

## Engineers Comments Regarding Surface Water Drainage

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|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Application Reference:</b>   | BE/141/25/DOC                                                                                                                 | <b>Reviewer Reference:</b> | ADC/EXT4b  |
| <b>Planning Officer:</b>        | Emma Shephard                                                                                                                 | <b>Date of Review:</b>     | 07/01/2026 |
| <b>Site Name:</b>               | Land at Oldlands Farm Newlands Road Bognor Regis PO22 9NN                                                                     |                            |            |
| <b>Application Description:</b> | Approval of details reserved by condition imposed under BE/150/22/OUT relating to condition 22-surface water drainage scheme. |                            |            |
| <b>Assessment Number:</b>       | 1 of 2                                                                                                                        |                            |            |

| Policy and Guidance Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
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| <p>Arun District Council Surface Water Drainage Guidance (including design checklists) - <a href="https://www.arun.gov.uk/surfacewater">https://www.arun.gov.uk/surfacewater</a></p> <p>Land Drainage Consent – <a href="https://www.westsussex.gov.uk/fire-emergencies-and-crime/dealing-with-extreme-weather/flooding/flood-risk-management/ordinary-watercourse-land-drainage-consent/">https://www.westsussex.gov.uk/fire-emergencies-and-crime/dealing-with-extreme-weather/flooding/flood-risk-management/ordinary-watercourse-land-drainage-consent/</a></p> <p>Arun District Council Land Drainage Byelaws - <a href="https://www.arun.gov.uk/byelaws/">https://www.arun.gov.uk/byelaws/</a></p> <p>Arun District Council surface water pre-commencement conditions - <a href="https://www.arun.gov.uk/planning-pre-commencement-conditions">https://www.arun.gov.uk/planning-pre-commencement-conditions</a></p> <p>The National Standards for SuDS - <a href="https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds">https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds</a></p> <p>The SuDs Manual [C753] by CIRIA</p> |  |

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| <b>Response</b> | Condition 22: <b>Objection</b> |
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| References                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <p>The NPPF states that when determining any planning application, local planning authorities should ensure that flood risk is not increased elsewhere (paragraph 181, 182 and 187e). The PPG guides local planning authorities to refer to 'Sustainable drainage systems: non-statutory technical standards' [NsTS] and detailed industry guidance like The SuDS Manual [C753] by CIRIA to guide decisions about the design, maintenance, and operation of sustainable drainage systems for non-major development.</p> <p>The NsTS have been superseded by the National Standards for Sustainable Drainage Systems [NSfS] from 19 June 2025.</p> <p>This consultation has been primarily informed by the NSfS and The SuDS Manual.</p> |

## Summary

This summary highlights if critical items aligning with each of the standards have been met. Critical items are highlighted in **bold** on our surface water drainage design checklist (linked above). A failure to address these will result in an **objection** to any application to discharge a surface water drainage design condition.

If any of these items are inadequately addressed by the submission, then their correction may result in a redesign of the surface water drainage scheme. A redesign is likely to have site wide implications such as the potential for storage structures to increase in volume or plan area, or the provision of other important infrastructure to satisfy the NSfS set out below.

All relevant items on the checklist are expected to be met before an application to discharge an application to discharge a SuDS design condition is supported.

Our response and requirements are elaborated upon or condensed within an attached comment tracker where necessary. If a comment tracker is provided a designer is encouraged to refer to this and respond to comments to aid further review. Please request a .docx version of this document to by email to [land.drainage@arun.gov.uk](mailto:land.drainage@arun.gov.uk) if needed.

| Standard                                                                          | Assessment   | Response            |
|-----------------------------------------------------------------------------------|--------------|---------------------|
| 1. Runoff destination                                                             | Insufficient | <b>Objection</b>    |
| 2. Interception drainage                                                          | Insufficient | <b>Objection</b>    |
| 3. Extreme Rainfall and Flooding                                                  | Insufficient | <b>Objection</b>    |
| 4. Water Quality                                                                  | Insufficient | <b>Objection</b>    |
| 5. Amenity                                                                        | Insufficient | <b>No objection</b> |
| 6. Biodiversity                                                                   | Insufficient | <b>Objection</b>    |
| 7. Construction, operation, maintenance, decommissioning and structural integrity | Insufficient | <b>Objection</b>    |

