

DRAINAGE STRATEGY REPORT

Proposed Light Industrial Units at
Glyncorrwg, 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 Glyncorrwg 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 2.7 km north northeast of Cymmer, at National Grid reference SS 873985, see Fig 2.1 below which shows the site area edged in red. The site address is Glyncorrwg Workshops, Ynyscorrwg Road, Glyncorrwg, Port Talbot, SA13 3EA.

The site is bounded to the northwest by existing industrial units, to the northeast by the existing highway entrance and service yard, beyond which Glyncorrwg Rugby and Football Club is located, to the southeast by Ynyscorrwg Road and to the southwest by Glyncorrwg Ponds and Mountain Bike Centre. The Afon Corrwg is located approximately 115m northwest of the site and Glyncorrwg Ponds are located approximately 330 m to the southwest.



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 four individual units. The building will be complete with a total of 13 car parking spaces and vehicular access points to each unit’s roller shutter door openings. The new building is shown with the cross hatched pattern below.

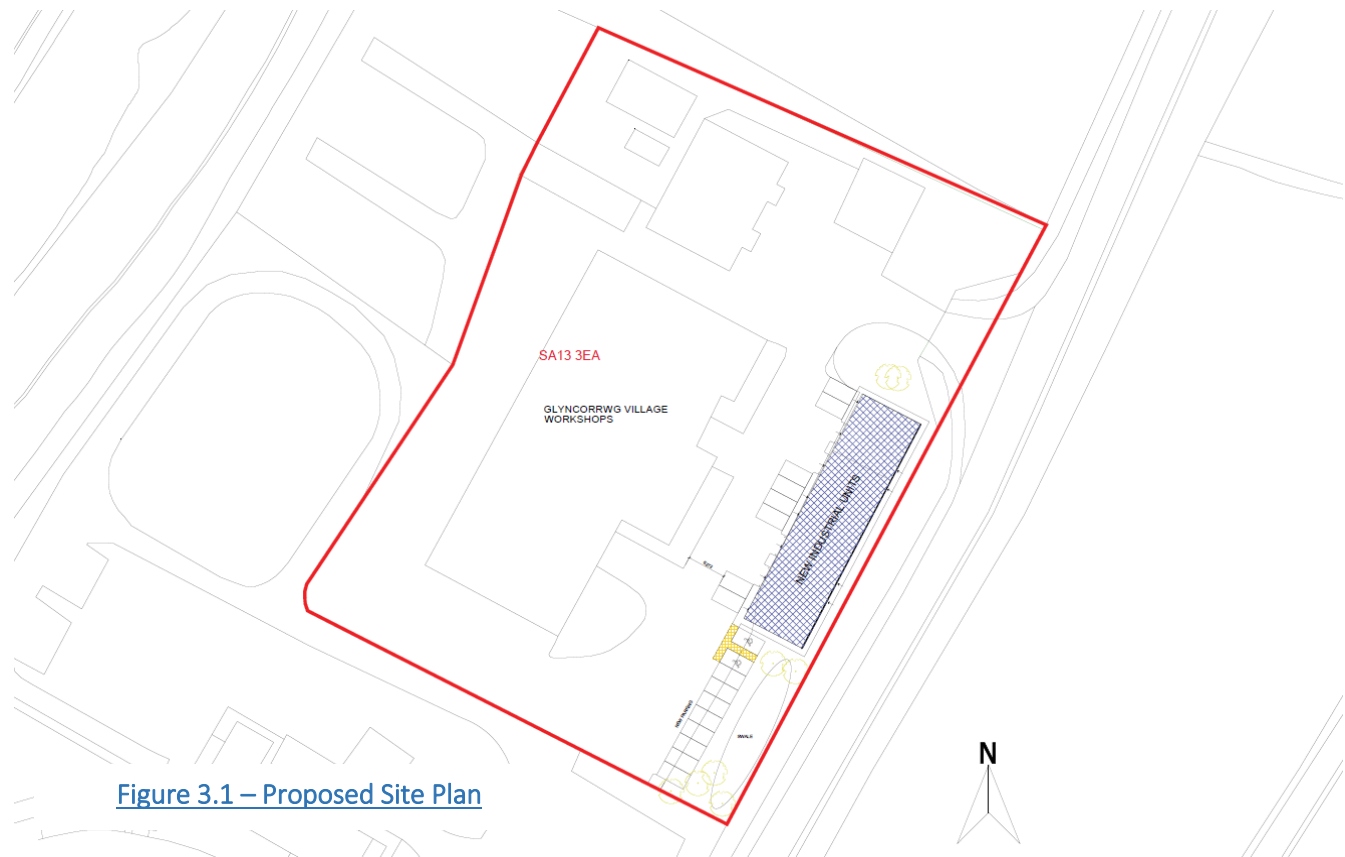


Figure 3.1 – Proposed Site Plan

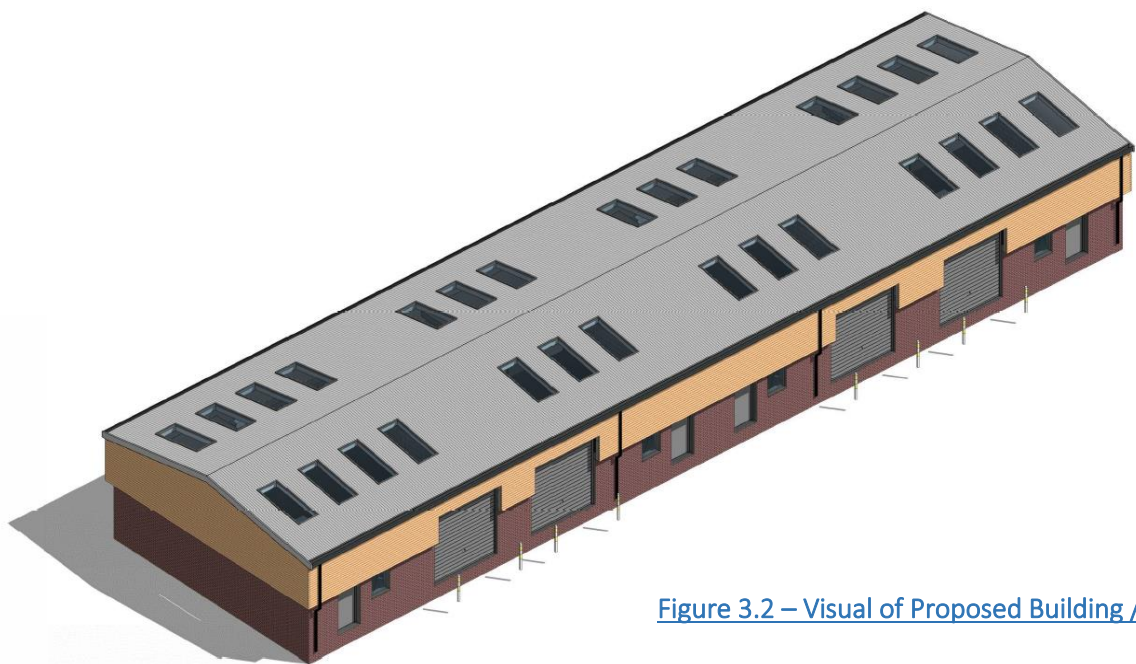


Figure 3.2 – Visual of Proposed Building / Units

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 boreholes, field testing, monitoring, laboratory testing and reporting. The fieldwork was carried out on 14 December 2023, with the field testing (TRL probes) cancelled due to a hard layer near surface. Additional fieldwork was agreed due to unexpected ground conditions on the site with trial pits and additional boreholes carried out in two further phases on 31 January and between 21 and 27 February 2024.

