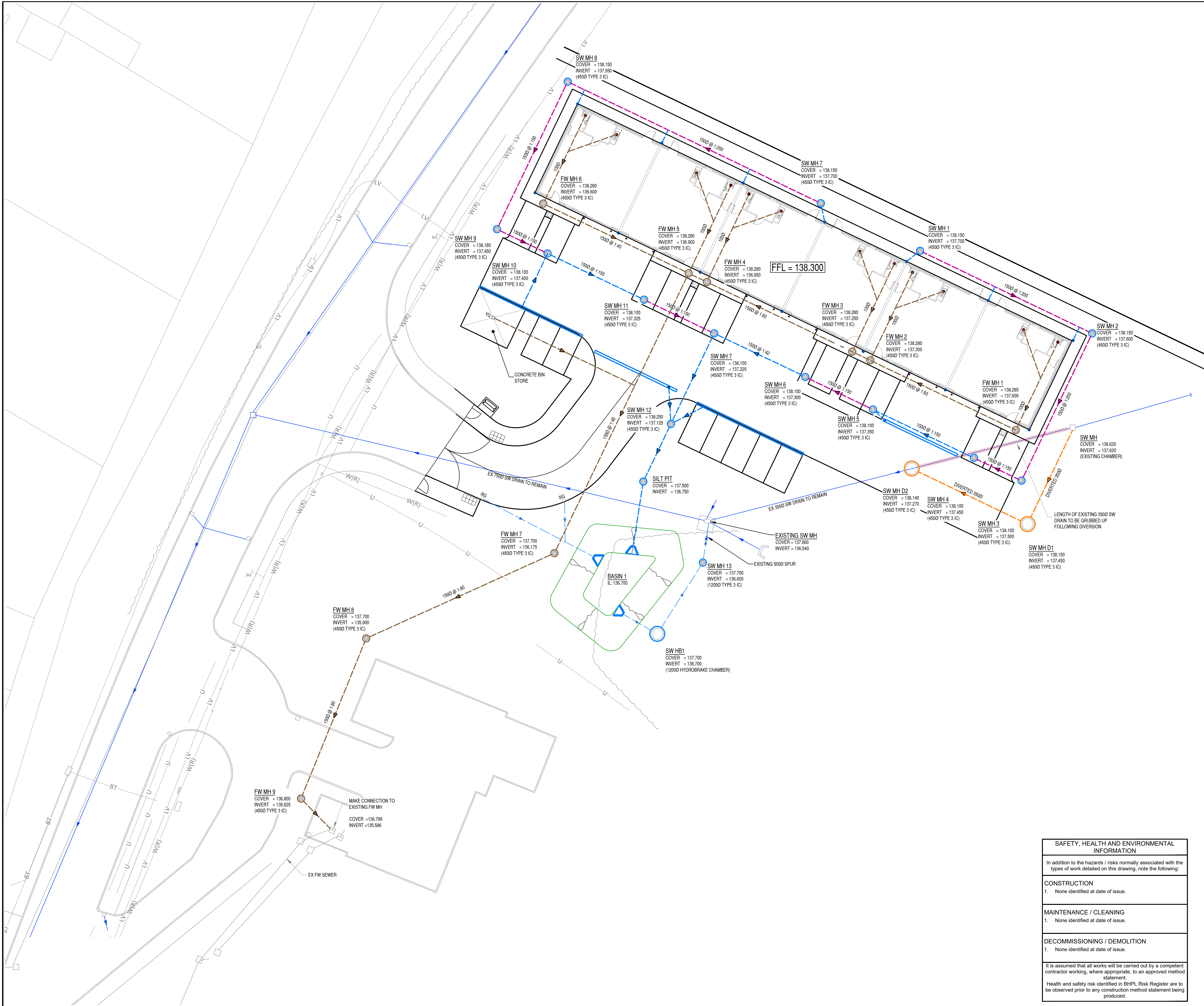
SHEET SIZE & SCALE A0 @ 1:250	DATE SURVEYED April 2024
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WING NUMBER	SHEET NUMBER	DRAWN BY
6964 R1	1	ES

