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STATION ROAD, BARGOED

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SURFACE WATER DRAINAGE STRATEGY

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Client: LANGSTONE CONSTRUCTION GROUP LTD

Site Name: Station road, Bargoed.

Surface Water Drainage Strategy:

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Approved By: Gavin Fairclough Technical Director

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- Welsh Government Statutory Standards for Sustainable Drainage Systems (2018)
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- CIRIA SuDS Manual C753 (2015)

EXECUTIVE SUMMARY

Austin Partnership have been commissioned to produce a Surface Water Drainage Strategy to accompany the SAB (SuDS Approving Body) application for the construction of a purpose-built residential apartment block with external parking at the above site. Table 1 below summarises the details of the development, flood risk to the site and proposed drainage strategy.

Table 1: Site Summary	
Site Location	The site is located on Station Road, Aberbargoed, Bargoed, Caerphilly County Borough. The postcode to the site CF81 8RF. National Grid Ref: 315126, 200117.
Proposed Development	The proposed development will consist of residential flats, complemented by landscaped areas at the front and rear, along with a dedicated parking area for residents.
Surface Water Drainage Strategy	It is proposed to utilise Sustainable Drainage Systems to manage surface water runoff from the proposed development in line with current best practice. The development will comprise of Tobermore or similar approved permeable paving to the external car parking area. The rainwater from the new roof will discharge into a mixture of lined raingardens to the front and a long linear swale to the rear, with the overflow discharging into the River Rhymney (subject to NRW / statutory authority approval) via a flow control device to an agreed rate of discharge.

1 EXISTING SITE CONDITIONS AND DEVELOPMENT PROPOSALS

1.1 The Site and Surrounding Area

The site is located north-east of Bargoed Train Station, positioned between Station Road to the west and the Rhymney River to the east. A location map extract is provided below, showing the approximate site boundary.



Figure 1 – Site Location Plan

(Source: Google Earth)

1.2 Development Proposals

The proposed development will consist of residential flats, complemented by landscaped areas at the front and rear, along with a dedicated parking area for residents. The surface water from the site will ultimately discharge to the River Rhymney, subject to the necessary consents. The overall site area is approximately 6100m² (0.61 Ha) and could be classed as brownfield due to its former industrial use as a timber and builder's supplies.

1.3 Existing Topography

A topographical survey was carried out in April 2025 by Drone Evolution. Due to the steep nature of the site, the survey was conducted using drone technology. The eastern boundary falls sharply towards the Rhymney River, which sits approximately 10 metres below the proposed development area.

1.4 Proximity to Watercourses

The closest named watercourse to the site is the River Rhymney which is approx. 60m to the east, but at a considerably lower elevation to the site.

1.5 Existing Sewers

The Dwr Cymru Welsh Water asset plan for the area indicates the presence of several sewers, including both surface water and combined systems, within the vicinity of the site. The nearest combined sewer is located within the Rhymney River, but due to the level change the existing surface water sewer is unlikely to be a viable point of connection. CCTV surveys have not been carried out due to the location and size of the existing combined sewer. The DCWW sewer map shown in [Appendix A](#).

1.6 Utilities

Initial utility searches show electrical and gas utilities in the area of the site with asset plans from Wales & West Utilities and National Grid Electricity Distribution shown in [Appendix B](#). Consideration of the location of these will have to be made especially for any highway works.

1.7 Geology and Ground Conditions

Soakaway testing will be carried out on site, and this will be submitted to support the full SAB Application.

2 PROPOSED SURFACE WATER DRAINAGE STRATEGY

2.1 Background

The Flood and Water Management Act 2010 (Schedule 3), which came into effect in Wales on 7 January 2019, requires new developments to include Sustainable Drainage Systems (SuDS) features that comply with national standards. All new developments of more than one dwelling or where the area covered by construction work equals or exceeds 100 square metres require approval before construction can commence from the SuDS Approval Body (SAB).

All new drainage systems will be designed with consideration for PPW, Non-Statutory Technical Standards for Sustainable Drainage Systems, Building Regulations – Approved Document H (Drainage and Waste Disposal), and the latest version of Sewers for Adoption.

2.2 Sustainable Drainage (SuDS) Statutory Guidance

The Welsh Government statutory standards for SuDS contains a set of principles which must be applied in the design of any surface water drainage scheme in order to obtain approval from the SAB Body. There are 6 SuDS standards, **Standard S1** is a Hierarchy Standard which gives criteria for prioritising the choice of runoff destination, while **S2 to S6** are Fixed Standards. The fixed standards state the minimum design criteria, how SuDS should be built, maintained, and operated.