## Reviewed Plans

The following documents have been submitted and reviewed to inform this consultation with reference to surface water drainage:

-DRAINAGE DOCUMENTATION, uploaded in 4 parts via the public planning portal

## Condition wording

Condition 22 is worded as follows:

*“Development shall not commence, other than works of site survey and investigation, until full details of the proposed surface water drainage scheme have been submitted to and approved in writing by the Local Planning Authority. The design should follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations, and the recommendations of the SuDS Manual produced by CIRIA. Design considerations must take full account of*

*the 'Supplementary Requirements for Surface Water Drainage Proposals' produced by Arun District Council, and are an overriding factor in terms of requirements. Winter groundwater monitoring to establish highest annual ground water levels and winter percolation testing to BRE 365, or similar approved, will be required to support the design of any infiltration drainage. No building / No part of the extended building shall be occupied until the complete surface water drainage system serving the property has been implemented in accordance with the agreed details and the details so agreed shall be maintained in good working order in perpetuity.*

*Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies W SP1, W DM1, W DM2 and W DM3 of the Arun Local Plan. This is required to be a precommencement condition because it is necessary to implement the surface water drainage system prior to commencing any building works"*

### Consultation comments to the planning officer

1. Please see the attached comment tracker for detailed comments relating to the submission.
2. Serious concerns were raised regarding the deliverability of a compliant SuDS design when the applications for both outline planning permission and reserved matters were made. The submission does not adequately deal with those concerns and as such a redesign may be required.
3. The design relies upon alterations to existing drainage infrastructure that is **outside the red line boundary for the site**. Critically an existing flow control in the highway limiting discharge rate from the access road to 5l/s will be replaced with one that restricts the rate to 16l/s. This is to allow for the existing rate of 5l/s plus the rate of 11l/s from this site. The concept of connecting to the existing highway drainage was proposed in the outline application, BE/150/22/OUT. However, the proposed discharge rate from the existing drainage network was 12.5l/s at that time. This was suggested to be the greenfield runoff rate QBAR for both the site and the access road. It is noted that the FRA was never listed as approved and as such the principle of discharging even at the lower rate of 12.5l/s at the outfall has not been agreed.
4. When the FRA for the outline application was assessed by our engineers further information was requested, with the implication that the submitted information was insufficient to recommend approval (or avoid objection). The latest consultation response is attached for ease of reference.
5. The same consultation response notes that the natural drainage of the site would not all drain to the northeastern corner as proposed. **The flood risk implications of draining the full site to this discharge point, and increasing the discharge rate at the outfall have not been adequately assessed**, now or in the outline application. The receiving watercourse forms part of a watercourse network which regularly floods. Therefore, it is inappropriate to consider the merits of the detailed surface water drainage proposals until it has been demonstrated that the principles of the design will not increase flood risk (downstream of the outfall, to the site, or to other sites which may rely on the access).
6. It is requested that any further submissions are administered and organised to enable ease of review, with plans separated from supporting documents and modelling.

### Drainage Impact on Other Planning Matters

This application has been assessed with regards to surface water drainage design only, together with land drainage aspects if deemed necessary.

Other planning matters occasionally effect the surface water drainage design. If plans relating to other matters have been assessed for their impact on the proposed drainage, then it must not be assumed that they have been assessed for any other purpose. The planning officer is advised to check for conflicts with any existing approved plans and to consult any relevant consultees as appropriate.

