

Drainage Strategy Report

Earlswood CFTB at:
Earlswood Transport Hub,
Jersey Marine,
Neath Port Talbot.
SA10 6NG

Prepared for: Mid & West Wales Fire & Rescue Service
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1.0 Introduction

1.1 Purpose of the Assessment

Vale Consultancy have been appointed by Mid & West Wales Fire & Rescue Service (*the client*) to develop the drainage strategy in support of a proposed planning application for the conversion of an existing workshop facility into a carbonaceous fire training facility, including the construction of a new smoke/filter housing and fan, flue stack, control room building and security fencing, all within the existing site for commercial end use, on a 0.702 ha site area of developed land at Earlswood Training Centre, Jersey Marine, Neath Port Talbot SA10 6NG. NGR :273107 194178.

1.2 Limitations

This drainage appraisal report is prepared in support of a planning application and is for the exclusive benefit of the Client. It may not be assigned to or relied upon by third party without the agreement of Vale Consultancy in writing. Vale Consultancy retains all copyright and other intellectual property rights in the document and its contents unless transferred by written agreement between Vale Consultancy and the Client.

The findings and opinions expressed are based on the conditions encountered and/or the information reasonably available at the date of issue.

1.3 Scope of the Assessment

The scope of the assessment is as follows: -

Surface Water

- Obtain details of existing site surface water drainage, ditch courses, watercourses, and any other water bodies within and adjacent to the site.
- Calculate expected surface water discharge flows based on likely development proposals.
- Obtain copies of available borehole records and geological maps to consider the feasibility of utilisation of sustainable drainage systems (SuDS) for the development site.
- Develop a surface water drainage strategy for the site using the principles of Sustainable Drainage Systems. The surface water drainage strategy will be in accordance with the NPTCBC requirements.

Foul Water

- There is no foul water emanating from the development proposals.

2.0 Development Site

2.1 Site Location and Description

The candidate site is located at Neath, west of Briton Ferry. The site comprises of a plot area of approximately 0.70 ha of developed land on the Earlswood Training Centre at an elevation of 6.5 m AOD with a small, wooded area to the east, and the Earlswood Depot Access Road to the south. As the proposed development is located on a site which is largely developed the classification would be considered as "Brownfield."

The primary vehicular access entrance into the site will be off the Earlswood Depot Access Road to the south.

The application site occupies a total area of approximately 0.03 hectares of developed hardstanding and the site is surrounded by wooded area and undeveloped fields, with the M4 to the south and the A48 to the north of the site. is centred on National Grid Reference Ref: NGR :273107 194178.

A review of the available data indicates that the site can take benefit of existing onsite surface water drainage.

The site comprises of an existing buildings and areas of hardstanding which consists of a mix of areas of asphalt and concrete. Currently building to be converted no active use as the building is vacant and the candidate site forms part of the wider Earlswood Training Facility.

The site location is indicated in *Figure 1*.