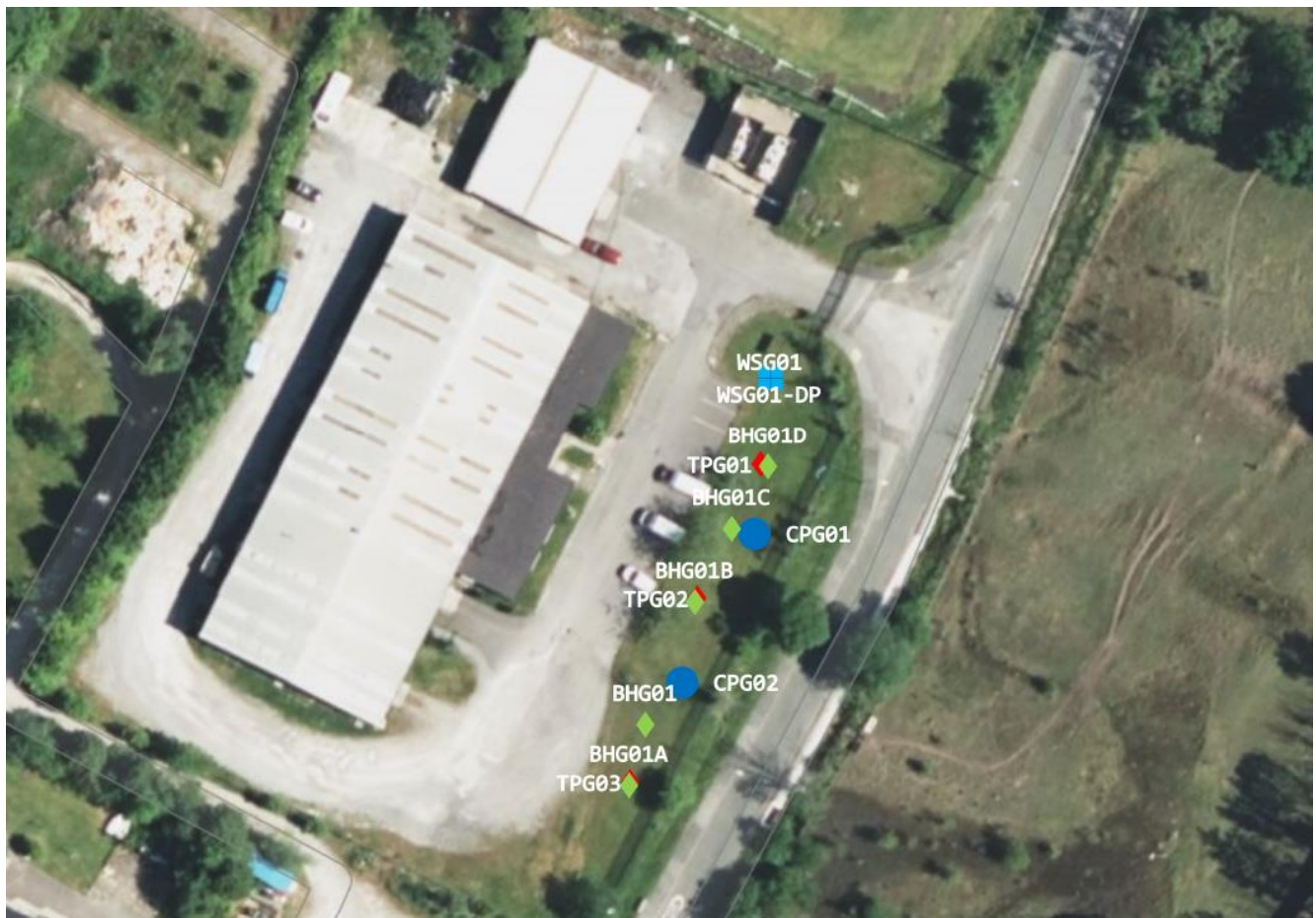


Figure 4.1 – Site Investigation Test Location Plan

4.1 GROUND CONDITIONS

The published geological map for the area, (BGS Sheet 248, 1963), and the BGS GeoIndex Onshore online viewer (2024) show the site to be located on Devensian Till, which is likely to consist of clay, silt, sand and gravel. Alluvium is shown to west of the site, associated with the Afon Corrwg. The underlying bedrock comprises the Brithdir Sandstone, of Carboniferous age, which is a greenish grey sandstone with conglomerate lenses at the base of sandstone units. The bedrock is indicated to dip 10 degrees to the north-northeast.

Although there are no observed coal seams indicated on the published geological information, there are eight inferred coal seams indicated within 1 km of the site, and the site lies within the influence of recorded workings in five coal seams. The nearest inferred coal seam is shown to be located immediately beyond the northeastern corner of the site, arcing around the eastern, northern and western boundaries of site. According to the BGS GeoIndex online viewer, the inferred coal seam is not laterally extensive and has been displaced by an inferred north-northwest to south-southeast trending fault located approximately 200m southwest of the site.

Based on the site history, Made Ground was anticipated to be present on site. There are also many workings identified in the local area (refer to Volume G1 of SI report) with the nearest noted as Glyncorrwg Colliery located 141m to the northeast. There are no recorded shafts or adits on or within 20m of the site.

The downward succession of strata encountered is broadly uniform across the site and is summarised in the table below:

Table 4.1 - Summary of Ground Conditions Encountered

Thickness (m)	Top (m)	Top (mOD)	Thickness (m)	Remarks
Made Ground (Colliery Spoil)	0.00	209.4 to 209.9	0.30 to 5.70	Ground surfacing. Base not encountered in majority of locations
Till	-4.00 & 5.60	204.1 & 205.8	0.40 & 0.80	CPG01 AND WSG01 only
Brithdir Member	-4.40 to 6.40	203.3 to 205.4	0.60 to 3.60	CPG01, CPG02 and WSG01 only. Base not encountered

MADE GROUND (COLLIERY SPOIL)

The term “Made Ground” has been used to classify all anthropogenic (man-made) materials present. Although the standard defines Made Ground as referring to non-engineered material, the difficulty of assessing which materials have been placed in accordance with an engineering specification often precludes the distinction. Strata identified as Made Ground on the borehole logs, and in the discussion of ground conditions here, include manufactured materials (e.g. concrete), imported 'soils' (e.g. granular fill) and in-situ soils that have been disturbed in some way by construction or other human activity.

The site surfacing was variable and comprised either a soft dark grey gravelly silt or brown gravelly slightly silty sand, both with rootlets to around 0.30m. This was underlain by a hard layer or crust that was generally not possible to break through with hand digging tools, except at the location of WSG01. The investigation was continued using a machine excavator to break through the thin layer.

The Made Ground was primarily recovered as sand or gravel, locally with frequent cobbles of sandstone and mudstone. In WSG01, in the northern part of the site, it consisted of firm dark grey slightly sandy to sandy gravelly clay. Based on the local site history this material, with its inherent variability, it has been assumed to be spoil from the nearby collieries and used to raise the ground level. This material tends to comprise the waste product from the deep mining of coal and is derived from the rocks adjacent to the coal seams, such as siltstone, sandstone and mudstone.

TILL

The Till was encountered as a thin layer below the Made Ground within two boreholes only; in CPG02 the Made Ground was found to be underlain directly by the Brithdir Member. This comprised a firm slightly gravelly sandy clay in CPG01 and a firm sandy silt in WSG01. Although these materials have been interpreted as Till, it is possible that they may alternatively represent Alluvium from the Afon Corrwg.

BRITHDIR MEMBER - SANDSTONE

The material recovered from the Brithdir Member comprised brown sandy slightly silty or clayey subangular fine to coarse gravel of mudstone, siltstone and sandstone. The granular material recovery within cable percussion boreholes required over seven hours of slow boring or chiselling to progress less than 4 m into the geological unit. It is not clear how this material might occur in situ, i.e. bedrock broken up by the drilling and chiselling process, or granular material. This is in part due to the drilling process used to locate natural ground below the colliery spoil. Using an alternative method, such as a rotary rig, could assist with the determination whether this is bedrock or superficial deposits. Due to the timeframe this was not possible to complete prior to reporting.

4.2 GROUNDWATER

Five groundwater entries into the boreholes or trial pits during fieldwork were recorded as either seepage or slow inflow, as summarised in Table 9 below. These are all within or at the base of the Made Ground and therefore probably represent groundwater 'perched' on top of the underlying Till. These observations may not represent equilibrium due to the short period over which the holes were open.

Table 4.2 - Summary of Groundwater Entries

Hole ID	Depth of Strike (m)	Rise after 20 minutes (m)	Groundwater Depth (mOD)	Stratum
CPG01	5.60	No rise	204.1	Made Ground / Till Boundary
CPG02	5.70	5.60	204.2	Made Ground / Brithdir Member Boundary
TPG02	0.60	Slow inflow	209.2	Made Ground
TPG03	0.20	Slow inflow	209.8	Made Ground
WSG01	1.20	1.00	208.5	Made Ground

Groundwater monitoring standpipes were installed in three boreholes. The results of the monitoring carried out on eight occasions between January and March 2024 are summarised below:

Table 4.3 - Summary of Installation and Monitoring

Hole ID	Response Zone (m)	Groundwater Depth (m)	Groundwater Level (mOD)	Stratum
WSG01	0.50 to 1.50	0.54 to 1.34	208.4 to 209.2	Made Ground
CPG01	1.00 to 4.00	3.85 to 4.90	204.8 to 205.8	Made Ground
CPG01	6.50 to 10.00	6.28 to 6.70	202.9 to 203.4	Brithdir Member

The readings from the functional wells indicate little variation over time in the groundwater level within each installation. However, the wells do not appear to correlate to the same phreatic surface and may indicate two perched water tables within the Made Ground (at around 1 m and 4 m depth) and a lower water table within the Brithdir Member at around 6.50m.

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 following has been extracted from the site investigation report and provides a summary of the geoenvironmental assessment only; reference should be made to the SOCOTEC report: H3091-23/G2 for details.

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 CPG01. In general, the risk to surface waters (i.e., the Afon Corrwg) 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 sever the leaching pathway.