It has been identified that the following consultees may have comments about the plans that have been submitted and reviewed for this application:

- ☐ Landscaping officer (proposed trees and landscaping)
- ☐ Tree officer (existing trees)
- ☐ Environment Agency (main rivers and fluvial/tidal flood risk, River Arun internal drainage board, groundwater source protection zones)
- ☐ Southern Water (foul drainage and surface water disposal to public sewer network/groundwater source protection zones)
- ☐ Portsmouth Water (groundwater source protection zones)
- ☒ **Lead local flood authority (all other sources of flooding and ordinary watercourses) – LLFA – major development and risk management authority for ordinary watercourse**
- ☐ Other: Specify .....
- ☐ None

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| <b>Application Reference:</b> BE/141/25/DOC<br><b>Site Name:</b> Land at Oldlands Farm Newlands Road Bognor Regis PO22 9NN | <b>Initial Issue Date:</b><br>07/01/2026<br><b>Issue Date:</b><br>Reviewer<br>Reference:<br>ADC/EXT4b |
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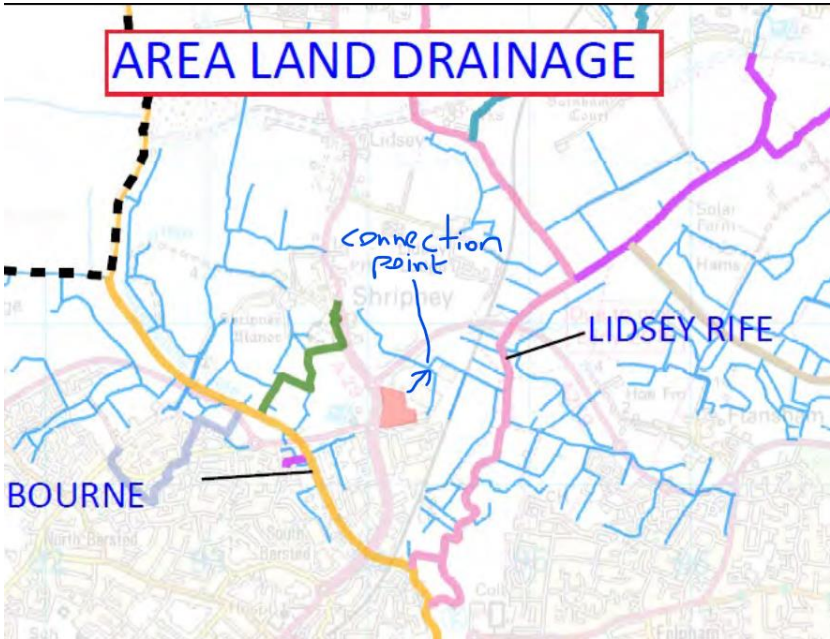
## Summary and Recommendation:

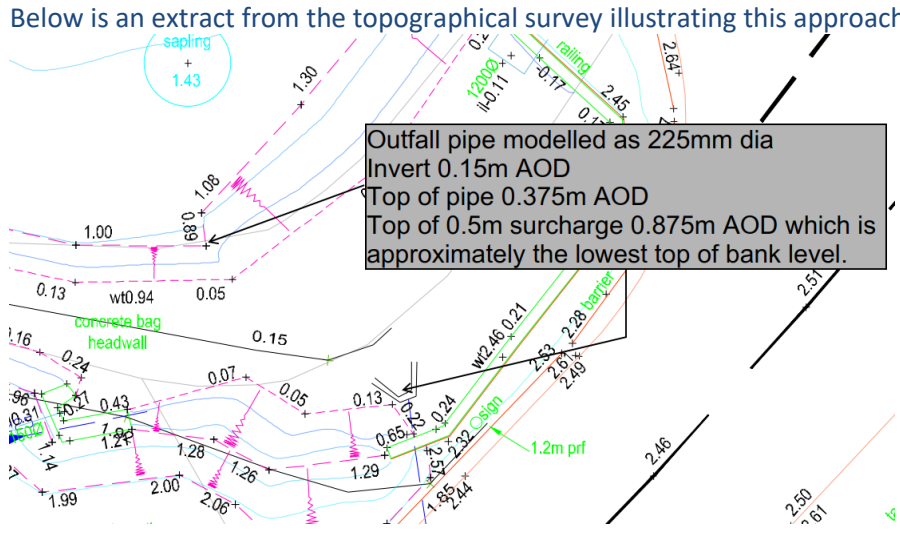
### Condition 22: **Objection**

*Please note: Any DOC application should only have a maximum of two consultation responses. If this is the second response for an open application and there are still comments outstanding, then please object to the application.*

