

Calculation Sheet



Project: Plas Coch – Glyndwr University, Wrexham

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Item	Calculation	Output
Objective	Summary of water quality treatment as part of surface drainage provision wrt Statutory standards for sustainable drainage systems (Welsh government, 2018) and CiRIA C753 SuDS Manual	
Pollution hazards – roofs	The new building roofs (houses, garages) all fall into the 'Very Low' category (Table 26.2, C753) and no direct treatment is proposed for this source run-off prior to discharge into the wider drain systems. RWP's will be designed without surface gullies to eliminate the risk of mis-use of domestic drains.	
Pollution hazards – driveways, parking and minor accesses	New driveways, parking courts and minor accesses all fall under the 'Low' category. The corresponding pollution hazard indices for solids / metals / hydrocarbons are 0.5 / 0.4 / 0.4 respectively (Table 26.2). Permeable block—paved pavements will be used – some parking courts will use a conventional block pavement where those areas are served by communal soakaway features. The permeable pavements are rated at pollution control indices of 0.7 / 0.6 / 0.7 respectively (Table 26.3, C753) which is sufficient for the indicative pollution level without further mitigation steps.	
Pollution hazards – main access road	The main development access road is also rated as 'Low' category: at most it will serve up to 91 units but for much of its length is serving far fewer dwellings with corresponding lesser levels of use. Road-side swales are provided for part of this route but constrained space and frequency of parking bays / drives / paths limits the extent to which those can be provided. The road is mainly designed as balanced carriageway but sections are designed to crossfall to one side and drain into the swales provided. Swales are 1.8 wide with side-slopes of 1:3 and central depth of 0.15m. Possible use of proprietary vortex interceptor manholes (e.g. FP McCann Stormcleanser) prior to inlets to the largest communal soak-away which drains the majority of this road ruled out due to layout limiting available space for such elements. Other soakaways serve only buildings or minor accesses with limited catchments. Mitigation indices given in the Manual (0.5 / 0.6 / 0.6) match the pollution indices for this element.	
Swale flow capacity	Based upon a gradient of 1:100 and a Manning's factor of 0.04, The maximum longitudinal capacity is 0.06 m³/s. For a rainfall intensity of 50 mm/hour this corresponds to a drained area of over 0.4ha. Use same gully spacings in the swale as for carriageway (1 per 100sq.m paved area).	