NT

Andrew Scott Ltd

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LEGEND

- PROPOSED STORM WATER SEWER
- PROPOSED STORM WATER PERFORATED PIPE
- PROPOSED FOUL WATER SEWER
- DIVERTED SEWER
- EXISTING SURFACE TO BE DEMOLISHED
- STORM / FOUL TYPE 2 / E MANHOLE
- STORM / FOUL TYPE 3 INSPECTION CHAMBER
- STORM FLOW CONTROL DEVICE
- FOUL FLOOR SOCKET
- RAINWATER PIPE
- ROAD GULLY
- YARD GULLY
- PRECAST HEADWALL
- DRAINAGE CHANNEL

NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT BHPL AND ARCHITECTS DRAWINGS.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ALL SITE INVESTIGATION REPORTS AVAILABLE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL SPECIALISTS DRAWINGS.
- ALL NEW SOIL PIPES, RAIN WATER PIPE & FOUL WATER GULLEY LOCATIONS AND FINAL NUMBERS ARE TO BE CONFIRMED BY THE M & E ENGINEER AND ARCHITECT.
- ALL RAIN WATER PIPES ARE TO BE CONNECTED TO A RODDABLE YARD GULLEY AT GROUND LEVEL.
- WHERE PROPOSED SEWERS CONNECT INTO EXISTING ADOPTED SEWERS THE CONTRACTOR IS TO CHECK THE COVER LEVEL, INVERT LEVEL, SIZE OF PIPE/CHAMBER AND THE CONDITION OF THE EXISTING SEWER / CHAMBER PRIOR TO DRAINAGE WORKS COMMENCING ON SITE.
- THE CONTRACTOR IS TO ENSURE THAT ANY EXCAVATIONS, ESPECIALLY LOCAL TO THE SITE BOUNDARY AND EXISTING BUILDING DOES NOT UNDERMINE ANY EXISTING STRUCTURE / FEATURE - *IF IN DOUBT ASK!*
- ALL EXISTING SERVICES ARE TO BE IDENTIFIED BY THE CONTRACTOR AND EITHER PROTECTED OR DIVERTED IF LIVE PRIOR TO ANY WORKS COMMENCING ON SITE ALL IN ACCORDANCE WITH THE APPARATUS OWNERS APPROVALS.
- ANY ABANDONED MANHOLES ARE TO BE GRUBBED UP AND BACKFILLED WITH WELL COMPACTED TYPE 1 MATERIAL AND ENDS OF ABANDONED SEWERS TO BE PLUGGED WITH CONCRETE.
- THE CONTRACTOR IS TO ADHERE TO ALL RELEVANT CURRENT HEALTH & SAFETY REGULATIONS AT ALL TIMES.

NOTE:

- CONTRACTOR TO VERIFY INVERT LEVELS OF EXISTING SEWERS AT CONNECTION POINTS PRIOR TO INSTALLATION OF UPSTREAM PROPOSED SEWERS; IF THERE IS A DISCREPANCY TO THE ASSUMED INVERT LEVELS SHOWN ON THE DRAWING, REPORT BACK TO BHPL.

P04	JS	14/06/24	TACTILES ADDED TO SITE ENTRANCE
P03	JS	11/06/24	LAYOUT UPDATED
P02	RC	22/05/24	UPDATED TO REFLECT SW CALCULATIONS
P01	RC	16/05/24	INITIAL ISSUE FOR COMMENT
Rev	By	Date	Revision