A review of the ground conditions, organic content of the Made Ground and potential sources of ground gas indicates the site is of low to moderate gas generation potential (i.e., considered unlikely to generate hazardous ground gases) and presents a moderate risk. A limited gas monitoring programme has indicated methane concentrations below the limit of detection and maximum carbon dioxide concentration of 9%.

4.4 INFILTRATION

Two soakaway tests were undertaken 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. However, the first of the tests was close to achieved the 25% effective depth, and so the data plot has been extrapolated in order to provide an estimated result. This extrapolation indicated an infiltration rate of approximately 1.6×10^{-6} m/s. This particular test was carried out in Made Ground, consisting of slightly clayey gravel material.

Based on the results of these tests, the overall conclusion is that the ground conditions encountered at the site is not suitable for the use of infiltration techniques. The test results have been summarised in the table below:



[Figure 4.2 – Soakaway Test Locations](#)

Infiltration Rate Tests	Results	Material Type
SAG01 1.70 - 3.00m	1.6×10^{-6} m/s. Calculation by extrapolation of test data after 1210 minutes of monitoring.	Slightly clayey GRAVEL. (MADE GROUND)
SAG02 1.50 - 3.00m	1170 mins of monitoring failed to reach 25% effective storage depth. No calculation possible.	Slightly clayey GRAVEL. (MADE GROUND)

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 operation of the precautionary framework is governed by Development Advice Maps (DAMs), which are made up of three zones, [Table 5-1](#), used to trigger the appropriate planning test and definitions of vulnerable developments. The DAMs are based on the best available information considered adequate to determine when flood risk needs to be taken into consideration with future development.

The precautionary framework identifies the vulnerability of different land uses to flooding and classifies proposed uses accordingly as detailed in [Table 5-2](#). This is because certain flooding consequences may not be acceptable for certain types of development.

According to TAN 15, new development should be directed away from Zone C and towards more suitable land in Zone A, otherwise to Zone B, where river or coastal flooding will present less risk than Zone C. Built development tends to increase the surface area of impermeable ground, thus reducing percolation and increasing rapid surface runoff. The following drainage strategy for the proposed development will demonstrate how runoff will be sustainably managed, preventing increased risk to both the site and surrounding area.

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’.

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. *Figure 6.1* below, indicates the site is located within Flood Zone C2, with reference to *Table 6-1*, the development should be subject to the application of the justification test, including acceptability of consequences.

The section below provides a summary of the potential flood risks to the site based on the available information through NRW’s flood risk maps and known topographical / services information. For a complete flood risk assessment, reference should be made to BHPL’s Flood Consequences Assessment which is subject to NRW approval.

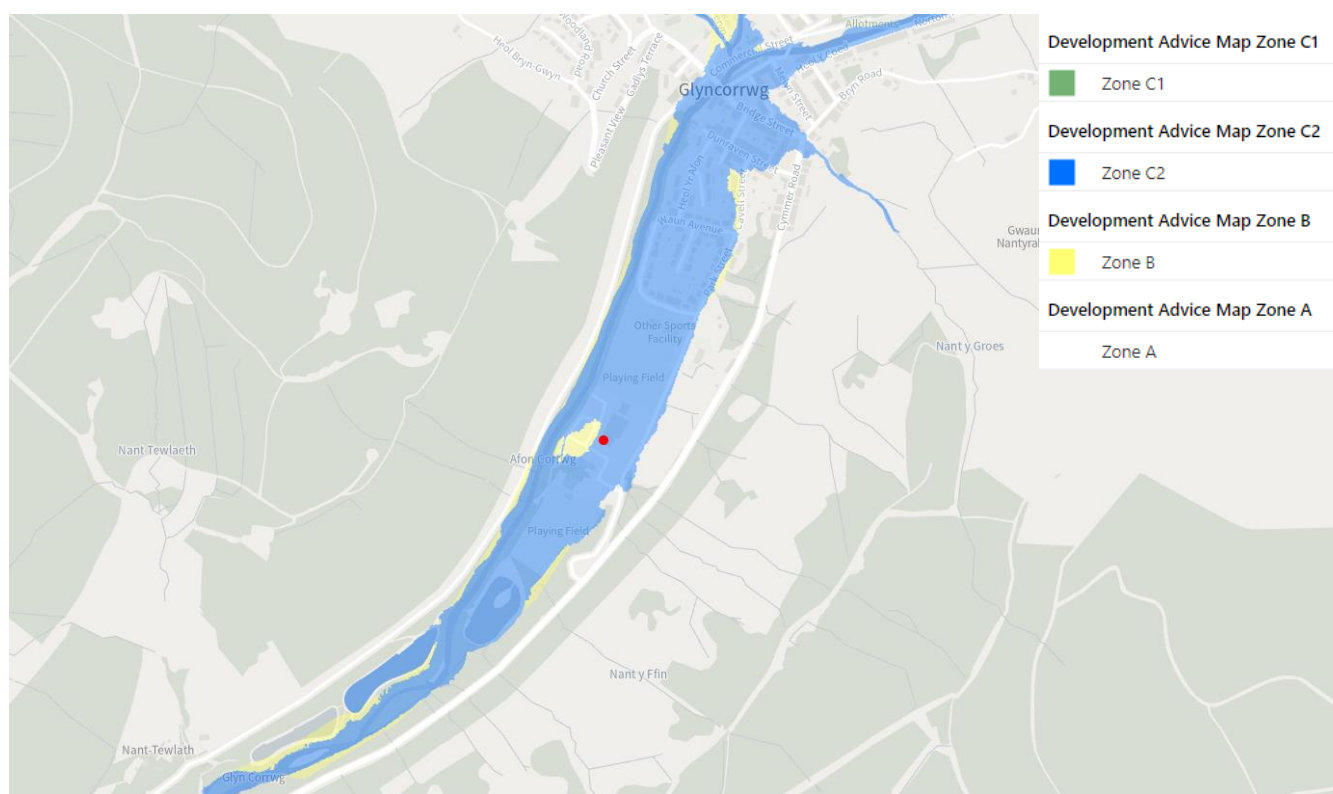


Figure 6.1 – Extract of NRW’s Development Advice Map

6.1 FLOOD RISK FROM RIVERS

River flooding happens when a river cannot cope with the amount of water draining into it from the surrounding land. [Figure 6-2](#) above shows the risk of flooding from rivers, albeit doesn't consider any flood defences that may be in place for the area. The extent of flood risk is categorized by the following zones:

- Flood Zone 3: Areas with more than 1% (1 in 100) chance of flooding from rivers 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 rivers in a given year, including the effects of climate change.

The closest watercourse is the Afon Corrwg, situated approximately 120m west of the development and runs from north to south. NRW's flood modelling for rivers indicates the site has a greater than 1% chance of flooding each year; see [Figure 6-2](#) below. The flooding is a direct result of the flat topography within the area due to the commercial and housing developments within the local vicinity. The flat topography is emphasised by the surrounding steep topography both east and west of the development area, see [Figure 2.1](#) for contours of the area.

Given the proposed use of the site, a waste compound, the overall risks are deemed acceptable, the development; however, reference should be made to BHPL's "Flood Consequences Assessment" for full details, which has been subject to NRW approval and outlines the risks and acceptability criteria and various mitigation measures.



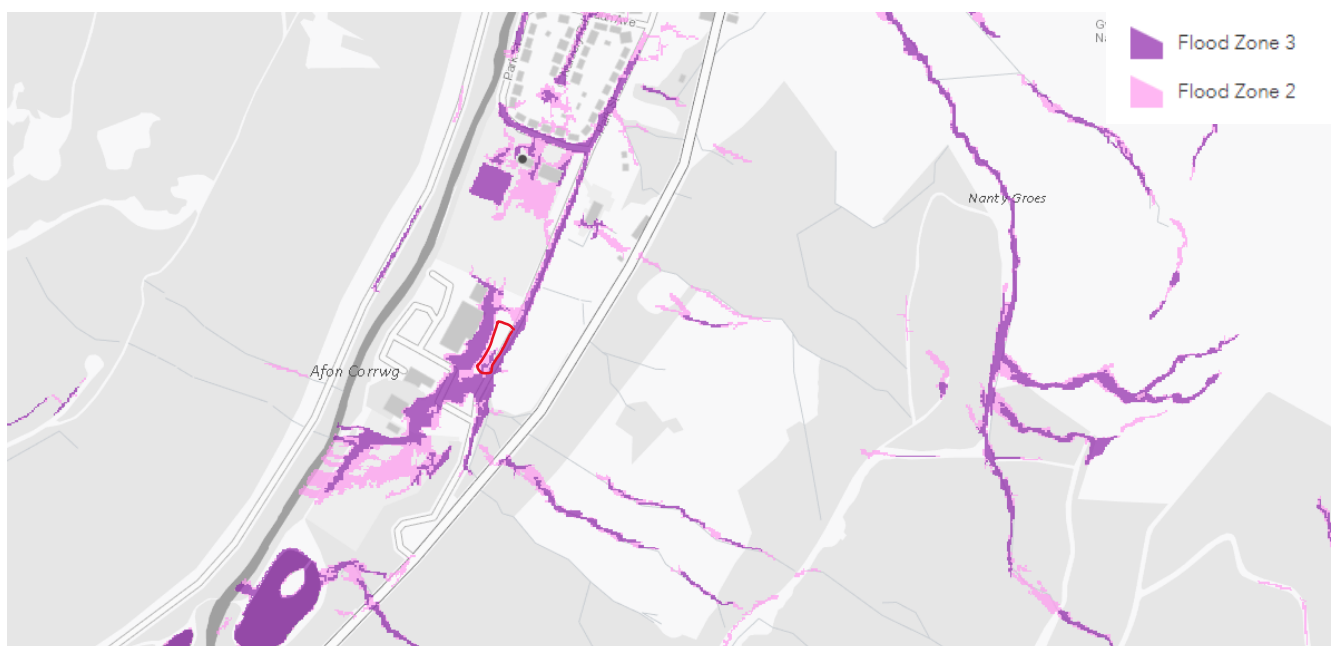
[Figure 6.2 – Extract of NRW's 'Flood Map for Planning' indicating the risk from rivers](#)

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](#) above 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.