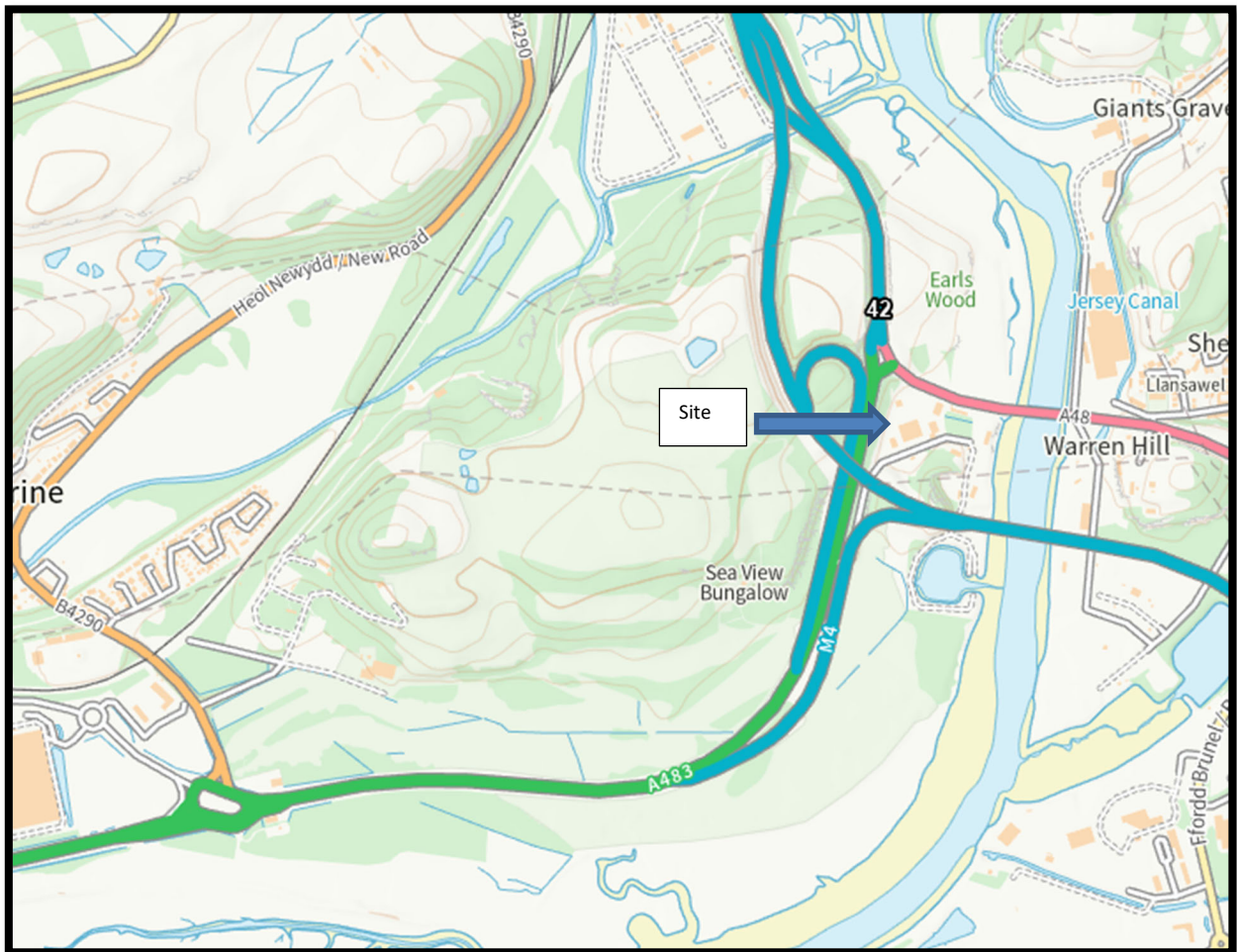


Figure 1 – Site Location

2.2 Site Proposals

The development proposals will comprise of the conversion of an existing workshop building which consist of a steel framed structure to be used as a cocoon over a specialist training /burn house building which consists of a two-storey residential building and material store this will create a new real fire training facility. External to the existing building is a control room and a smoke filter house and fan will be constructed. Within the burn house are a number of strategically positioned trapped floor gullies into which the fire water used in the training exercise will discharge with the ultimate destination to the above ground storage tank via the surface water pumping station.

3.0 Existing Site

3.1 Topography



The site topography as surveyed shows the ground levels on the site to be situated on relatively flat ground at an approximate elevation of 6.5m AOD.

3.2 Geology

A review of geological information identified in Integral Geotechnique (Wales) Site Investigation Report dated September 2022 indicates that the site is underlain by marine or estuarine alluvium, overlying bedrock of the upper coal measures, with a mantle of made ground overlying the site. The hydrogeology of the site identifies that the superficial deposits are classified as an undifferentiated aquifer, and the upper coal measures are classified as a secondary A aquifer. The Geo-environmental appraisal of the site to provide a basis of the drainage and structural engineering design.

3.3 Watercourses and Hydrology

The nearest major surface water feature to the site is the small channel Indicated on the historical mapping which flows to the east and extents to a stream that flows to the river Neath. The river Neath is approximately 150m to the east of the site.

- Pluvial surface water is by unfettered run-off from the site which currently discharges by means of an existing formal below ground surface water drainage system which ultimately discharges via

an offsite small watercourse out falling into the river Neath.

- There are no known watercourses within the site boundary.
- No main river lies within the site boundary and the river Neath is 150 m to the east of the site.
- There are no known land drainage assets within the site boundary.

3.4 Infiltration to Groundwater

Pollution The Geo-environmental appraisal survey identified that some of the pre-existing ground conditions had been filled with material containing asbestos (generally cement bound ACM). The site and surrounding area are known to comprise 'made ground', some of which contains exceedances of arsenic and lead. Changes in the groundwater regime due to point drainage soakaways will risk the mobilisation of contaminants, the consequences of which are difficult to predict. Groundwater was encountered at depths of 1-3m below existing ground level.

Taking all of the above into consideration, discharge of residual surface water flows to ground via infiltration is not a viable solution.