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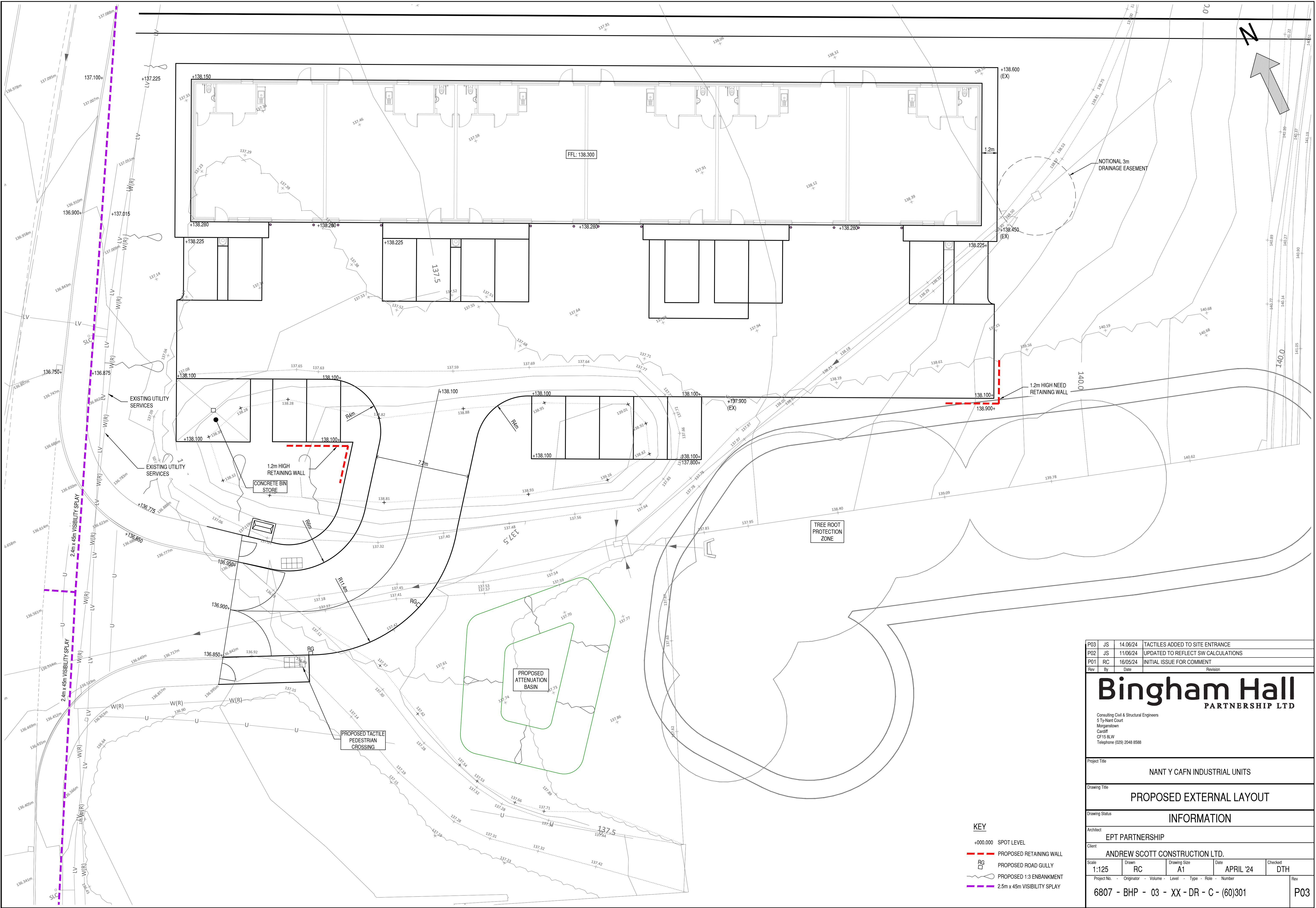
PARTNERSHIP LTD

Consulting Civil & Structural Engineers
5 Ty-Nant Court
Morganstown
Cardiff
CF15 5LW
Telephone (029) 2048 8588

Project Title	NANT Y CAFN INDUSTRIAL UNITS		
Drawing Title	PROPOSED DRAINAGE LAYOUT		
Drawing Status	INFORMATION		
Architect	EPT PARTNERSHIP		
Client	ANDREW SCOTT CONSTRUCTION LTD.		
Scale	1:200	Drawn	RC
Drawing Size	A1	Date	MAY '24
Checked	DTH	Project No.	6807 - BHP - 03 - XX - DR - C - (50)301
Rev	P04	Originator	Volume

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
In addition to the hazards / risks normally associated with the types of work detailed on this drawing, note the following:
CONSTRUCTION
1. None identified at date of issue.
MAINTENANCE / CLEANING
1. None identified at date of issue.
DECOMMISSIONING / DEMOLITION
1. None identified at date of issue.
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.
Health and safety risk identified in BHPL Risk Register are to be observed prior to any construction method statement being produced.