With reference to [Figure 6-3](#) below, the car parking area fronting the existing “MPN Windows” building and therefore, part of the development area is at risk of surface water flooding. Following a review of the topographical survey for the site, the road fronting the existing building has low spots with an elevation of 209.00m whilst the access road that runs around the rear of the building has an elevation of 210.00m. Additionally, the main highway to the east of the proposed site ranges from 210.00m to 209.50m for the length of the development area. This depression fronting the existing the building is the cause of the surface water flood risk indicated on NRW's flood risk map. The area shown to be at risk is currently served by two road gullies, which, as part of this development will be removed and replaced with the permeable surfacing and new drainage channels; the more widespread drainage mechanism will offer a betterment to the existing localised drainage spots.



[Figure 6.3 – Extract of NRW's 'Flood Map for Planning' indicating the risk from surface water and small watercourses](#)

6.3 FLOOD RISK FROM SEA

The site lies approximately 16.0km 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 perched water tables may be present within the Made Ground (at around 1 m and 4 m depth) and a lower water table within the Brithdir Member at around 6.50m. Therefore, during periods of heavy rainfall, there is potential for the ground to become saturated and the water table to rise to ground level; in this instance overland flows may occur, albeit, depths will be minimal due to the widespread nature of the flooding, affecting much of the area local to the Afon Corrwg.

6.5 FLOOD RISK TO DEVELOPMENT FROM LOCAL SEWERS

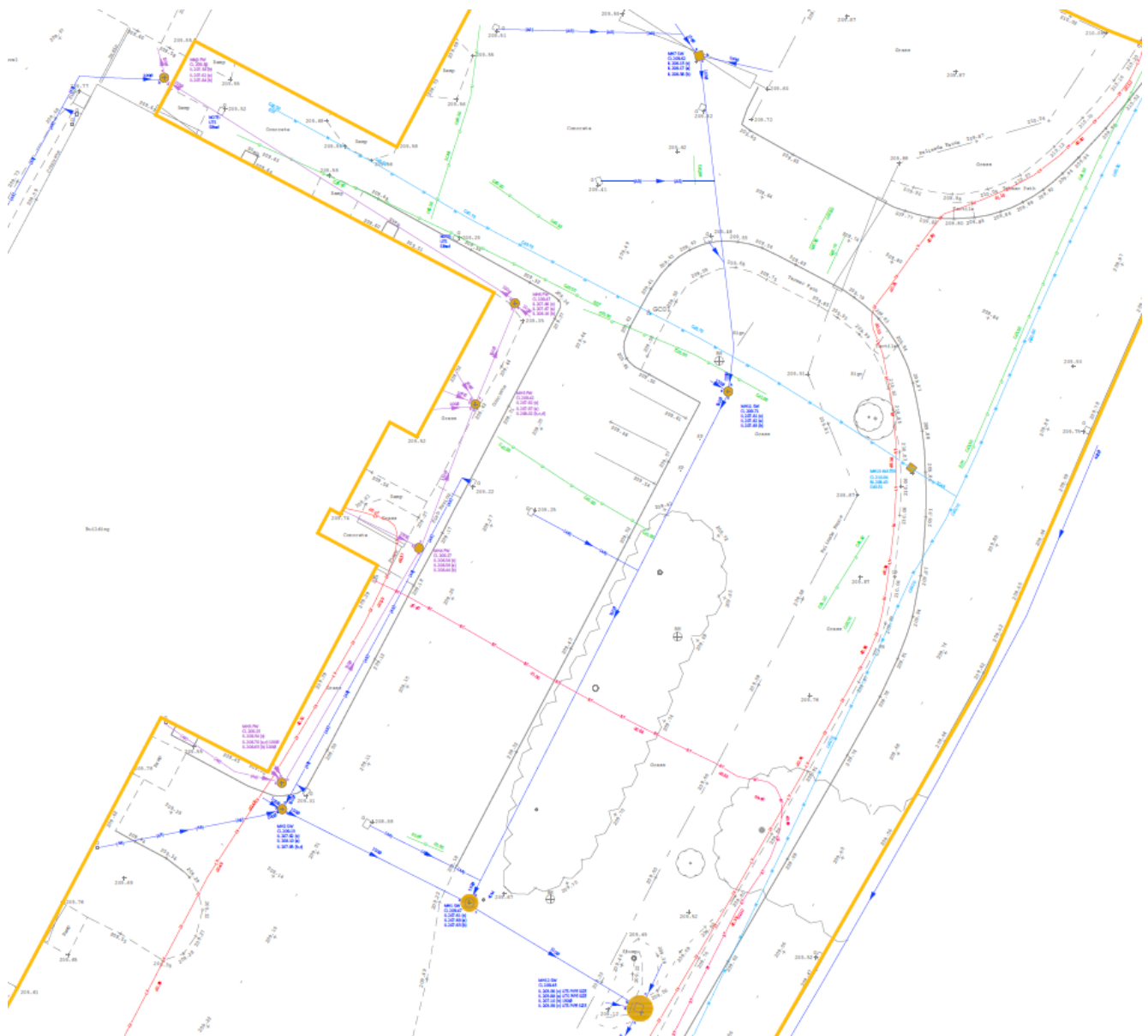
Flooding can occur as a result of infrastructure failure e.g., blocked sewers or failed pumping stations. Sewer flooding can occur when the system surcharge due to the volume or intensity of rainfall exceeding the capacity of the sewer, or if the system becomes blocked by debris or sediment. With reference to [Figure 6.4](#) below, the adopted sewer plan provided by DC/WW indicates that the site is free from any large public sewers, the closest public sewer being the foul sewer to the west of the development and existing building, and it is presumed to serve the housing development to the north and existing Community Enterprise Development Centre.



[Figure 6.4 - Extract of DCWW's Adopted Sewer Plan](#)

In addition to the public sewer records, [Figure 6.4](#) 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 6.5](#) below. The survey information shows that the existing building is served by both a private foul and surface water network. The surface water network comprises of two sewer lines, one crossing the existing entrance to the site and the hardstanding opposite the front of the building, whilst the other network serves the building itself and the car park area to the south-west. The surface water sewers converge in the south east corner of the site before being discharged off site.

Given the local sewers are under one ownership (NPTCBC) they are considered to be easily manageable with risks of blockages being minimal. Chambers are well positioned across the site facilitating regular inspections and maintenance when required.



[Figure 6.5 - Extract of Landmark Surveys Wales's Utility Survey Drawing; referenced 6965](#)

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 8-1](#) 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 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	Two soakaway tests were undertaken 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. However, the first test was close to achieving the 25% effective depth, and so the data plot for this test has been extrapolated in order to provide an estimated result. This extrapolation indicated an infiltration rate of approximately 1.6×10^{-6} m/s. This particular test was carried out in Made Ground, consisting of slightly clayey gravel material. Based on the results of these tests, the overall conclusion is that the ground conditions encountered at the site is not suitable for the use of soakaways.
Priority Level 3: Discharge to a surface water body	The closest watercourse is the Nant Corrwg, situated approximately 75m west of the development and runs from north to south at the rear of the existing community centre building. Given the existing community centre building plus its existing access roads and car parking areas, it would be difficult and costly to provide a new SW sewer to make connection to the river, even if sufficient falls can be provided. The construction of a new surface water sewer line is not deemed practical.
Priority Level 4: Discharge to surface water sewer.	There is an existing SW drainage network serving the site which cross the site and discharges off site to the south. The existing SW sewers will require diversion as part of the works. It is proposed to make connection to the diverted sewer with discharge rate being controlled to 2.0l/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-02-XX-DR-C-(60)201 for details.