S1 - Runoff destination:

The runoff destination should be prioritised as follows:

Collect for reuse; Infiltrated to ground; Discharge to a surface water body;
Discharge to a surface water sewer, Discharged to a combined sewer.

S2 - Hydraulic control:

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.

The surface water runoff rate for the 1 in 1-year return period event (or agreed equivalent) should be controlled to help mitigate the negative impacts of the development runoff on the morphology and associated ecology of the receiving surface water bodies.

The surface water runoff (rate and volume) for the 1% (1 in 100 year) return period event (or agreed equivalent) should be controlled to help mitigate negative impacts of the development on flood risk in the receiving water body.

The surface water runoff for events up to the 1% (1 in 100 year) return period (or agreed equivalent) should be managed to protect people and property on and adjacent to the site from flooding from the drainage system.

The risks (both on site and off site) associated with the surface water runoff for events greater than the 1% (1 in 100 year) return period should be considered. Where the consequences are excessive in terms of social disruption, damage, or risk to life, mitigating proposals should be developed to reduce these impacts.

Drainage design proposals should be examined for the likelihood and consequences of any potential failure scenarios (e.g. structural failure or blockage), and the associated flood risks managed where possible.

S3 – Water quality:

Treatment for surface water runoff should be provided to prevent negative impacts on the receiving water quality and/or protect downstream drainage systems, including sewers.

S4 – Amenity:

The design of the surface water management system should maximise amenity benefits.

S5 – Biodiversity:

The design of the surface water management system should maximise biodiversity benefits.

S6 - Construction, operation, and maintenance:

All elements of the surface water drainage system should 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 (energy).

All elements of the surface water drainage system should be designed to ensure maintenance and operation can be undertaken (by the relevant responsible body) easily, safely, cost-effectively, in a timely manner, and with the aim of minimising the use of scarce resources and embedded carbon (energy).

The surface water drainage system should be designed to ensure structural integrity of all elements under anticipated loading conditions over the design life of the development site, considering the requirement for reasonable levels of maintenance.

The statutory SuDS Standards encourage SuDS techniques such as wetlands, swales, ponds, and vegetated systems which can help increase access to green spaces and provide community facilities to bring people together.

2.3 Surface Water Drainage Strategy

CIRIA report C753 'The SuDS Manual' outlines the various types of SuDS, their benefits and limitations and design considerations associated with each. Not all SuDS features/methods are feasible or appropriate for all developments due to factors such as ground conditions, available space, and site levels, which will influence the different methods adopted as part of a particular development. Given the nature of the site and existing ground conditions the following surface water drainage strategy is proposed.

S1 - Runoff destination:

Collect for reuse: As the proposed development will consist of self-contained residential flats, the relative cost of installing and maintaining any form of mechanical/electrical rainwater harvesting system would mean that any such system is unlikely to be viable.

As the development is located in an area that is not prone to water supply issues, no further rainwater collection method will be adopted for the site.

However, informal collection of rainwater is utilised using raingardens, where rainwater collected during storm events is held within the lined system and will maintain plant life within these areas.

Discharge to a surface water body: The nearest watercourse is the River Rhymney and as it is within reasonably close proximity to the development, subject to the necessary consents, this is a viable point of discharge.

Discharge to a surface water sewer or highway drain: From DCWW sewer map record the most suitable point of discharge is into nearest combined

sewer, on the eastern site boundary. Due to levels, a connection into the nearest highway drain is unlikely to be feasible.

S2 - Hydraulic control:

The runoff from both the roofs and hard landscaped areas are proposed to be directed to the raingardens and a long linear swale located at the front and the rear of the proposed new building. These will then overflow into the proposed below ground drainage system, thus reducing direct runoff into the below ground drainage. Further hydraulic control is proposed by the installation of a flow control chamber which will restrict discharge from site to the existing river at a flow rate to be agreed.

S3 – Water quality:

Water quality from the roof and hard landscaping should reach acceptable levels due to the treatment provided by raingardens, any sump boxes associated with the drainage channels. Also, the sumps proposed in surface water chambers and the flow control chamber, will catch and hold silts within the surface water flows.