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P02	JS	11/06/24	UPDATED TO REFLECT SW CALCULATIONS			
P01	RC	16/05/24	INITIAL ISSUE FOR COMMENT			
Rev	By	Date	Revision			

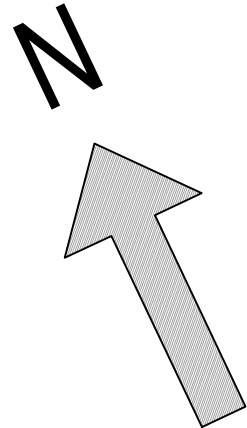
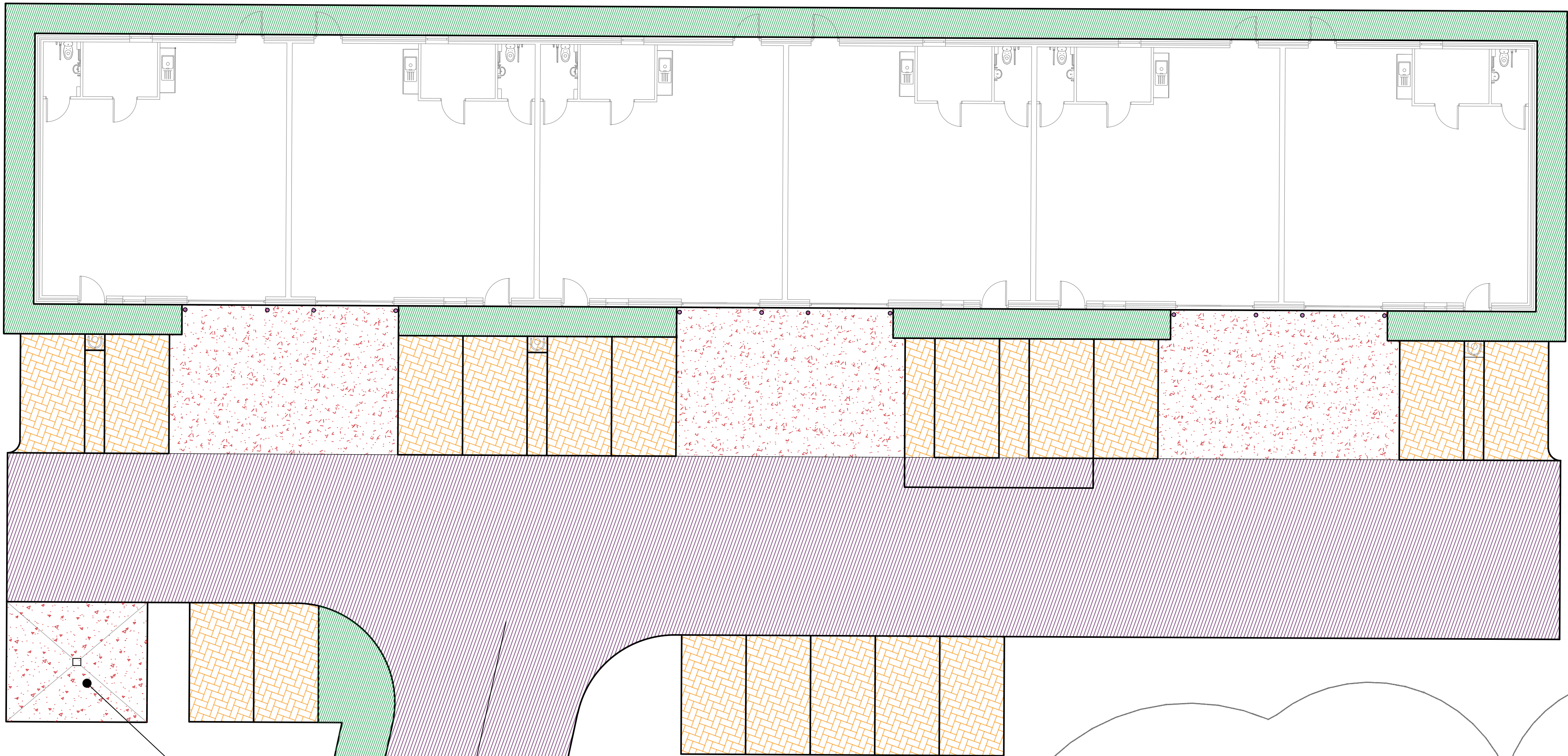
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5 Ty-Nant Court
Morganstown
Cardiff
CF15 8LW
Telephone (029) 2048 8588