The proposed surface water network considers the roof of the new building, and the hardstanding areas to the front / immediate west and south of the building with 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 / diverted private sewers.

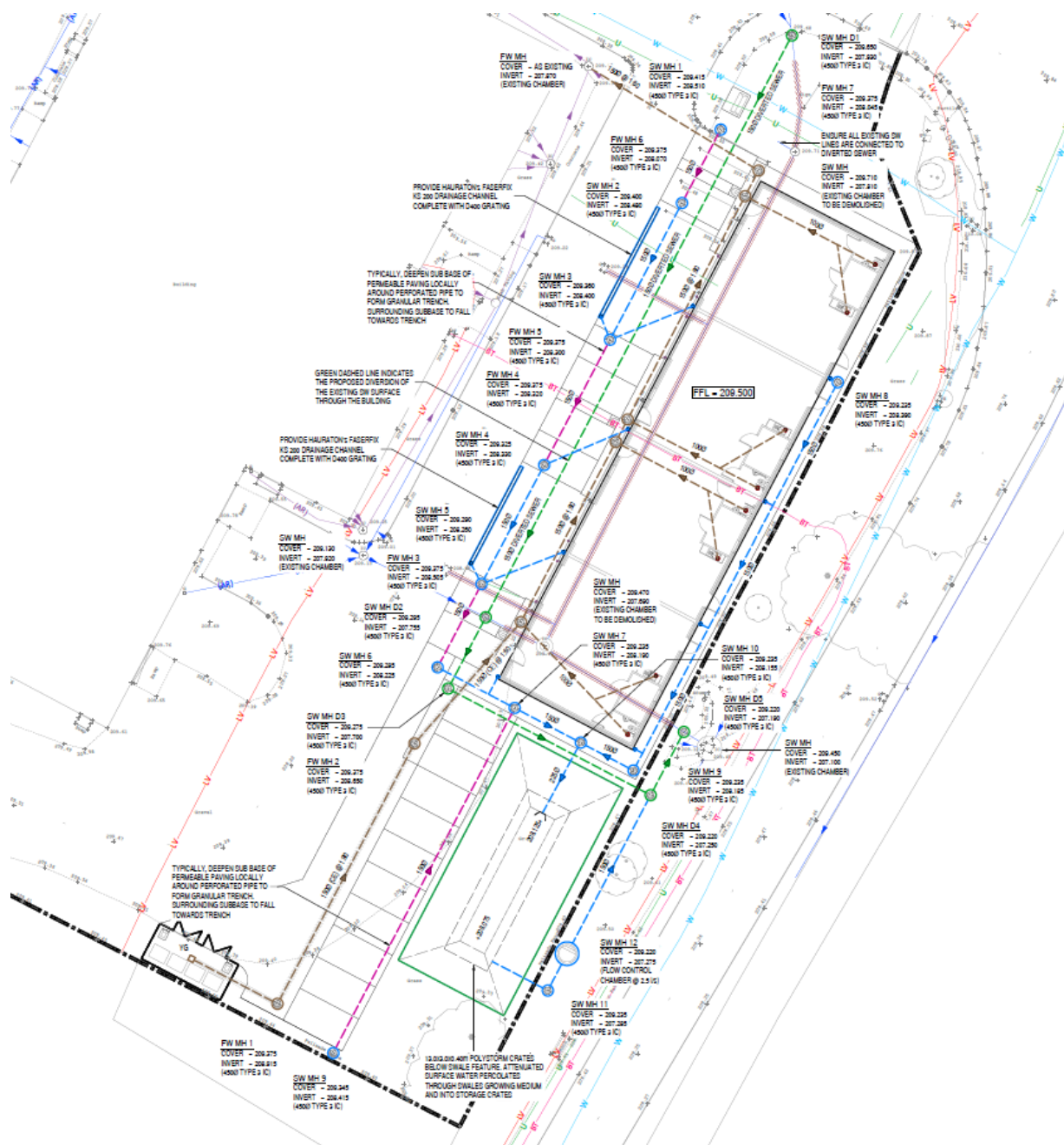


Figure 7.1 – Extract of BHPL's Proposed Drainage Layout; reference: 6807-BHP-02-XX-DR-C-(50)201

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 a drainage channel at base of ramp to collect runoff and discharge to the carrier pipe fronting the building. In addition to the new hardstanding areas, part of the existing hardstanding area fronting the MPN Windows building will be accommodated for within the proposed drainage design due to existing falls and location of the road gullies that will be removed as part of this development.

Ultimately, all flows from the development's drainage network will be conveyed towards a swale / water detention feature. The feature will be complete with below ground storage in the form of geo-cellular crates; all runoff must percolate through the growing medium and geotextile and into the crate system where an outlet will direct the collected surface water to a flow control chamber with a restricted / maximum flow of 2.0 l/s. Attenuation is provided by both the crate system and swale feature over, and in extreme events, the granular trenches surrounding the perforated pipe and sub-base of the permeable paving system.

Ultimately flows will go on to make connection to the proposed surface water sewer diversion; the existing sewer comprises of a 150-diameter pipe and serves the existing building (MPN Windows) immediately opposite, the storage units just north of the existing storage buildings as you enter the site and the hardstanding areas associated with the existing site. The existing sewer then goes on to make connection to a surface water sewer that runs north to south, parallel to the road and at a depth of 3.5m deeper than the on-site private network we'll be utilising; the sewer likely serves the housing development north of the site.

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 as part of the hydraulic analysis due to the lack of available space remaining on the site.

A total area of 1,430m² 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_287354_198542_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 ramps to the building, will be provided by the water detention feature which is assumed to provide compliance for areas up to 5 times its vegetated area. Due to the discharge point being part of the geo-cellular storage below the swale feature, all surface water must percolate through the growing medium.
- The permeable surfacing will be providing interception for the total area it covers.
- The existing hardstanding which, due to the topography of the site, will fall towards the proposed infrastructure, due to the size of the site, it has not been feasible to provide interception for all of this area.

With reference to Table G2.1 (see [Table 6-3](#) 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.

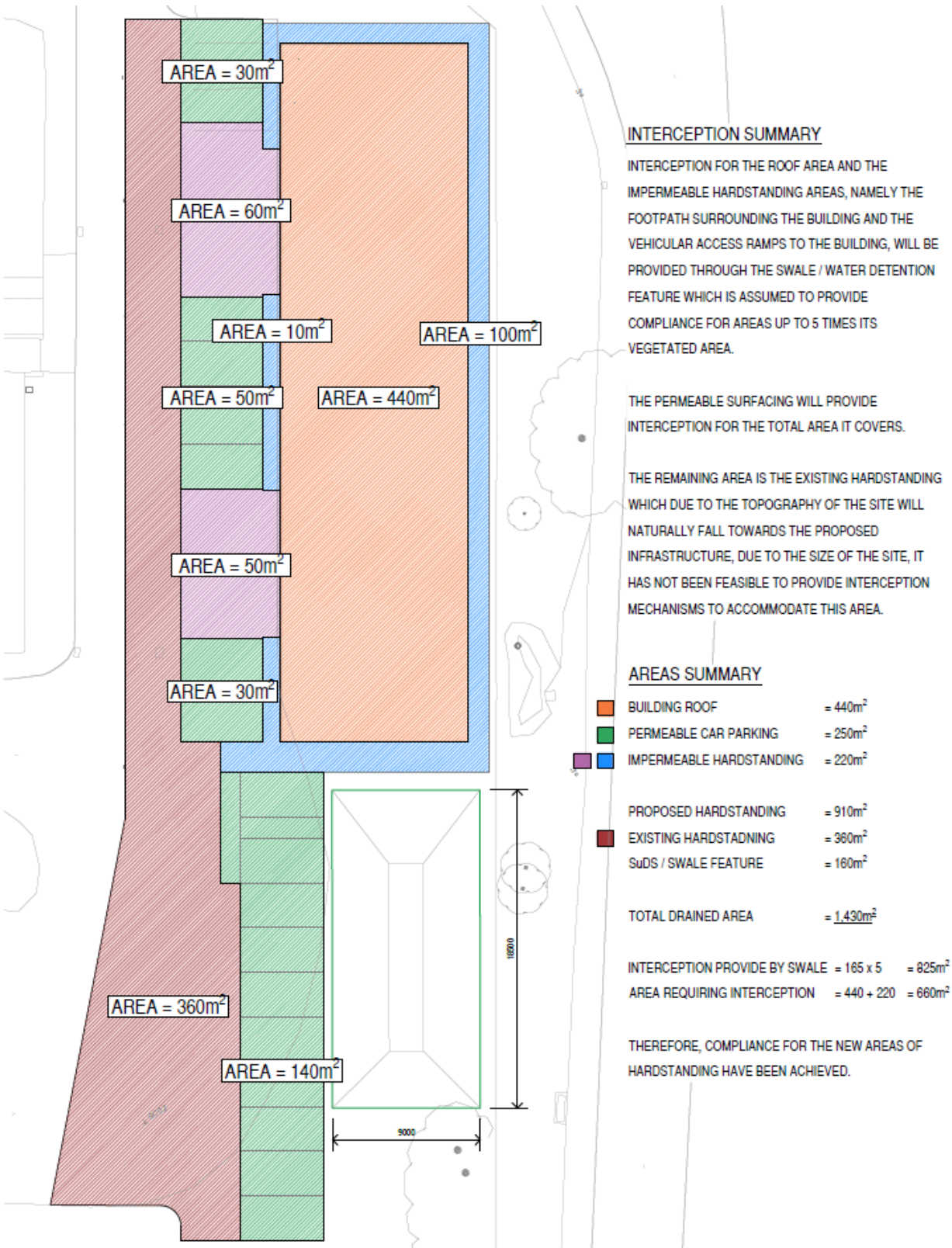


Figure 7.2 – Extract of BHPL’s Surface Water Interception Drawing

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, surface water will surcharge the swale feature, the levels to the east of the swale, rising up towards the highway; therefore, overland flows will fall towards the site and will naturally make their way to the low point within the access road at 209.000, indicated on the figure below; flows will continue to spread within the road area. Consequently, all flooding will be retained on the site.



