Discharge Conditions Designer Response

Pentland Homes
Grovehurst Farm, Sittingbourne
October 2023

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Quality Assurance

Site name: Grovehurst Farm, Sittingbourne

Client name: Pentland Homes Ltd

Type of report: Discharge Conditions Designers Response

Job Reference: 9383

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Date October 2023

Reviewed by: John Russell

Signed J.RUSSELL

Date October 2023

Rev	Date	Details	Prepared by	Checked by
V.01	October 2023	Discharge conditions planning	AH	JR
V.02	November 2023	Additional planning condition added	AH	JR

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Planning Conditions

Planning Condition	Barter Hill Comment
Condition 8 The residential development shall be carried out strictly in accordance with details in the form of finished floor levels for all the dwellings which shall firstly have been submitted to and approved in writing by the Local Planning Authority	**Condition 8** Finished floor levels and internal road designs have been undertaken for review and approval of Local planning authority. Refer to Barter Hill drawing reference: 9383-BHP-XX-XX-DR-C-4101 to 4104 for outline finished floor levels and internal road levels.
Condition 9 The details submitted pursuant to condition 1 (the reserved matters) shall show cross sections through the development and Great Grovehurst Farmhouse along the lines of A-B; A-C and A-D as shown on drawing no. 5384/OPA/SK004rC. The development shall thereafter be carried out in accordance with the approved details	**Condition 9** Planning sections have been produced in line with drawing no. 5384/OPA/SK004rC. Refer to Barter Hill drawing number: 9383-BHP-XX-XX-DE-C-4111 and 4112 for planning sections scheme plan and sections.
Condition 19 No development related to the residential element of the application hereby approved shall take place until a detailed sustainable surface water drainage scheme for the site has been submitted to (and approved in writing) by the Local Planning Authority. The detailed drainage scheme shall demonstrate that the surface water generated by this development (for all rainfall durations and intensities up to and including the climate change adjusted critical 100 year storm) can be accommodated and disposed of without increase to flood risk on or off-site. The drainage scheme shall also demonstrate (with reference to published guidance): 1. that silt and pollutants resulting from the site use can be adequately managed to ensure there is no pollution risk to receiving waters. 2. appropriate operational, maintenance and access requirements for each drainage feature or SuDS component are adequately considered, including any proposed arrangements for future adoption by any public body or statutory undertaker. The drainage scheme shall be implemented in accordance with the approved details	**Condition 19** Surface water drainage has been designed to account for the 100 year +45% climate change storm event, utilising FEH-22 rainfall data. The gradients of all proposed development drainage is designed to ensure that it meets the requirements of industry guidance (Design and construction guidance for foul and surface water sewers offered for adoption under the code for adoption agreements for water and sewerage companies) for self-cleansing velocities. Additionally within Ciria SuDs Manual C753 utilising the simple index approach and allocating the suitable pollution hazard indices the proposed design provides suitable total pollution mitigation measures as outlined below. **Total SuDS mitigation index ≥ pollution hazard index** **(for each contaminant type) (for each contaminant type)** Table 26.2 (pollution hazard indices for different land use classifications) highlights the pollution hazard level, TSS, metals and hydro-carbons for each land use. Land use classification for this development is: Residual roofs and Individual property driveways, residential car parks, low traffic roads, therefore both fall within the low pollution hazard level. As shown below.

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

To achieve adequate treatment, SuDs components should have a total pollution mitigation index that equals or exceeds the pollution hazard index. Where this cannot be achieved using an individual component, two or more components in series can be implemented. The required total pollution hazard indices mitigation for the proposed development is:

Residual roofs: TSS (0.2), Metals (0.2) and Hydro-carbons (0.05)

Individual property driveways: TSS (0.5), Metals (0.4) and Hydro-carbons (0.4)

Total:

TSS (0.7), Metals (0.7) and Hydro-carbons (0.45)

Due to the nature of the ground conditions onsite infiltration features cannot be implement. Therefore any features specified will be for treatment, collection and discharge via gravity to an existing surface water manhole.

Table 26.3 (Indicative SuDs mitigation indices for discharges to surface water) provides mitigation indices against a variety of SuDs components.