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Drawing Title						PROPOSED EXTERNAL LAYOUT					
Drawing Status						INFORMATION					
Architect						EPT PARTNERSHIP					
Client						ANDREW SCOTT CONSTRUCTION LTD.					
Scale	Drawn	RC	Drawing Size	A1	Date	APRIL '24	Checked	DTH			
Project No.	Originator	Volume	Level	Type	Role	Number	Rev				
6807 - BHP - 03 - XX - DR - C - (60)301							P03				

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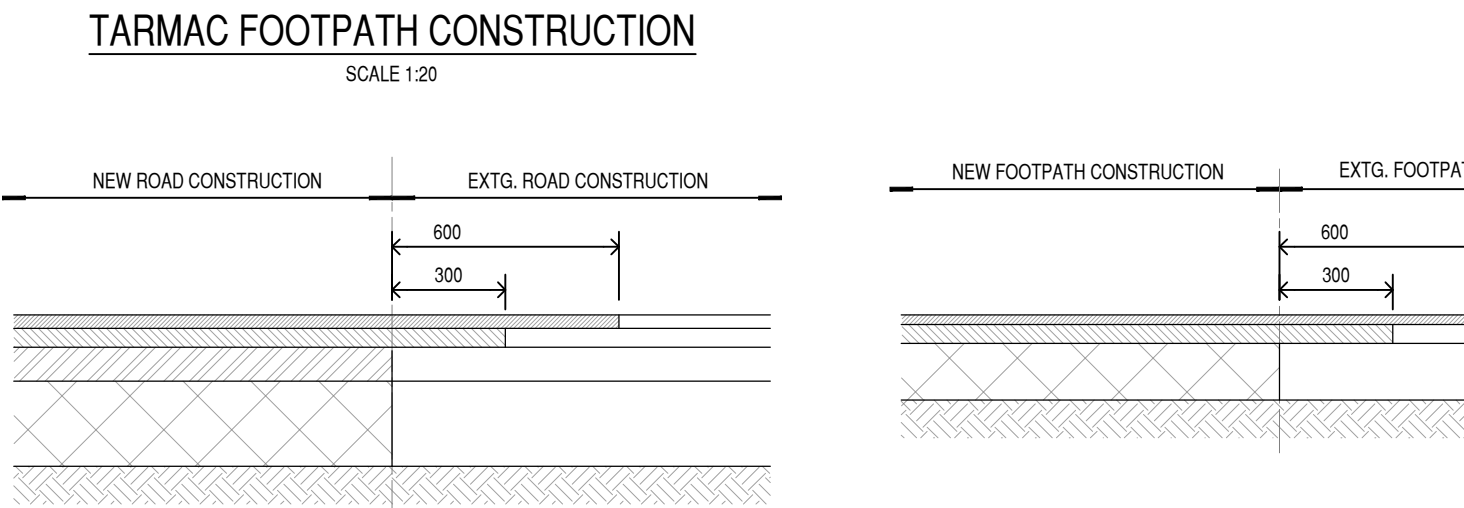
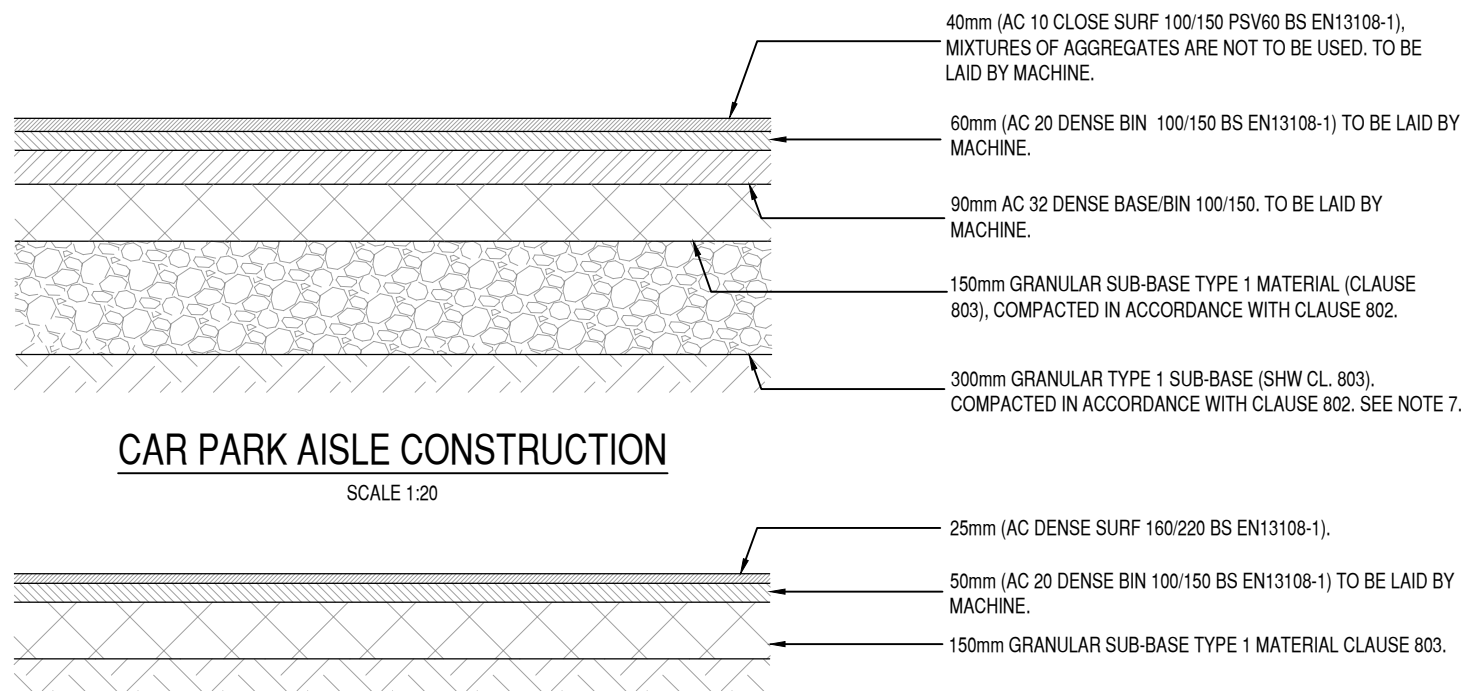
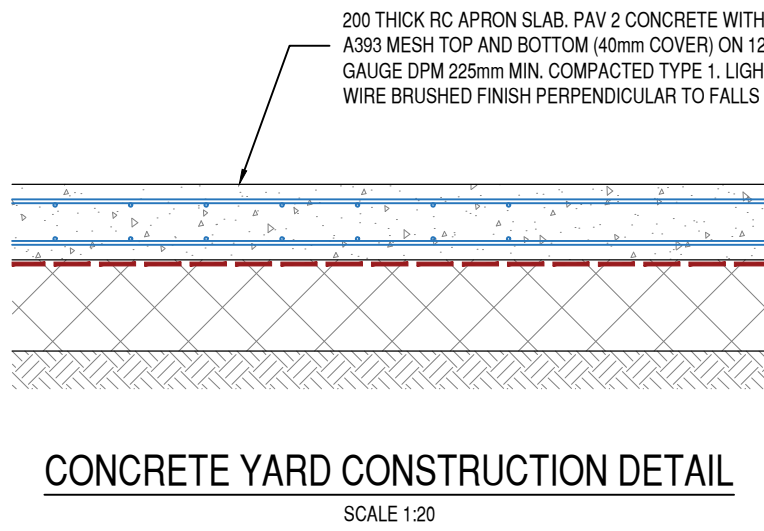