4.0 Legislation

4.1 Environment (Wales) Act (2016)

This Act provides the legislation needed to plan and manage Wales' natural resources in a more proactive and sustainable way. The key parts of the Act relating to flood and water management are:

- Part 1 – sustainable management of natural resources.
- Part 7 – flood and coastal erosion committee and land drainage (clarifies the law for other environmental regulatory regimes including flood risk management and land drainage).

4.2 Wales Spatial Plan (2008)

The Wales Spatial Plan (Ref. 8-13) is a framework for ensuring that the development of places and the delivery of services work together at a local, regional, and national level to improve the lives and prosperity of the citizens of Wales. It ensures the principles of sustainable development are fully embedded in future design with flood risk a recognised area of concern which needs to be addressed going forward.

The Planning Directorate has begun work on the National Development Framework (NDF) (Ref. 8-14) which will set out a 20-year land use framework for Wales and will replace the current Wales Spatial Plan. This document will set out where nationally important growth and infrastructure is needed and will provide direction for Strategic and Local Development Plans.

4.3 Planning Policy Wales (Edition 10, 2018)

Planning Policy Wales (PPW) (Ref. 8-15), which is supplemented by a series of Technical Advice Notes (TAN), sets out the land use planning policies for the Welsh Government. The PPW and TANs comprise national planning policy which should be considered in preparation of development plans. Meeting the Welsh Government's objective for sustainable development requires action through the planning system to move away from flood defence and towards a more positive avoidance of development in high-risk areas. Local planning authorities should consult with other authorities and NRW to ensure that, as well as not being at risk itself, the development does not increase the risk of flooding elsewhere.

4.4 TAN 15: Development and Flood Risk (2004)

TAN 15 provides guidance which supplements the policy set out in Planning Policy Wales in relation to development and flooding. It provides advice on matters including the use of DAMs to determine flood risk issues, how to assess the flooding consequences of proposed development and action that can be taken through development plans and development control (management) procedures to mitigate flood risk when planning for new development. This document is discussed in more detail within the site-specific Flood Consequence Assessment that accompanies the proposed development.

4.5 The Flood and Water Management Act (2010)

Under Schedule 3 of the Flood and Water Management Act, Lead Local Flood Authorities (LLFAs) were established as SuDS Approval Bodies which will require NPTCBC to approve but not adopt the SuDS for this new development.

However, the development proposals are below the SAB trigger levels of 100m² construction area.

4.6 Local Flood Risk Management Strategy

Under the Flood and Water Management Act, a duty has been placed on NPTCBCC to develop and maintain a Local Flood Risk Management Strategy (LFRMS). The strategy gives a clear vision on how flood risk will be managed in the authority's boundary and deals with only local flood risk which is defined in the act as being from:

- Surface water runoff
- Groundwater
- Ordinary watercourses (Main River flooding remains the responsibility of NRW)

4.7 Statutory Standards for Sustainable Drainage – 2018

As a requirement of the Flood and Water Management Act, the Government must publish Statutory Standards and consult on them prior to publication. These standards address the design, construction, maintenance, and operation of drainage systems. The Statutory Standards for sustainable drainage consultation came into effect on 7th January 2019, requiring all new developments to include Sustainable Drainage Systems (SuDS) features that comply with the national standards.

In the legislation for sustainable drainage SAB will apply to

- Construction work means anything done by way of, in connection with or in preparation for the creation of a building or other structure, AND
- Construction work has drainage implications if the building of structure will affect the ability of the land to absorb rainwater.

The proposed construction works are below the 100m² threshold and therefore exempt from SAB.

The existing development building footprint area is 300m².

New construction area 87m² ≤ 100m²

4.8 BS 8533: Assessing and managing flood risk in development – Code of practice.

The British Standard 8533 (BS8533) has been published by the British Standards Institution (BSI) in October 2011. This aims to provide further details, guidance and recommendations to the developers, planning

authorities and flood risk managers in order to consider and identify the flood risk from all the potential sources of flooding and how to avoid, reduce and mitigate their likely impact in new or existing developments.

4.9 The SuDS Manual (2015) CIRIA C753

NPTCBC are now the statutory consultee for major developments which have surface water implications. This new responsibility will require LLFAs to provide comments in relation to surface water drainage aspects of planning applications within 21 days.

The latest guidance on the use of SuDS is provided in 'The SuDS Manual' by CIRIA (ref: C753, London 2015). The SuDS Manual states that.

The philosophy of sustainable drainage systems is about maximising the benefits and minimising the negative impacts of surface water runoff from developed areas.

The SuDS approach involves slowing down and reducing the quantity of surface water runoff from a developed area to manage downstream flood risk and reducing the risk of that runoff causing pollution.

