

Drainage assessment report

5-7 Station Road, Hayling Island

The following letter and appended documents answers the points made in the letter from the planners dated 27 April 2020 ref SWM/2019/0307. The relevant points are noted below with comments and documents attached.

- **Background information on the proposed design. Including proposal; site; plans of surface water drainage and any SuDS featured in the scheme. [Could be conditioned]**
 - Please provide details on the proposed permeable paving.

As shown on the attached updated drawing the SUDS scheme on the site involves attenuating the storm water on site within the sealed permeable paving system. This is then discharged into the storm sewer system near the site at an agreed rate with southern water, the control of which will be via a flow control device such as a Tubosider flow control device. There is now a detail on the attached drainage drawing providing details of the proposed permeable paving.

- Information evidencing that the **correct level of water treatment exists** in the system in accordance with the Ciria SuDS Manual C753. **[Could be conditioned]**
 - A simple index approach assessment based on the Simple Index approach methodology as outlined in Table 26.1 of the Ciria SuDS Manual C753 to be provided please.

A simple index approach tool has been used from UK suds and the treatment level provided on site has been found to be sufficient, the output from this spreadsheet is attached to this letter report.

- **If not using infiltration for drainage - Existing and proposed run-off rate calculations** completed according to a suitable method such as IH124 or FEH. Information is available from UK Sustainable Drainage: Guidance and Tools. Calculations must show that the proposed run off rates do not exceed the existing run-off rates. This must be shown for a one in one year event plus climate change and a one in one hundred year event plus climate change. **[Required]**
 - If not using infiltration provide justification on why infiltration is not being used.

Revised calculations are attached. The Wallingford UK suds tool using IH124 has been used for the 100 year + 40% CC event, this provides are required storm water volume = 67m³. This has then been double checked via the attached spreadsheet design which compares the existing and proposed run-off and produces a required storage volume

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of 71m³ so this has been provided by using the permeable paving storage blanket and gives a depth requirement of 0.5m.

Infiltration is not being used on the site for a number of reasons. The first being that the site is at very low level above sea level and local boreholes indicate that ground water is at approximately 2.0m below ground level, this would make providing 1.0m clear between winter high ground water and any infiltration tanking unlikely. The second reason is due to the findings of the Ground Condition Consultants Desk top study report dated Jan 2019 due to likely contamination on the site and the risk of promoting movement of contamination via ground water infiltration, see extract below:

Hydrogeology	The Environment Agency Groundwater Vulnerability Map extracts (see Appendix 2) indicate the site to be overlying superficial Secondary A Aquifer, interpreted as the River Terrace Deposits, over a bedrock Secondary A Aquifer, interpreted as the Portsmouth Sand Member And Whitecliff Sand Member. The site is not located within a Groundwater Source Protection Zone.
Hydrology	The closest surface water feature to the site are a few inland rivers (unnamed) located more than 250m to the north of the site.
Risk Assessment	The preliminary risk assessment identified the following possible contamination sources associated with the site: • Potential for asbestos containing material fragments within the ground from the demolition of the former buildings and construction of the current buildings. • Potential for a range of contaminants, including organic and inorganic chemicals from the site's use as a petrol filling station and as vehicle workshops and other use. It should be noted that additional sources of contamination may become apparent during any future investigation and development of the site.

- **If not using infiltration for drainage - Existing and proposed run-off volume calculations** completed according to a suitable method such as IH124 or FEH. Calculations must show that, where reasonably practical, runoff volume should not exceed the greenfield runoff volume for the same event. This must be shown for a 1 in 100 year, 6 hour rainfall event **[Required]**

- The calculations provided have included a 40% climate change factor for the 1:100 year existing runoff, this is not acceptable. Only the post-development scenario should include the 40% climate change factor.
- The calculations assume a 50% runoff coefficient for the permeable paving. This is not acceptable please ensure you provide suitable justification or utilise 100% runoff coefficient.

These calculations have been revised and are attached along with the revised attenuation design calculations.

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- **Maintenance regimes** of the entire surface water drainage system including individual SuDS features, including a plan illustrating the organisation responsible for each element. **Evidence** that those responsible/adopting bodies are in discussion with the developer. For larger/phased sites, we need to see evidence of measures taken to protect and ensure continued operation of drainage features during construction. **[Confirmation of who will carry out the maintenance is required. Maintenance schedules could be conditioned]**

This item will be dealt with via the site management company in due course. This agent will manage all communal areas on the site and maintain drainage systems. Please condition this item as in due course the management company would become involved in the site.