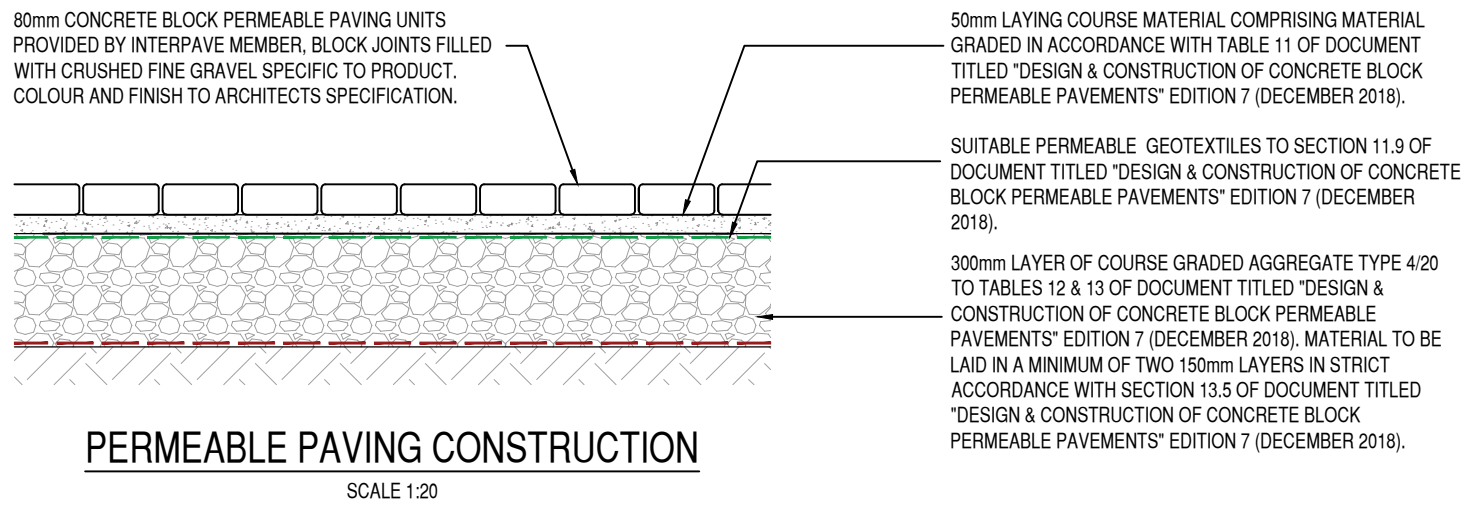
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
In addition to the hazards / risks normally associated with the types of work detailed on this drawing, note the following:
CONSTRUCTION
1. EXISTING BELOW GROUND SERVICES TO BE ESTABLISHED
MAINTENANCE / CLEANING
1. None identified at date of issue.
DECOMMISSIONING / DEMOLITION
1. None identified at date of issue.
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement. Health and safety risk identified in BHP/L Risk Register are to be observed prior to any construction method statement being produced.