Figure 7.3 – Extract of BHPL's Exceedance Flow Routes 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 8-5. 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 8-6](#) below:

Table 8-6. 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
Commercial yard and delivery areas, non-residential car parking with frequent change	Medium	0.70	0.60	0.70

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 8-7. 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
Swale / Water Detention Basin	0.5	0.5	0.6

Consequently, water quality is deemed to be provided through the use of the permeable surfacing & a rain garden feature.

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's at Glyncorrwg comprise of permeable block paving and a swale feature with below ground crates. The swale will ensure water is kept at or close to ground surface thus promoting amenity benefits. The proposed swale is visually prominent, located between the boundary fence and parking. The basin 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 be topsoiled with a rain garden soil to ensure functionality of the system. The base will then be overseed 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 will ensure the SuDS feature enhances the visual character of the site.

Biodiversity

The landscape proposals have 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/basin support the local species. In addition, 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 will therefore support and promote natural habitat and species whilst also contributing to the delivery of local biodiversity objectives.

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-02-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

The existing on-site, private foul water drainage / sewer is located to the north-east corner of the existing "MPN Windows" building. New foul water drainage is limited to a single WC (with WHB) and a kitchen sink unit to be provided at the rear of each unit. No trade effluent is anticipated. The welfare facilities will be served by a new gravity sewer laid to falls running along the front of the new development. This new sewer will convey all foul water from the south to north where it will make connection to the existing on-site private sewer described above.

The depth of the existing manhole is sufficient to cater for a new gravity sewer, although in order to provide adequate falls in the new sewer fronting the development, it will be necessary for the sewers serving the individual units to run below the building's footprint, and therefore will be concrete encased.

APPENDIX A

BHPL Drawing Ref 6807-BHP-02-XX-DR-C-(50)201 P03 – Proposed Drainage Layout
BHPL Drawing Ref 6807-BHP-02-XX-DR-C-(60)201 P02 – Proposed External Works Layout
BHPL Drawing Ref 6807-BHP-02-XX-DR-C-(60)205 P02 – Proposed External Finishes Plan
Landmark Surveys Wales Ltd- Glyncorrwg Utility Survey.
Dwr Cymru/Welsh Water Sewers Records Map.

[illegible]

PROPOSED STORM WATER SEWER	
PROPOSED STORM WATER PERFORATED PIPE	
PROPOSED FOUL WATER SEWER	
PROPOSED DIVERTED STORM WATER SEWER	
DENOTES EXISTING SEWER TO BE DIVERTED	
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	
PROPRIETARY SWALE INLET	
DRAINAGE CHANNEL	

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT BHP&L AND ARCHITECTS DRAWINGS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL THE SITE INVESTIGATION REPORTS AVAILABLE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL SPECIALISTS DRAWINGS.
4. ALL NEW SLOPES, PIPES, RAIN WATER PIPE & FOUL WATER GULLY LOCATIONS AND FINAL NUMBERS ARE TO BE CONFIRMED BY THE M & E ENGINEER AND ARCHITECT.
5. ALL RAIN WATER PIPES ARE TO BE CONNECTED TO A PROBABLE RAIN GULLY AT GROUND LEVEL.
6. WHERE PROPOSED SEWERS CONNECT INTO EXISTING ABOVE 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.
7. 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!
8. ALL EXISTING SERVICES ARE TO BE IDENTIFIED BY THE CONTRACTOR AND EITHER PROTECTED OR DIVERTED IF PRIOR TO ANY WORKS COMMENCING ON SITE ALL IN ACCORDANCE WITH THE APPROVED OWNERS APPROVALS.
9. 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.
10. THE CONTRACTOR IS TO ADHERE TO ALL RELEVANT CURRENT HEALTH & SAFETY REGULATIONS AT ALL TIMES.

- 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.

In addition to the hazards / risks normally associated with the types of work detailed on this drawing, note the following:

1. None identified at date of issue

1. None identified at date of issue

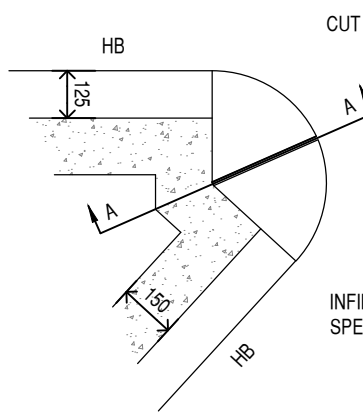
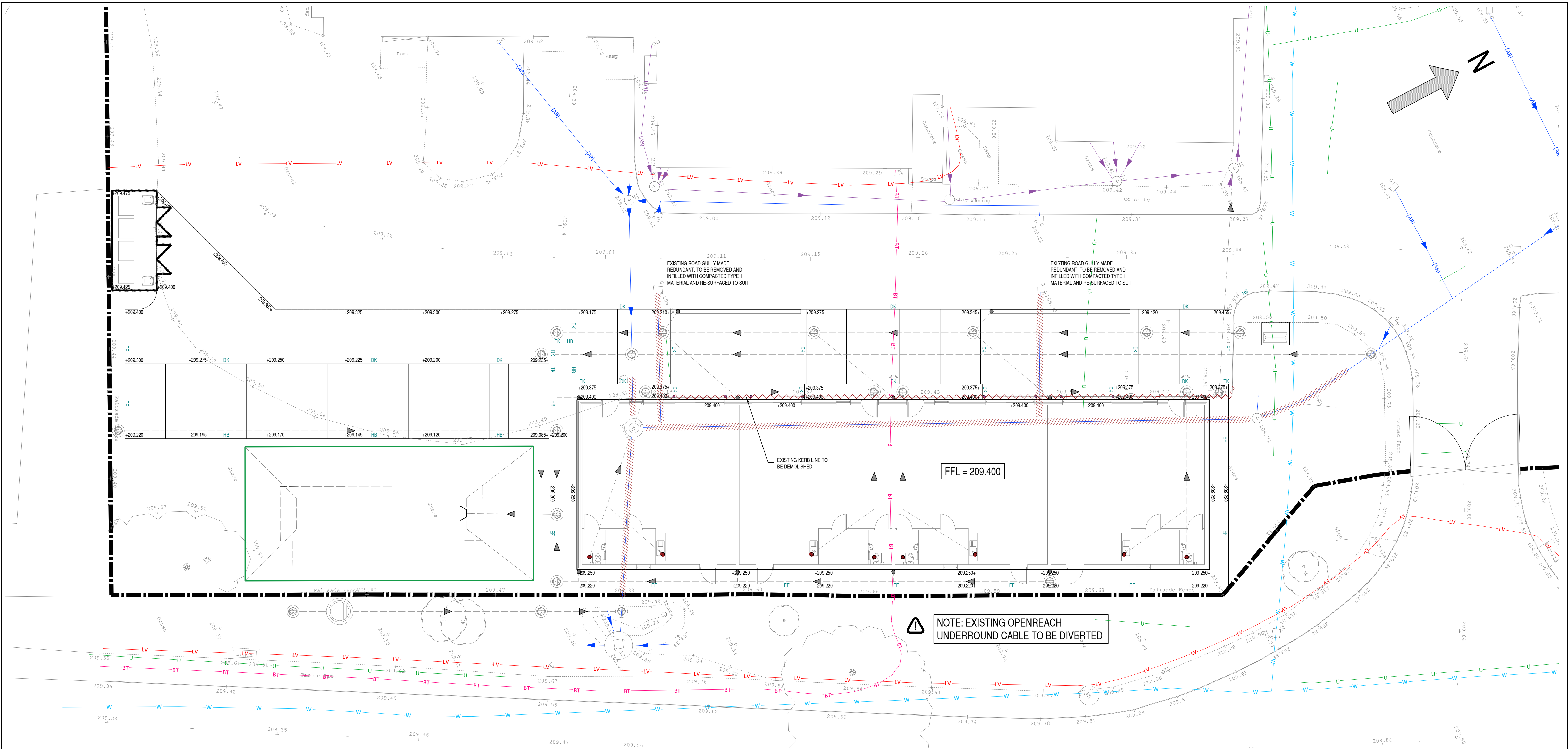
1. None identified at date of issue.