Similarly, the attenuated permeable paving proposed for the parking area will allow rainfall to filter through the construction make-up and rainwater diffuser, before discharging into the surface water drainage system, via the outlet within the stone base layer.

A Simple Index Approach for Pollution Hazard Index and Mitigation Indices for the development has been carried out, and the relevant tables can be seen in [Appendix C](#) of this document.

S4 – Amenity:

Amenity value can be provided in several ways, the first is the raingardens will provide an aesthetically pleasing feature to the front of the apartments, the long linear grassed swale will be a prominent feature to the rear, and the permeable paving to the driveways will provide adequate usage for off road parking.

S5 – Biodiversity:

The planned raingardens to the property frontage will be the main focal point for biodiversity with the correct planting schedule, but also the provision of grassed areas and swale to the rear will encourage insects, birds and other wildlife. The current site consists of mostly rough ground covered with builder's rubble and discarded general waste material, which will be transformed by the biodiversity levels of the proposed development.

S6 - Construction, operation, and maintenance:

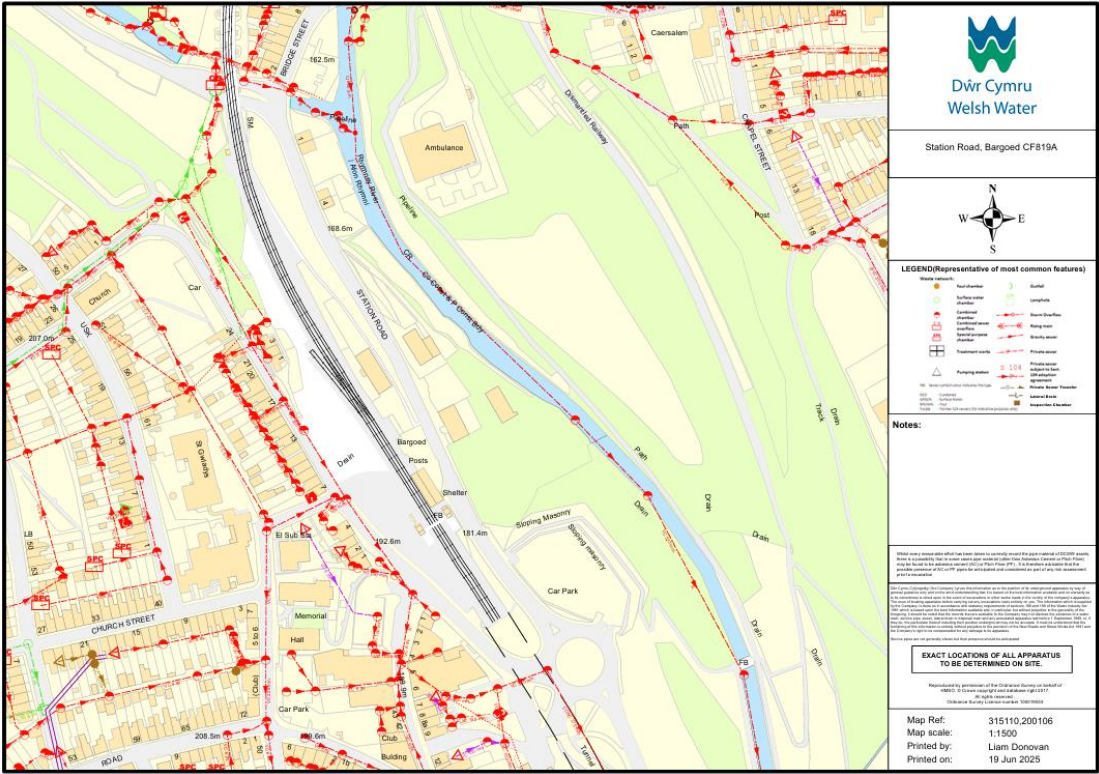
The planned drainage system is at or very near to ground level making construction easier and safer for the developer, and with no great number of deep excavations, the costs should be lower. Construction of the below ground drainage will be specified to be installed to Sewers for Adoption

standards and comply with Building Regulations. Encouraging good workmanship and thus reducing the risk of system failures in the future.