NOTES

- ALL CLAUSE REFERENCES ARE FROM D.O.T. PUBLICATION 'SPECIFICATION FOR HIGHWAY WORKS'.
- ALL FORMATIONS SHALL BE PROOF ROLLED ANY SOFT SPOTS REMOVED AND REPLACED WITH CLASS 6F2 TABLE 61 MATERIAL. COMPACTION SHALL BE IN ACCORDANCE WITH CLAUSE 612. THE MINIMUM CBR OF AREAS OF FILL MATERIAL SHALL BE 15%. ALL FILL MATERIAL MUST BE APPROVED BY THE HIGHWAY AUTHORITY PRIOR TO USE. (S.H.W.).
- IF ROADBASE IS LAID AND IS NOT COVERED IMMEDIATELY WITH THE BASECOURSE THEN THE ROADBASE SHOULD BE SPRAYED WITH A SEALING COAT OF BITUMINOUS SPRAY TO CLAUSE 920.
- FORMATION LEVELS TO ALL EXTERNAL CONSTRUCTION MAKE UPS TO BE PROOF ROLLED TO REFUSAL. ANY SOFT SPOTS TO BE REMOVED AND REPLACED WITH 6F2. MAKE-UP LEVELS TO UNDERSIDE OF SUB-BASE FOLLOWING PROOF ROLLING IF NECESSARY. MINIMUM CLASS OF CAPPING TO BE 6F2.

LEGEND

- PAV2 CONCRETE YARD CONSTRUCTION (193m²)
- PERMEABLE BLOCK PAVING CONSTRUCTION (251m²)
- TARMAC ROAD CONSTRUCTION (629m²)
- TARMAC FOOTPATH CONSTRUCTION (199m²)
- SuDS FEATURE (134m²)



Rev	By	Date	Revision
P03	JS	14/06/24	TACTILES ADDED TO SITE ENTRANCE
P02	JS	10/06/24	LAYOUT UPDATED
P01	RC	15/05/24	INITIAL ISSUE FOR COMMENT

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CF15 5LW
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Architect	EPT PARTNERSHIP				
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Scale	1:200	Drawn	RC	Drawing Size	A1
Date	APRIL '24	Checked	DTH	Rev	P03
Project No.	6807 - BHP - 03 - XX - DR - C - (50)305	Originator	Volume	Level	Type
Role	Number	Rev			

Consulting Civil & Structural Engineers

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E-mail: dth@bhpl.co.uk

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