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.

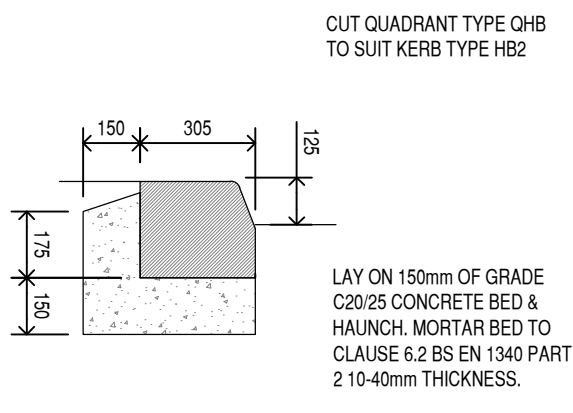
Health and safety risk identified in BHPL Risk Register are to be observed prior to any construction method statement being produced.

P03	RC	28/05/24	UPDATED SITE PLAN		
P02	RC	22/05/24	UPDATED TO REFLECT SW CALCULATIONS		
P01	RC	08/05/24	INITIAL ISSUE FOR COMMENT		
Rev	By	Date	Revision		
Bingham Hall PARTNERSHIP LTD Consulting Civil & Structural Engineers 5 Ty-Nant Court Morginstown Cardiff CF15 8LW Telephone (029) 2048 8588					
Project Title					
GLYNCORRWG INDUSTRIAL UNITS					
Drawing Title					
PROPOSED DRAINAGE LAYOUT					
Drawing Status					
INFORMATION					
Architect					
EPT PARTNERSHIP					
Client					
ANDREW SCOTT CONSTRUCTION LTD.					
Scale	Drawn	Drawing Size	Date	Checked	Rev
1:200	RC	A1	APRIL '24	DTH	
Project No. - Originator - Volume - Level - Type - Role - Number					Rev
6807 - BHP - 02 - XX - DR - C - (50)201					P03

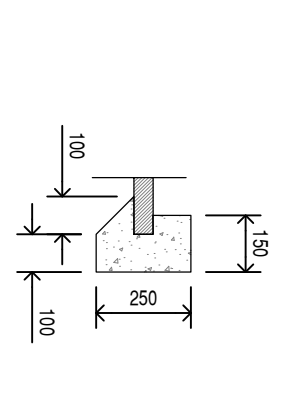
NOTE THE PROPERTY OF THIS DRAWING AND DESIGN IS VESTED IN BINGHAM HALL PARTNERSHIP LIMITED AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT



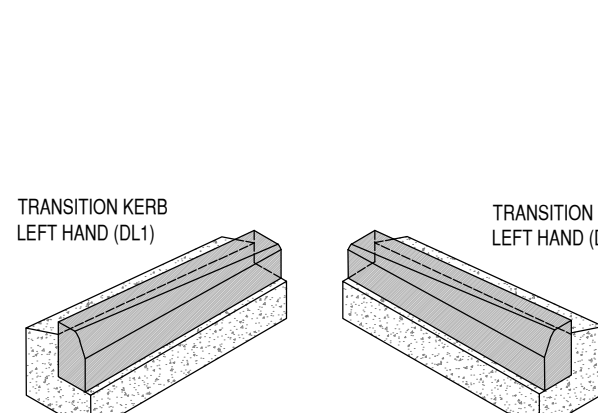
CUT DOWN QUADRANT KERB DETAIL (QHB)



SECTION A-A



EDGING KERB (EF)



TRANSITION KERBS

NOTES:

1. ALL KERBS AND CHANNELS TO BE IN ACCORDANCE WITH BS 57263.
2. UNLESS SPECIFIED OTHERWISE F10.12 KERBS TO BE LAID WITH 125mm UPSTAND.
3. BED AND HAUNCH TO KERBS AND CHANNELS TO BE 200mm (28 day strength) CONCRETE.
4. KERBS AND CHANNELS MAY BE LAID EITHER DIRECTLY ONTO THE WET CONCRETE BASE OR BEDDED ON 1015mm 1:3 CEMENT MORTAR ON A PREVIOUSLY CONSTRUCTED BASE.
5. TAPER OR TRANSITION KERBS TO BE USED AT CHANGES IN KERB FACE OR TYPE.
6. KERBS AND CHANNELS TO BE LAID CLOSE-JOINTED. WHERE JOINTS OF WIDTH GREATER THAN 5mm ARE UNAVOIDABLE THESE SHALL BE FILLED WITH EPOXY MORTAR.

NOTES

1. ALL CLAUSE REFERENCES ARE FROM D.O.T. PUBLICATION 'SPECIFICATION FOR HIGHWAY WORKS'.
2. ALL FORMATIONS SHALL BE PROOF ROLLED ANY SOFT SPOTS REMOVED AND REPLACED WITH CLASS 6F2 TABLE 6/1 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.).
3. 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.
4. 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.

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.

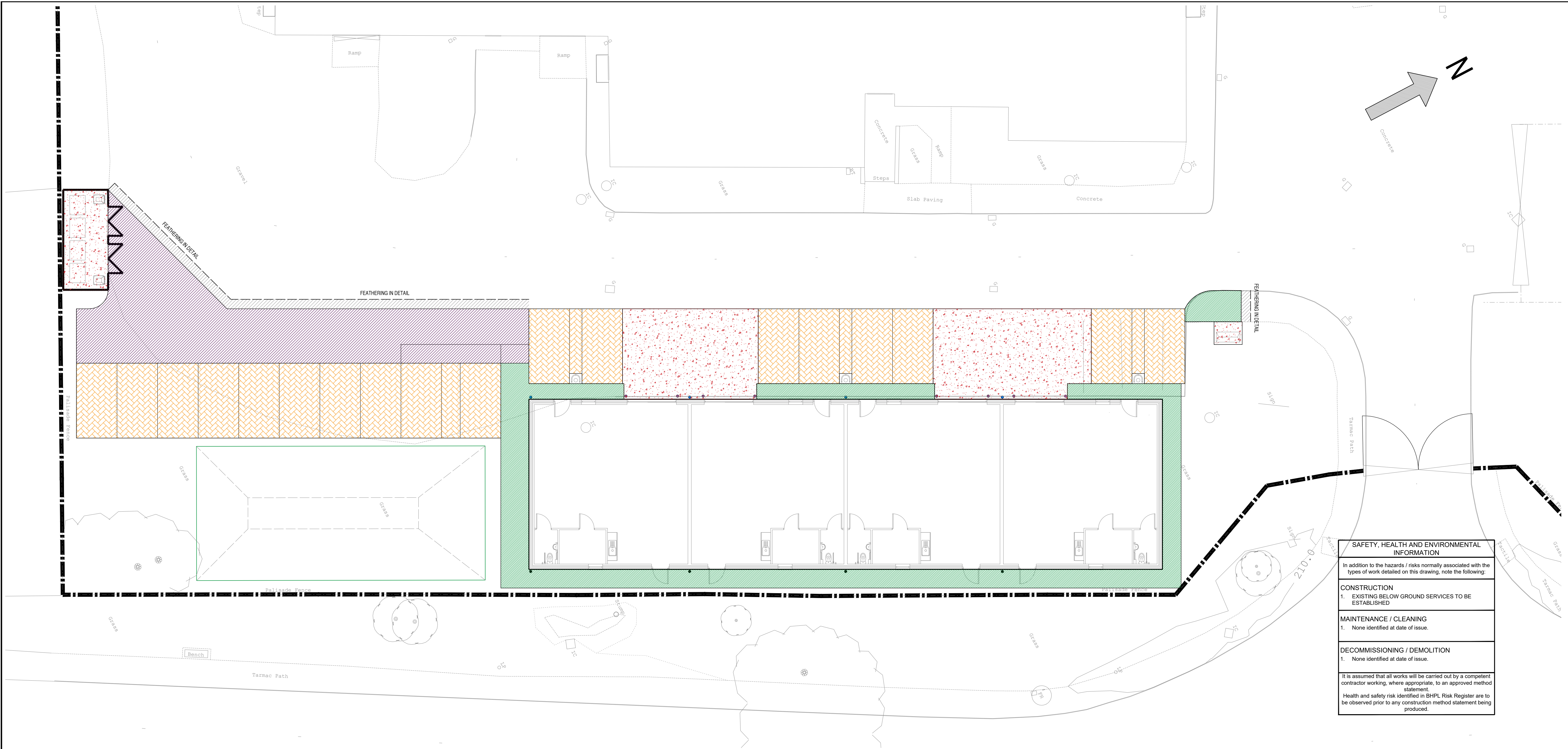
DECOMMISSIONING / DEMOLITION
1. None identified at date of issue.

