A picture containing drawing

Description automatically generated

**DRAINAGE STRATEGY**

**SUMMARY**

**PROPOSED RESIDENTIAL APPARTMENTS AT**

**PLAS PENRHOS,**

**BANGOR**

Cadarn Consulting Engineers Ltd have been appointed by Adra (Tai) Cyfyngedig to provide a drainage strategy, for both surface water and foul, for the proposed development at Plas Penrhos, Bangor, Gwynedd, LL57 4TR (National Grid Reference **SH 56458 70807**). The existing site is a brownfield site currently occupied by a large ‘L shaped’ building previously utilised as offices for Natural Resources Wales (NRW). The total area of the site is approximately (4,545.78m²) 0.45 ha.

The proposed development involves the demolition of the existing building and the construction of a 4-storey apartment block with one of the storeys being a lower ground floor level and only covering a small proportion of the building. The proposal consists of 18 No. 1 bedroom apartments and 21 No. 2 bedroom apartments. It is also proposed to construct a new 33 bay carpark area within the site.

The site generally falls in a south-westerly direction with a high point of 75.49m above A.O.D. Based on a distance of 91.150m between these two points the approx. gradient across the site is 1:8.8, although due to the site partly being developed the gradient is not consistent throughout the site, with large retaining structures present. There is a surface water and foul drainage network within the site, this drainage network has been CCTV’d.

The existing site benefits from a positive surface water drainage network which accommodates the surface water run-off from the access track, building and parking area itself and discharges into Highway drainage network located beneath Bron-Y-De located to the West of the site. This highway drains runs in a southerly direction and communicated to the existing Dwr Cymru / Welsh Water (DCWW) surface water sewer located approx. 20m downstream.

There is a land drainage feature located along the along the southern boundary of the site, initially as an open watercourse for a very short length before it is culverted adjacent to the south-eastern corner of the site. The existing culvert is Ø 450mm and runs the entire length of the southern boundary before communication with an existing surface water sewer located in the south-western corner. As the natural gradient of the site falls towards this watercourse historical prior to being cultivated the surface water run-off from the site would have been accommodated by this length of watercourse.

The Dwr Cymru / Welsh Water (DCWW) apparatus map indicates there is a Ø 225mm surface water gravity sewer, located in the south-east corner of the site running in an easterly direction, this culverted land drain discussed above communicates to this sewer. it is assumed that the land drainage feature was culverted at a time where the local culverting policy was that a culverted watercourse must have a minimum pipe diameter of 450mm, hence the reason for the reduction in pipe diameter downstream.

There is a 4-inch (100mm) diameter Cement Mortar (CM) watermain located beneath the highway north of the site, and a 90mm HPPE watermain to the west within the footway of Llys Adda.

In accordance with the SuDS Manual 2015, surface water should be managed and discharged from a new development in line with the following hierarchy:

* + - * Priority level 1: Re-use of water;
      * Priority level 2: Infiltration into ground;
      * Priority level 3: Discharge to a water body;
      * Priority level 4: Discharge to a surface water run-off drain;
      * Priority level 5: Discharge to a combined surface water run-off and foul drain.