5.0 Sustainable Drainage Systems (SuDS) Compliance

5.1 SuDS Objectives.

NPTCBC Land Drainage have confirmed that the proposed development will not require SAB approval prior to any construction works commencing onsite. Therefore, a surface water drainage system will be developed in line with the ideals of sustainable development.

The design approach for an industrial infill on the available plot within an existing commercial/industrial setting will, take advantage of the space available within the site demise which will be attenuated with a restricted and managed run off.

5.2 The SuDS Management Train

The drainage design within the development, will comply with the four pillars of SUDS: Water Quality, Water Quantity, Amenity and Biodiversity.

The 'management train approach' should be central to the surface water drainage strategy for the proposed site. The main objective is treatment and control of runoff as near to the source as possible protecting downstream habitats and further enhancing the amenity value of the site. This concept uses a hierarchy of drainage techniques to incrementally reduce pollution, flow rates and volumes of stormwater discharge from the site, and is as follows:

Prevention - the use of good site design and housekeeping measures to prevent runoff and pollution and includes the use of rainwater reuse/harvesting.

Source Controls - control of runoff at source or as close to source as possible (e.g., soakaways, green roofs, pervious pavements)

Site Control - management of water in a local area and can include below ground storage/attenuation, detention basins, large infiltration devices.

Regional Control - management of water from a site or various sites and can include wetlands and balancing ponds.

5.3 Building Regulation Hierarchy

In line with current best practice, priority consideration for means of surface water discharge should be given firstly to the use of infiltration. There are two factors determining whether infiltration can be utilised onsite.

The first is the geological constraints determined by the underlying geology and the potential for pollution and mobilisation of contaminants.

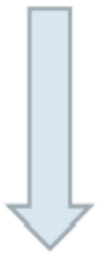
The second is the physical constraints determined by land use and the proposed masterplan. Building regulations requires a minimum 5m standoff distance of point source soakaway from any structure, building or public highway. The drainage strategy does not propose the use of point source soakaways where infiltration can be concentrated to one specific location.

5.4 Surface Water Runoff Destination

The Flood and Water Management Act 2010 (Schedule 3) came into effect in Wales in January 2019, which now requires new development to include Sustainable Urban Drainage Systems (SuDS) features which comply with the National Standards. The proposed development must therefore take into consideration the following hierarchy for surface water destination.

By exploring the Surface Water destination in line with the SuDS Standards which are aimed at ensuring that the most effective drainage scheme is delivered with the most preferred levels of surface water destination will be determined.

Surface water runoff destination have been considered in order of Priority Level.

Surface Water Disposal Mechanism	SUDS Hierarchy
Priority Level 1: Surface Water runoff is collected for use. Priority Level 2: Surface Water runoff is infiltrated to the ground. Priority Level 3: Surface Water runoff is discharged to a surface water body. Priority Level 4: Surface Water runoff is discharged to a surface water sewer, highway drain, or another drainage system. Priority Level 5: Surface Water runoff is discharged to a combined sewer.	Most Preferred  Least Preferred

Priority Level 1 –Collection for reuse. The level 1 solution will not be wholly adequate to deal fully with the development surface water drainage and would require overflow into the next lower priority destination Level 3 which will be required when the collection storage of the above ground storage tank is full. Therefore, the proposed drainage strategy is based on this principle: collection of rainfall for re-use as the first priority, but with a system that ensures the managed discharge of overflow run-off at times when collection storage is full.

Primary and secondary destination of surface water runoff

Priority Level	Primary destination	Secondary destination	Comments
Priority Level 1	Y	Y	
Priority Level 2	N	N	
Priority Level 3	Y	Y	
Priority Level 4	N/A	N/A	
Priority Level 5	N/A	N/A	

Discharge to a foul drainage will not be permitted.

5.5 SuDS Site Constraints

Not all SuDS techniques are suitable for all sites; therefore, an assessment of the existing site is required, so that the SuDS limitations can be determined. This assessment considers the following:

Land Use Characteristics: The proposed density and land use of the development will influence the SuDS selection.

Site Characteristics: Geological, groundwater and contamination characteristics could all affect the suitability of infiltration SuDS techniques.

Catchment Characteristics: The site is currently greenfield and the discharge rate from the redeveloped site will need to be limited.

Environmental and Amenity Performance: Factors including maintenance regime, cost, safety, and habitat creation need to be considered to influence the SuDS selection for the site.