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 Risk Register are to be observed prior to any construction method statement being produced.

P02	RC	28/05/24	UPDATED SITE PLAN
P01	RC	19/04/24	INITIAL ISSUE FOR COMMENT
Rev	By	Date	Revision

Bingham Hall PARTNERSHIP LTD Consulting Civil & Structural Engineers 5 Ty-Nant Court Morganstown Cardiff CF15 6LW Telephone (029) 2048 8588			
Project Title GLYNCORRWG INDUSTRIAL UNITS			
Drawing Title PROPOSED EXTERNAL WORKS LAYOUT			
Drawing Status INFORMATION			
Architect EPT PARTNERSHIP			
Client ANDREW SCOTT CONSTRUCTION LTD.			
Scale 1:125	Drawn RC	Drawing Size A1	Date APRIL '24
Project No. 6807 - BHP - 02 - XX - DR - C - (60)201	Originator Volume	Level Type	Role Number
Rev P02			

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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.			

80mm CONCRETE BLOCK PERMEABLE PAVING UNITS PROVIDED BY INTERPAVE MEMBER, BLOCK JOINTS FILLED WITH CRUSHED FINE GRAVEL SPECIFIC TO PRODUCT. COLOUR AND FINISH TO ARCHITECTS SPECIFICATION.

50mm LAYING COURSE MATERIAL COMPRISING MATERIAL GRADED IN ACCORDANCE WITH TABLE 11 OF DOCUMENT TITLED 'DESIGN & CONSTRUCTION OF CONCRETE BLOCK PERMEABLE PAVEMENTS' EDITION 7 (DECEMBER 2018).

SUITABLE PERMEABLE GEOTEXTILE TO SECTION 11.9 OF DOCUMENT TITLED 'DESIGN & CONSTRUCTION OF CONCRETE BLOCK PERMEABLE PAVEMENTS' EDITION 7 (DECEMBER 2018).

300mm LAYER OF COURSE GRADED AGGREGATE TYPE 420 TO TABLES 12 & 13 OF DOCUMENT TITLED 'DESIGN & CONSTRUCTION OF CONCRETE BLOCK PERMEABLE PAVEMENTS' EDITION 7 (DECEMBER 2018). MATERIAL TO BE LAID IN A MINIMUM OF TWO 150mm LAYERS IN STRICT ACCORDANCE WITH SECTION 13.5 OF DOCUMENT TITLED 'DESIGN & CONSTRUCTION OF CONCRETE BLOCK PERMEABLE PAVEMENTS' EDITION 7 (DECEMBER 2018).

IMPERMEABLE MEMBRANE DENOTED BY RED DASHED LINE TO RESTRICT INGRESS OF SHALLOW GROUND WATER TABLE

PERMEABLE PAVING CONSTRUCTION

SCALE 1:20

40mm (AC 10 CLOSE SURF 100/150 PSV60 BS EN13108-1). MIXTURES OF AGGREGATES ARE NOT TO BE USED. TO BE LAID BY MACHINE.

60mm (AC 20 DENSE BIN 100/150 BS EN13108-1) TO BE LAID BY MACHINE.

90mm AC 30 DENSE BASE BIN 100/150. TO BE LAID BY MACHINE.

150mm GRANULAR SUB-BASE TYPE 1 MATERIAL (CLAUSE 803), COMPACTED IN ACCORDANCE WITH CLAUSE 802.

300mm GRANULAR TYPE 1 SUB-BASE (SHW CL 803), COMPACTED IN ACCORDANCE WITH CLAUSE 802. SEE NOTE 7.

SUB-GRADE TO BE PROOF ROLLED, ANY SOFT SPOTS TO BE REMOVED AND REPLACED WITH 75 DOWN-EVENLY GRADED AND WELL-COMPACTED IMPORTED HARD CORE, LAID IN LAYERS NOT EXCEEDING 150mm.

TARMAC ROAD CONSTRUCTION

SCALE 1:20

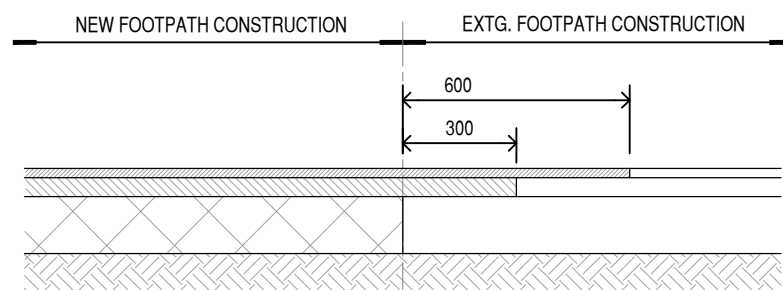
25mm (AC DENSE SURF 160/220 BS EN13108-1).

50mm (AC 20 DENSE BIN 100/150 BS EN13108-1) TO BE LAID BY MACHINE.

150mm GRANULAR SUB-BASE TYPE 1 MATERIAL (CLAUSE 803).

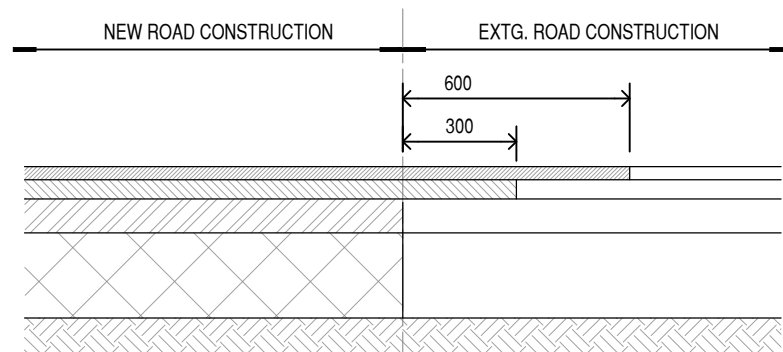
TARMAC FOOTPATH CONSTRUCTION

SCALE 1:20



FOOTPATH FEATHERING DETAIL

SCALE 1:20



ROAD FEATHERING IN DETAIL

SCALE 1:20

LEGEND

- PAV2 CONCRETE YARD CONSTRUCTION (120m²)
- PERMEABLE BLOCK PAVING CONSTRUCTION (240m²)
- TARMAC ROAD CONSTRUCTION (200m²)
- TARMAC FOOTPATH CONSTRUCTION (120m²)

NOTES

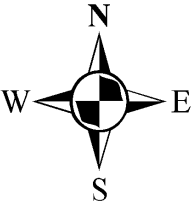
- ALL CLAUSE REFERENCES ARE FROM D.O.T. PUBLICATION 'SPECIFICATION FOR HIGHWAY WORKS'.
- ALL FORMATIONS SHALL BE PROOF ROLLED ANY SOFT SPOTS REMOVED AND REPLACED WITH CLASS 6F2 TABLE 61 MATERIAL. COMPACTION SHALL BE IN ACCORDANCE WITH CLAUSE 612. THE MINIMUM CBR OF AREAS OF FILL MATERIAL SHALL BE 15% 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.

P02	RC	28/05/24	UPDATED SITE PLAN
P01	RC	08/05/24	INITIAL ISSUE FOR COMMENT
Rev	By	Date	Revision
Bingham Hall PARTNERSHIP LTD			
Consulting Civil & Structural Engineers 5 Ty-Nant Court Morganstown Cardiff CF15 5LW Telephone (029) 2048 8588			
Project Title GLYNCORRWG INDUSTRIAL UNITS			
Drawing Title PROPOSED EXTERNAL FINISHES			
Drawing Status INFORMATION			
Architect EPT PARTNERSHIP			
Client ANDREW SCOTT CONSTRUCTION LTD.			
Scale 1:125	Drawn RC	Drawing Size A1	Date APRIL '24
Project No. 6807 - BHP - 02 - XX - DR - C - (60)205	Volume -	Level -	Type -
Role -	Number -	Rev P02	Checked DTH



Dŵr Cymru
Welsh Water

Glyncorrwg Workshops Park Street
Glyncorrwg SA13 3EA



LEGEND(Representative of most common features)

Waste network:			
	Foul chamber		Outfall
	Surface water chamber		Lamphole
	Combined chamber		Storm Overflow
	Combined sewer overflow		Rising main
	Special purpose chamber		Gravity sewer
	Treatment works		Private sewer
	Pumping station		Private sewer subject to Sect. 104 adoption agreement
NB: Sewer symbol colour indicates the type.			Private Sewer Transfer
RED	- Combined		Lateral Drain
GREEN	- Surface Water		Inspection Chamber
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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