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## Land off Syr Dafydd Avenue – Castell Group

### Technical Note – Drainage Strategy

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#### Introduction

This Drainage Strategy has been prepared by Phoenix Design Partnership Limited on behalf of Castell Group.

The Drainage Strategy has been produced taking into account the Statutory Standards for Sustainable Drainage Systems produced by Welsh Government and the CIRIA SuDS Manual (C753).

#### Location

The site is located to the north east of Bargoed, in a town called Oakdale, that is in the County Borough of Caerphilly, centred at a National Grid Reference of 319258, 198708.

The site occupies an area of approximately 0.183 hectares and is broadly square in shape. The site is currently occupied by an existing building which is set to be demolished. The Northern and westerly boundary of the site is defined by existing residential properties with the easterly boundary being next to a field and the southern boundary is accessible off Syr Daffyd Avenue.

The site naturally falls from south to north-west, the gradients are roughly from site entrance to corner of boundary at 1 in 17.

#### Schedule 3 (Flood and Water Management Act 2010) and the Sustainable Drainage Approval Body (SAB)

Under Schedule 3 all developments in Wales over 100m<sup>2</sup> now require surface water drainage to be designed in accordance with the statutory standards for sustainable drainage systems produced by Welsh Government. It is the job of each Council's SAB team to assess and approve the design proposals which are reviewed against these standards.

The standards aim to mimic the natural drainage characteristics of a site to help control the volume and rate of run off from the proposed development. This is achieved by managing the runoff at or close to the surface and as close to the sources as possible while also providing additional benefits such as biodiversity and amenity.

There are six standards that need to be met as follows.

S1 – Surface Water runoff destination

S2 – Surface Water runoff hydraulic control

S3 – Water Quality

S – Amenity

S5 – Biodiversity

S6 – Design of drainage for construction, operation and maintenance

## Surface Water Drainage

The surface water solution will be designed in accordance with the Statutory standards for sustainable drainage systems 2018 (Welsh Government), Building Regulations Part H, Sewers for adoption 7<sup>th</sup> Edition and the CIRIA SuDS Manual C753.

Whilst the surface water design will be considered at detailed design, a summary of how the drainage will adhere to the standards are as follows:

### S1 - Surface Water runoff destination

There is an existing main surface water sewer that runs to the easterly boundary that is located in the field opposite our development. The existing surface water sewer as it stands is very shallow is only 500mm from invert to cover, so we will be proposing to lower the invert 900mm.

The proposed drainage from our new development then will connect onto the existing main sewer at a new manhole junction further downstream from EXS/2 at a restricted rate. This will then ultimately discharge further downstream into the existing ditch that runs to the north of the boundary of the fields.

Site investigation works were done and it was concluded that soakways were not an option due to the underlying ground makeup of the site.

### S2 – Surface Water runoff hydraulic control

The proposed development will drain into the ditch located to the northern of the boundary development at QBAR rate which we have calculated using the FEH rainfall data and the REFH2 methodology. The FEH Calculations.

The ReFH2 model indicates that the total site generates a Qmed of 2l/s which is converted into Qbar via the FSSR 1 method which stipulates Qmed to multiplied by 1.08, hence a Qbar of 2.1/s.

### S3 – Water Quality

Proposed features to be used on site will ensure that water quality complies with S3 of the WG guidance which refers to the Water Quality Management section of the SUDS Manual. The 'Pollution Hazard Level' for each of the surfaces (Roofs, driveways, shared surfaces & Roads) are categorised in Table 26.2 of the SuDS Manual. Once the areas are identified, Table 26.3 of the SuDS Manual is used to identify the pollutants removal along the drainage train.

Block 1 southern-eastly roof will discharge into rain gardens that are located around the perimeter of the building which will then discharge into the first attenuation tank that is situated to the western side of the boundary.

Block 2 eastly side roof will discharge into a filter strip that runs down the perimeter of the building before discharging into the second tank that is located also to the western side of the boundary. The westly side of the roof will discharge at floor level before getting captured into one of the aco channels and discharging into the sub base of the macro pervious paving.

The road access into site and car parking bays will be captured via aco channels and discharging via a diffuser unit box into the sub base of macro pervious paving.

### S4 – Amenity & S5 – Biodiversity

The site will be designed around the SAB features with amenity and biodiversity in mind. Features such as rain gardens and green space areas will be implemented around the development as much as possible.

### S6 – Design of drainage for construction, operation and maintenance

The site is to be constructed in line with the guidance set out in Ciria C768. Specific details will be provided in the developers 'SuDS Construction Management Plan'.

Additional operation and maintenance plans will be provided based upon the specific requirements of the site.

### Foul Water Drainage

It is anticipated that the foul flows will discharge into the existing combined sewer that is located in the Syr daffydd avenue road. The connection points are to be confirmed following discussions with Dwr Cymru Welsh Water (DCWW). As the site naturally falls to northern boundary it is unachievable to connect into the combined sewer in the existing road without using a package pump station that will be located 10m from the buildings to meet part H (drainage and waste disposal) requirements of Wales.