- **Calculations/Hydraulic model output** to demonstrate the surface water drainage system is capable of draining the site without flooding during the 1 in 30 year storm whilst retaining the 1 in 100 year storm flows plus climate change allowance within the site boundary and without putting the proposed buildings and any third party land at risk from flooding. **[Required]**

- The calculations provided have included a 40% climate change factor for the 1:100 year existing runoff, this is not acceptable. Only the post-development scenario should include the 40% climate change factor.
- The calculations assume a 50% runoff coefficient for the permeable paving. This is not acceptable please ensure you provide suitable justification or utilise 100% runoff coefficient.
- The calculations submitted indicate that runoff has been calculated using BRE 365 methodology. BRE 365 methodology only applies when discharging to a soakaway and is not valid for discharge to a sewer. Please provide a suitable set of calculation/hydraulic model output for the existing and proposed drainage scenarios. Storm durations should consider storm durations between 15-1440 minutes for both the summer and winter profiles.

The UK suds tool indicates that during the 1 in 30 year event a volume of 155.70m³ of storm water is created. The storm water volume during the 1 in 100 year event = 220.64m³. During the 1/30 year event the total discharge from the site would be 149.6m³ to the storm sewer, this means that during this event a storage volume of 155.7-149.6 = 6.1 m³ is required. Therefore the total storage required on the site during this imaginary event would be 220.64 - 149.6 + 6.1 = 77.14m³. The attenuation tank volume provided = 72.0m³, therefore the volume to be stored not in the attenuation tank = 5.14m³. If this was spread over the car parking area (500m²) the depth of water would be 10.3mm, therefore no flooding is going to occur.

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The calculations have been revised and account for the above comments.

- Evidence that **enough storage/attenuation** has been provided without increasing the runoff rate or volume. This must be shown for a 1 in 100 year plus climate change event. **[Required]**
 - Please apply the correct runoff value for the permeable runoff coefficient and show that the site will have adequate storage/attenuation to contain the 1:100 year event plus climate change on site.

This has been addressed in the revised calculations, a run off factor of 1.0 has been used.

- Exceedance flows are considered in the event of the pipe being non-operational. Evidence that Exceedance flows and runoff in excess of design criteria have been considered - calculations and plans should be provided to show where above ground flooding might occur and where this would pool and flow. **[Could be conditioned]**

During the 1in100 year + 40% climate change event a storm water volume = 220.6m³ would be generated by the site. If this volume was allowed to pond above ground and not enter the attenuation tank then over the approximate car park area (500m²) there would be standing water to a depth of 441mm. Given that the carpark level is around 7.400m AOD this would be a flood level = 7.841m AOD. This means that the flood water would move to the North into Station Road, it cannot move to the West of East as the buildings or a wall is present. There are road gullies present in Station Road which would drain the storm water without it continuing to move much further.

- Provide confirmation of the proposed surface water connection and discharge rates acceptance by Southern Water. **[Required]**

Southern water have been contacted and a spare capacity application will be made based on the other documents in this letter. The results of this can be provided as soon as available. The below already issued letter from them indicates that they have no issues with the proposed storm water connection. In due course a full application will be submitted to discharge the storm water into their sewer at the rate of 6.93 L/s. This is suspected to be much less than currently discharges from the site into the storm sewer. We would propose that this item is conditioned and in due course the agreed application with Southern Water can be provided.

Yours Sincerely

Elvin Gomery

For and on behalf of Cowan Consultancy

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Department of Planning and Development
Havant Borough Council
Public Service Plaza
Civic Centre Road
Havant
Hampshire
PO9 2AX

Your ref
APP/19/00324

Our ref
PLAN-032717

Date
27/04/2020

Contact
Tel 0330 303 0119

Dear Sir/Madam,

Proposal: Demolition of existing dwelling and business units and construction of a 2/3 storey building to provide 19 flats and 2 commercial units with vehicle and bicycle parking and a bin store.
Site: APP/19/00324: - 5-7 Station Road, Hayling Island, PO11 0EA.

Thank you for your letter dated 06/04/2020.

Further to our previous correspondence dated 25/10/2019 regarding the above planning application consultation and revised information provided by the applicant regarding surface water drainage.

Southern Water shall have no objections to the proposed drainage details as shown in drawing 414406-100 P4. All other comments dated 08/05/2019 remain unchanged and valid.

For further advice, please contact Southern Water, Southern House, Yeoman Road, Worthing, West Sussex, BN13 3NX (Tel: 0330 303 0119).

Website: southernwater.co.uk or by email at: developerservices@southernwater.co.uk

Yours faithfully,



Joff Edevane
Growth Planning Lead
Business Channels

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