5.6 SuDS Design Philosophy

The SuDS philosophy for the development site and use of SuDS in the form of water collection for re-use, this will be achieved by gravity discharge of both the rainwater runoff from the cocoon building and the firewater from the training exercises, which will decant into a surface water package pumping station which will then lift the surface water to an above ground storage tank. The tank will function as an attenuation storage facility and a fire water reuse facility, and with a system that ensures that the discharge from overflow arrangement provides a managed run-off at times when the collection storage is full.

Amenity is not the main driver for this sub-catchment.

For this specific scheme the use of pipework and propriety products are the most efficient and cost-effective way of delivering a SuDS scheme, which will address the and improve the way in which the surface water is managed.

As the space is limited for above ground conveyancing, the design concept does not necessarily include some of the more visible SuDS features, the design includes a sequence of components provide the necessary processes to control the frequency of runoff, flow rates and the volume of runoff, and to reduce concentrations of contaminants to acceptable levels.

The drainage techniques proposed for this site include prevention, source controls and site controls. The following SuDS strategy is proposed for the development and the techniques are discussed in further detail in Section 6.

5.6.1 The SuDS Drainage Concept (Ref: Appendix A)

The existing building drainage consists of a standard roof water collection system with rainwater down pipes into the below ground conveyancing pipework. Attenuation storage will be provided by an above ground storage/harvesting tank. Water quality will be provided by the existing downstream treatment component of a suitably sized By-pass interceptor and the gully sediment traps and line drain sumps. The overflow water quantity passing forward from the tank overflow to the existing offsite drainage will be provided by an orifice flow control regulated at 1.0 l/sec.

Exceedance flow destination is provided via the hardscaped area with the overland flows directed to the surrounding wooded areas at the site boundary.

5.7 SuDS Components Considered for the Development

Site control features such as detention basins and swales can be designed to attenuate storm runoff and provide conditions for settlement of suspended solids. The use of these types of attenuation within the

development have been given due consideration and discounted as there is not enough land available to provide this large feature.

5.7.1 Soakaways

Conventional soakaways are not a viable option at the site as a method of surface water disposal.

5.7.2 Porous Pavements

Shallow infiltration with the use of porous paving is not a viable option at the site as a method of surface water disposal.

5.7.3 Green Roofs

The use of a retro-fit green roof has been considered and discounted for the main buildings due to the structural implications and the imposed load on the buildings.

5.7.4 Rainwater Harvesting

The use of a proprietary rainwater harvesting system has been considered for the respective development plot and due to the advantage of capital cost/installation with no excavation for below ground tanks and maintenance requirement.

The use of rainwater harvesting is a cost-effective /viable option for managing surface water runoff.

5.7.5. Rain Gardens/Raised Planters

Roof runoff to this SuDS mechanism is not a viable option at the site as a method of surface water disposal

5.7.6 Detention Basins.

The selection and siting of this SuDS component has been discounted due to the site suitability and constraints of the physical and geometric requirements in achieving the key design criteria.

5.7.7 Swale

The use of swales has been considered and discounted due to the site constraints and land take.

6.0 SURFACE WATER RUNOFF CONTROL AND DRAINAGE STRATEGY

The surface water from the development will be collected within the site and discharged using SuDS features.

The objectives of sustainable drainage systems are threefold:

- To limit the peak run-off rate.
- To limit the volume of run-off.
- To maintain the quality of the surface water which is discharged.

The proposed drainage strategy is subject to liaison and approval with NPTCBC SAB.

6.1 Peak Run-off Flow Rate

The calculation will include for the anticipated impermeable development area based on an initial estimated permeable development for the catchment area. The 10% allowance for urban creep is not applicable as the proposed development has maximised the developable site area.

SECTION X-X (DRAINAGE CONCEPT)

(TO BE READ IN CONJUNCTION WITH DRAWING 14995/C500)

6.2 Three Annual Rainfall Probabilities (*merit specific consideration: 100%, 3.33% and 1%*)

The **3.33% annual probability** (1 in 30-year event) is of importance because of the linkage with the level of service requirements of Sewers for Adoption that requires surface water sewers can convey this storm event within the drainage network without causing flooding to any part of the site.

The **1% annual probability** (1 in 100-year event) has been selected since it represents the boundary between high and medium risk of fluvial flooding defined in TAN 15 and recognises it is not practicable to fully limit flows for the most extreme storm events. Also, during storm events of this magnitude, the capacity of the surface water drainage system may be inadequate, however the floor levels of the proposed buildings will be flood free.

Flood flows up to 1% annual probability are contained within the site and will have little material impact in terms of nuisance and damage. Overland flood flows within the site have been assessed for the short high intensity rainfall events of between 15 mins and 1-hour duration.