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

The proposed SuDs features onsite is an attenuation basin which discharges at a controlled flow rate via a flow control device. Downstream of this device is a proprietary treatment device which is

<table>
<tr><td></td><td>designed to capture any remaining residual sedimentation/contaminants to acceptable concentration levels. The total pollution mitigation provided is calculated using the formula below:

$\text{Total SuDS mitigation index} = \text{mitigation index}_1 + 0.5\ (\text{mitigation index}_2)$

Therefore, the proposed SuDs features provides a total combined pollution removal as follows:

Detention basin: TSS (0.6), Metals (0.6) and Hydro-carbons (0.5)

Proprietary treatment device (hydro-international advanced vortex or similar approved): TSS (0.5), Metals (0.4) and Hydro-carbons (0.5)

<table><tr><th rowspan="2">Model</th><th colspan="3">Downstream Defender® Select Mitigation Indices [a][b]</th></tr><tr><th>Total Suspended Solids (TSS)</th><th>Metals</th><th>Hydrocarbons (Oils)</th></tr><tr><td>Vortex</td><td>0.3</td><td>0.2</td><td>0.2</td></tr><tr><td>Vortex Plus</td><td>0.5</td><td>0.4</td><td>0.5</td></tr><tr><td>Advanced Vortex</td><td>0.5</td><td>0.4</td><td>0.5</td></tr></table>
Notes:
(a) All mitigation indices supplied by Hydro International Ltd are calculated using the methods laid out in the British Water How To Guide: Applying the CIRIA SuDS Manual Simple Index Approach to Proprietary / Manufactured Stormwater Treatment Devices. The Advanced Vortex and Vortex Plus models have also been independently verified by the WRc, with the WRc Performance Declaration available on request.
(b) Mitigation Indices quoted for the Downstream Defender® Select are valid when the unit is designed according to the Treatment Flow Rate (see Table 3).

SuDS Mitigation Indices for Downstream Defender® Select

Total:

TSS (0.85), Metals (0.80) and Hydro-carbons (0.75)

The total pollution removed by the SuDs implemented as part of the drainage strategy provides sufficient surface water treatment prior to it entering an existing surface water network.</td></tr>
<tr><td>Condition 31

Prior to the commencement of the residential element of the proposal, details of levels and lighting of the main access roundabout to the site shall be submitted to and approved by the Local Planning Authority. Thereafter, no dwelling shall be occupied until the access works have been completed in their entirety as shown on drawing D118/12RevC (including in accordance with the approved levels and lighting details)</td><td>Condition 31

Finished floor levels and internal road designs have been undertaken for review and approval of Local planning authority. Refer to Barter Hill drawing reference: 9383-BHP-XX-XX-DR-C-4101 to 4104 for outline finished floor levels and internal road levels.</td></tr>
<tr><td>Condition 32

The details submitted pursuant to condition 1 (the reserved matters) shall include details of areas for the parking and manoeuvring of vehicles in the development in accordance with Swale Borough Council's adopted Parking Standards Supplementary Planning Document (adopted 2020). The parking areas shall be provided in accordance with such details as approved prior to</td><td>Condition 32

Sten Architecture are responsible for the site wide implementation of parking standards in accordance with the appropriate documentation. Manoeuvring of refuse and fire tender vehicles are represented on Barter Hill drawing reference: 9383-BHP-XX-XX-DR-C-0101 (Fire Tender Vehicle Tracking) and 9383-BHP-XX-XX-D-C-0102 (Refuse Vehicle Tracking)</td></tr>
</table>

the occupation of each dwelling to which they relate and retained thereafter).	
Condition 43 States the details pursuant to condition 1 (the reserved matters), shall show a pedestrian / cycle link through the site, linking to Swale Way, in a position as indicatively shown on drawing no. 5384/OPA/SK006rD (Illustrative Masterplan) and shall be constructed prior to the occupation of the 50th dwelling.	**Condition 43** A pedestrian link has been provided as shown on the below extract. The pedestrian link has be designed in accordance with Swale Borough Council design requirements and will be construction to suit the local highway authorities specification. The pedestrian link will be constructed prior to the occupation of the 50th dwelling.