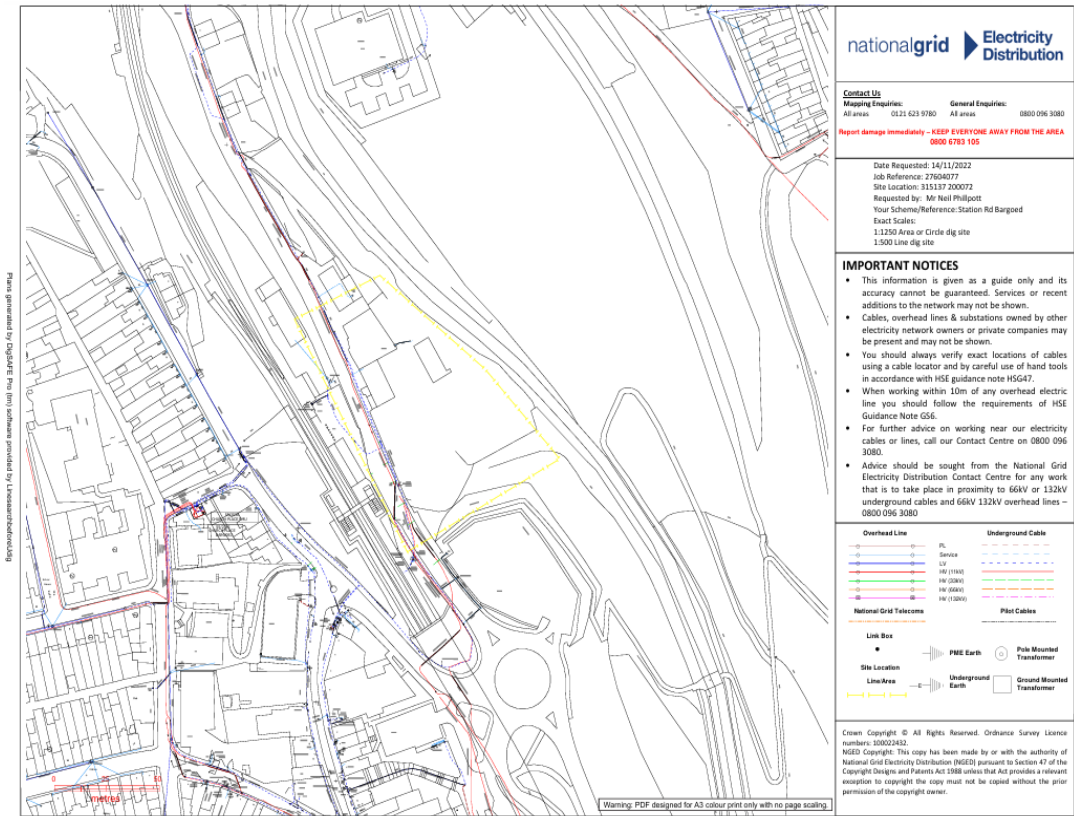
At construction stage the main contractor will be asked to provide a Health and Safety Plan under the Construction (Design and Management) Regulations 2015. Thus, ensuring risks have been identified and controlled, mitigated, or eliminated where appropriate.

Maintenance of the surface level SuDS features will be a mix of the end user (tenants) and the housing association, with tenants to be educated in how these features work and their importance to the drainage of their property. The housing association will include this development into their overall maintenance strategy for the area, and a fully funded maintenance plan provided.

APPENDIX A



APPENDIX B



APPENDIX C

According to CIRIA C753, runoff from the development is considered to present a 'very low to low' source of runoff pollution and the simple index approach should be used. The pollution hazard index is outlined in the Table A below.

A. Pollution Hazard Index (Table 26.2 CIRIA C753)				
Land use	Pollution Hazard	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential Roof	Very Low	0.2	0.2	0.05
External Paving	Low	0.5	0.4	0.4
Residential Drives	Low	0.5	0.4	0.4

The mitigation indices have been applied to the roof and external areas to demonstrate that the pollution hazard has been addressed as outlined in the Table B below.

B. Mitigation Indices (Table 26.3 CIRIA C753)				
Land Use	SuDS Feature	TSS	Metals	Hydrocarbons
Residential Roofs	Raingarden	0.8	0.8	0.8
	Total	0.8	0.7	0.9
	Pollution Hazard Addressed			
External Paving	Permeable Paving	0.7	0.6	0.7
	Total	0.7	0.6	0.7
	Pollution Hazard Addressed			
Residential Drives	Permeable Paving	0.7	0.6	0.7
	Total	0.7	0.6	0.7
	Pollution Hazard Addressed			