Table 1 below indicates the change in impermeable/permeable area and corresponding flow rates unto the receiving sewer (based on 50mm/hr rainfall intensity) for the pre and post development scenarios.

	Pre-Development Catchment	Existing Flow Rate (Based on 50mm/hr)	Post Development Catchment	Proposed Flow Rate (based on 50mm/hr)	Reduction in flow rate to receiving sewer
Existing Building	300 m ² Impermeable (100%)	4.5 l/s	300m ² Impermeable (100%)	1.0 l/s	78%
Firewater	Based on applying water /exercise for 2min=214 l/min for 5 no exercise/ day			Total daily use of firewater= 1070 litres =0.012l/sec	0%
	Total	4.5 l/s	Total	1.012l/sec	Overall Reduction 77%

Table 1: Pre- and Post-Development surface water discharge comparison

It should be noted that the flow rates indicated above are based on a rainfall event of 50mm/hr intensity, if the rainwater harvesting storage tanks which forms part of the drainage proposals are full and then all the run-off falling on the development area will discharge to the existing drainage network. During summer when demand for stored water is at its highest and the tanks are empty, all the rainwater falling on the building roof would be captured and stored which would reduce both the total amount of water discharged to the existing drainage system and the rate of discharge from the development proposals. The above table therefore shows the 'worst case' discharge for the given rainfall intensity.

7.0 Compliance with SuDS Principles

S2 Surface Water Hydraulic Control.

The proposed rainwater harvesting, and associated overflow control devices will serve to mitigate the negative impacts of runoff from the development and surface water discharge for agreed return periods events will be controlled. However, it is important that the drainage design proposals should be examined for the likelihood and consequences of any potential failure scenarios. The proposed water storage and flow rate attenuation significantly reduce the risk of flooding from surface water over the pre-development situation. Reducing both the rate of flow and total annual volume of discharge to the offsite watercourses during extreme rainfall events.

S3 Water Quality.

The proposed SuDS system will provide a level of treatment for the development surface water run-off and take benefit from the existing pollution screening provided by a bypass interceptor. Since the run-off from the development comprises roof drainage the site presents a low risk in terms of adverse water quality. Whilst water quality remains important, there will be less benefit of providing treatment stages for surface runoff than there would be with a higher priority level disposal method.

S4 Amenity.

Amenity is not the main driver for this sub-catchment.

S5 Biodiversity.

Biodiversity is not the main driver for this sub-catchment.

S6 Design of drainage for Construction Operation & Maintenance and Structural Integrity.

All elements of the surface water drainage system will be designed so that they can be constructed easily, safely, cost effectively, in a timely manner, and with the aim of minimising the use of scarce resources and embedded carbon.

8.0 Pollution Control/Water Treatment

The design of the drainage system will need to consider treatment of the surface water run-off to allow for removal of pollution from the flow prior to discharge from the site. The selection of separate stages of treatment will be necessary to ensure enough removal of pollutants based on the designation of the area being drained.

Initial capture of the run-off from impermeable areas is likely to be completed using the sediment traps of the gullies and line drain sumps with ultimate discharge via the existing bypass interceptor.

Infiltration drainage methods are unsuitable for this development and therefore treatment of surface water prior to entering the pump station and the storage tank has been considered and that the use of the gullies and silt traps and interceptors will provide a degree of treatment.

The surface water treatment stage will depend on the potential hazards on the site and the sensitivity of the receiving surface water drain to possible pollution.

SuDS Component Management Train Approach

Do the SuDS /Treatment Practices achieve the following water quality treatment processes.

SuDS/Treatment Practices	Pollution Prevention /Interception	Primary Treatment Process	Secondary Treatment Process	Tertiary Treatment Process
Permeable pavement/surface	N/A			
Infiltration systems	N/A			
Green Roof	N/A			
Rainwater Harvesting System	Yes			
Filter Strips	N/A			
Swale	N/A			
Bioretention Surface	N/A			
Detention Basin	N/A	N/A	N/A	
Pond			N/A	
Wetland			N/A	N/A
Attenuation Storage	Yes			

Water Quality Standard

Land Use	Pollution Hazard Level	Water Quality Treatment for Discharges for Development (CIRIAC753: Table 26.2)
Unit Roof	Very Low	TSS=0.2. Metals=0.2. Hydrocarbons 0.05
Hard standing Areas surrounding the building	Low	TSS=0.8. Metals=0.8. Hydrocarbons=0.9

SuDS components for the management train for the development site does not exceed the pollution hazard index.

Therefore, the SuDS mitigation indices for discharging to surface water within the management train will capture, convey and store surface water runoff while delivering interception and pollution risk management.

Unit roof water is considered low risk, and by discharging into catch pits /gullies they will capture the pollutants, by removing and treatment will provide a gradual improvement to the water quality entering the offsite system and is therefore deemed to be sufficient.

9.0 Exceedance Flow

In line with the design criteria of dealing with exceedance flows the proposed development it is demonstrated not to flood for storm events with a return period greater than 100 years plus climate change. In accordance with best practice (CIRIA C635 Designing for Exceedance), flood waters from storm events that exceed the design storm of 100years +cc will be channelled toward the low points of the site with the site curtilage. The proposed network modelling results based on the Simulation Criteria for a 100-year storm return period for a range of storm durations with the network at pipe full capacity, will indicate the points of storm water escape from the proposed drainage network.

The exceedance overland surface conveyance of the flood pathways (default pathways) is directed by design to effectively convey exceedance flow away from the building to areas in the development low spots where temporary storage can be incorporated.

The potential points of exceedance escape would be from the interaction between the major and minor drainage system which is as follows:

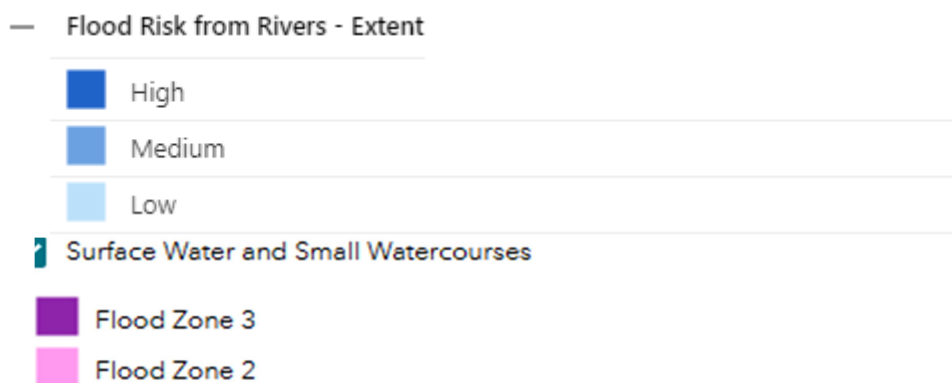
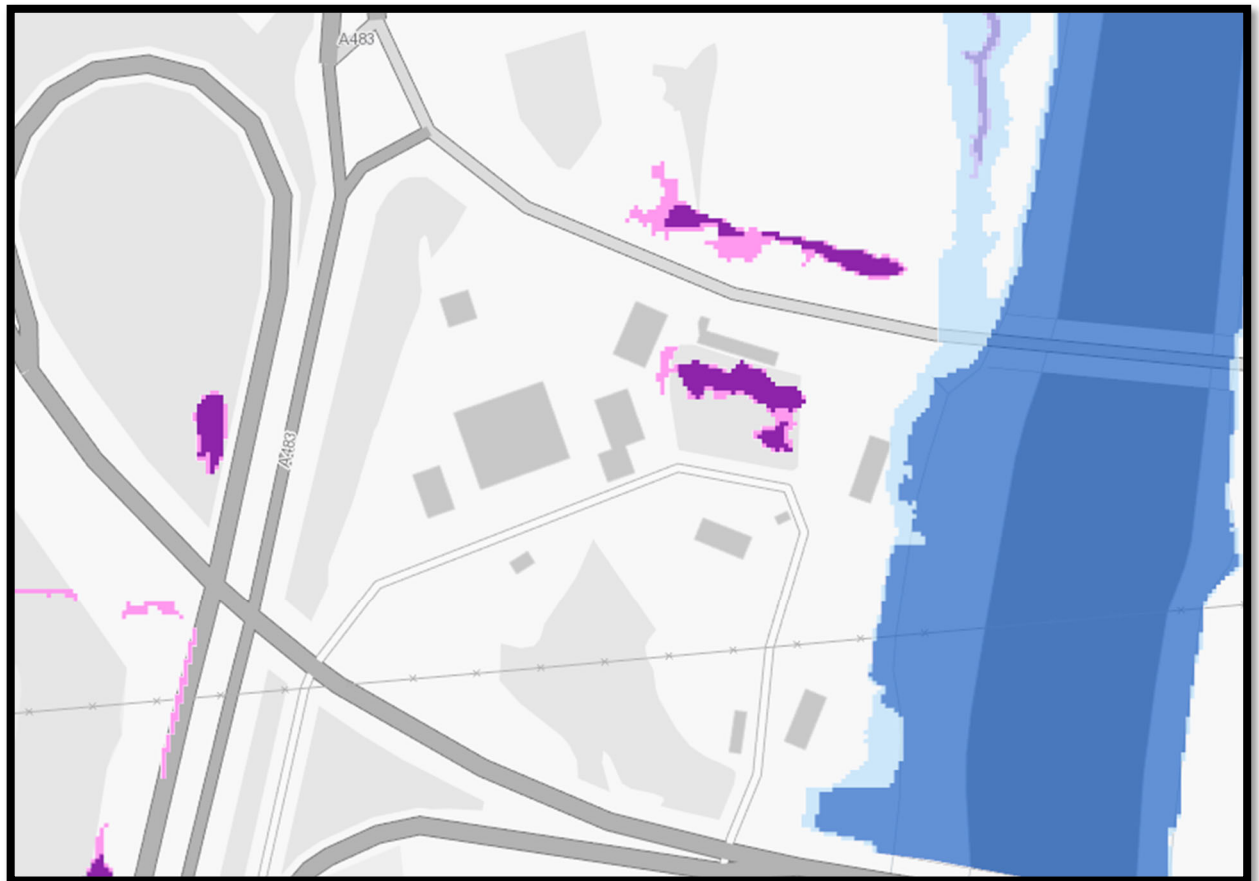
- Flooding from manholes and other connections to the minor drainage system due to blockage or other defects.
- Excess surface water runoff that cannot enter the system due to the limited capacity.
- Flooding caused by the high levels of surface water in the onsite drains preventing the site from discharging.

10.0 Status of Ownership of SuDS Drainage System

The site falls under the definition of one property and therefore any SuDS that drain the sites external areas will remain in private ownership.

11.0 Flooding

The NRW Development Advice Map for the site indicate that site area is outside the flood envelope, in an area of little to no flood risk.



Extract from NRW Development Advice Maps (DAMs)

14.0 Surface Water Drainage Operation and Maintenance Strategy

The operation and maintenance of the approved SuDS system and the inspections and the maintenance required for the SuDS components within the system to function as designed in meeting the required performance levels will be detailed in a standalone document *Titled: Management and Maintenance Plan For Sustainable Drainage (SuDS)* which sets out that the responsibility for inspection and maintenance is with the Mid & West Wales Fire & Rescue Service or their appointed asset maintenance contractor.

Conventional surface water drainage features such as gullies, channels, and manholes should be inspected as an absolute minimum annually, and where practicable after intense storm events, with silt removal.

S1 -Surface Water Destination

The proposed SuDS features to the proposed development will discharge to an above ground harvesting tank with a managed discharge overflow into the existing onsite surface water drainage system.: Priority Level 1 and 3.

S2 -Surface Water Runoff Hydraulic Control

Surface water runoff hydraulic control is provided with the overflow surface water discharge from the above ground harvesting tank with the via flow control chambers in the downstream system prior to entering the existing surface water drainage network.

S3 -Treatment

Given the low pollution hazard levels of the proposed development and the introduction of trapped gullies, linear drainage channel outlet sumps and an existing by-pass interceptor, the water treatment requirement is satisfied, within the spatial constraints of development site.

S4- Amenity

Given the nature of the site amenity can be discounted in this instance.

S5 -Biodiversity

Given the nature of the site and the land use of the development expectations, biodiversity can be discounted in this instance.

S6 -Design for Construction, operation, and maintenance.

Maintenance plan for the proposed SuDS system is contained within a standalone document titled: "Management and Maintenance Plan". The maintenance and management of all the SuDS components applicable to the new surface water drainage serving the development proposals is contained within the referenced document.

Construction: It is anticipated the proposed development will be a D & B form of procurement and that the sequence and timing for construction work will forming part of the successful contractor's overall construction programme and given the nature of the construction project on a site with boundary constraints the position of site accommodation, material lay -down areas and construction access and H+S Plan will be a primary consideration.

15.0 Summary

- The drainage strategy demonstrates that sustainable drainage principles have been incorporated within its design and that the development complies with the principles of the SUDS hierarchy.
- The surface water strategy demonstrates that surface water runoff from any impermeable surfaces within the proposed development shall be captured, treated, and attenuated, within the site curtilage.
- Following the completion of the development, The Construction (Design and Management) CDM Regulations 2015 File shall include risk assessments for the design, construction, operation and maintenance of the drainage system.

Appendix A
Development Drainage Concept Plan

Appendix B
Existing Drainage Site Survey Records