|                             | ADC Drainage Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Designer Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
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| <b>Date:</b>                | 07/01/2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |
| <b>Condition Number: 22</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |
| Comment Number              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |
| 1.                          | <p>Please provide evidence that the flood risk implications of the proposed combined discharge rate of 16l/s at the outfall to the watercourse have been appropriately assessed.</p> <p>The suggested discharge rate is higher than the one initially proposed in the FRA for the outline application. It is noted that the FRA was never approved and that ADC engineers questioned the flood risk implications of the full site draining to this point with a combined flow rate restriction of 12.5l/s at the time.</p> | <p>The proposed plot is restricted to the QBar greenfield runoff rate of 11 l/s in line with the NSfS 3.19 (as confirmed in your comment no. 3). There is an existing highway system outfalling at 5 l/s min that currently drains just the highway itself as identified on BWB drawing 243912-BWB-EXT-XX-G-C-0535-[S2-P03]. The intention of the wider drainage strategy is for our site to connect to this highway drainage system with the final flow control upsized accordingly.</p> <p>Following our meeting of 5/2/26 it was agreed we would re-assess the combined impermeable areas of both the on-site plot and off-site highway and recalculate the final Qbar greenfield runoff rate on this. The result of this is a final discharge rate of 12.8 l/s (reduction of 3.2 l/s) – see BWB calculation 243912-BWB-EXT-XX-T-C-0506-[S2-P03].</p> <p>The lower discharge rate of 12.8 l/s results in an increase in flood volumes in the more extreme storm events. The detailed hydraulic modelling (Ref 243912-BWB-EXT-XX-T-C-0500-[A4-C08]) shows how this can be adequately accommodated within the lower dock area on site.</p> |  |  |  |

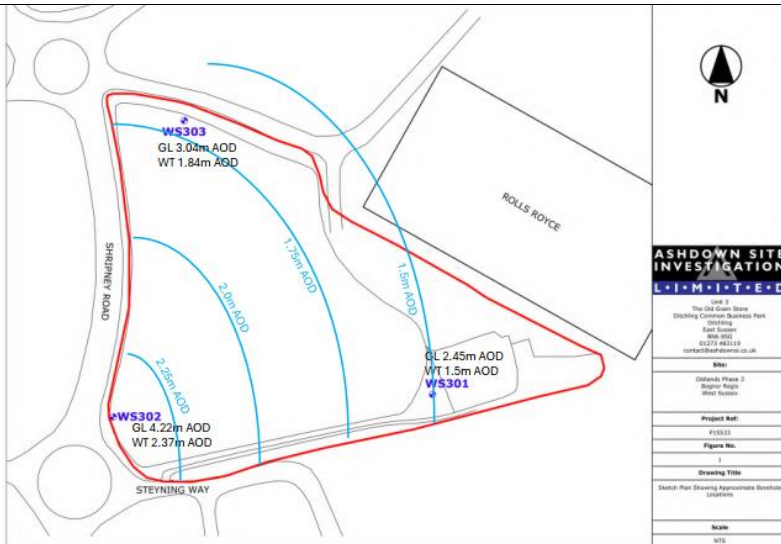
|    |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |
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|    |                                                                                                                                                                                                                                         | <p>The flood risk associated with both the on-site system and off-site highway system has been appropriately assessed.</p> <p>The off-site existing highway system is shown to flood in its existing state which is identified on BWB drawing 243912-BWB-EXT-XX-G-C-0535-[S2-P03]. When the proposed site is connected to this existing system the offsite flooding is significantly reduced proving betterment as identified on BWB drawings 243912-BWB-EXT-XX-G-C-0538-[S2-P03] &amp; 0539-[S2-P03]. The off-site betterment provided by the proposed drainage ranges from 24% to 41% based on the 100yr + 45% and 30yr + 40% storm events respectively.</p> <p>The flood risk on site is adequately managed by storing water within the plot, utilising SuDS, underground storage and lower dock areas in the more extreme events. The on-site system shows no flooding in the 30yr event (Ref 243912-BWB-EXT-XX-T-C-0500-[A4-C08]) with controlled flooding in low risk areas (primarily the lower dock zone) up to and including the 100yr + 45% climate change event – also shown on BWB drawings 0538 &amp; 0539.</p> <p>The site follows the surface water hierarchy and therefore it is entirely reasonable for the site to connect to the nearest watercourse, via the existing highway drainage system, at the greenfield runoff rate.</p> |  |  |  |
| 2. | <p>The proposed connection rate to the ordinary watercourse north of EX MH7 has been increased from 5l/s to 16l/s. Please submit written evidence that the risk management authority agrees to this increase in flow rate.</p>          | <p>As outlined in our response above and agreed in our meeting on 5/2/26 the runoff rate of 12.8 l/s based on Qbar greenfield runoff is understood to be acceptable to ADC, as is the point of connection.</p> <p>The Qbar runoff is based on the impermeable area of both the on-site plot and off-site existing road network.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |
| 3. | <p>The proposed discharge rate of 11l/s <u>from the development</u> is acceptable with regards to NSfS 3.19. However, the designer has not demonstrated that all this flow would naturally go to the receiving watercourse, and the</p> | <p>ADC approval of the discharge rate from the on-site plot of 11 litres per second is noted.</p> <p>The topographical survey provided previously and included in our drainage submissions shows the site generally falling in a north/easterly direction towards the receiving watercourse. Interpolated groundwater contours demonstrate the same effect. An extract from the original FRA is included below, marked up to show the site's connection point.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |

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|    | <p>rate may need to be reduced due to other factors (see comments 7 and 11) if a connection to the existing network on the highway is pursued.</p>           |  <p>The site is within the catchment of the Lidsey Rife, a connection to the nearest watercourse at the Qbar greenfield runoff rate is therefore entirely reasonable and in line with standards/best practise.</p> <p>It was demonstrated and agreed in our meeting of 5/2/26 that the site is part of the nearby watercourse system and the point of discharge, utilising the existing highway sewer, is agreed.</p> |  |  |  |
| 4. | <p>No survey data for the existing highway network has been submitted. The condition of the network and the size of manholes have not been demonstrated.</p> | <p>The existing network is part of Newlands Road which was constructed relatively recently (around 2014-15), so the surface water sewer is early in its design life. No concerns have been raised regarding the condition or operation of this existing network, given the above it is reasonable to assume the drainage is in good condition.</p>                                                                                                                                                      |  |  |  |

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|    |                                                                                                                                                                                                                                                                                                                                                                             | <p>Pipe size, invert and cover levels of the existing surface water sewer are shown on the survey information submitted – refer to BWB drawing 243912-BWB-EXT-XX-G-C-0535-[S2-P03].</p> <p>A CCTV survey will be undertaken as part of the handover by the contractor at the appropriate time to validate the condition.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |
| 5. | <p>The outfall has been modelled with a surcharged depth of 0.5m – what is the justification for this depth?</p> <p>Surcharge level should be based on watercourse modelling for the 1% AEP + CCA event or the top of the bank if that modelling is not available. See <a href="#">Standard 3 - Management of extreme rainfall and flooding   Arun District Council</a></p> | <p>The 0.5m surcharge was considered a sensible value for what is a relatively shallow watercourse, representing top of bank of the watercourse at the outfall location.</p> <p>Below is an extract from the topographical survey illustrating this approach.</p>  <p>For completeness, a sensitivity check of a higher surcharge of 0.725m (@ 1.1m AOD) has been undertaken (243912-BWB-EXT-XX-T-C-0509-[S2-P01]) which shows no flooding on site in the 30 year event. The volume of on-site flooding for the worst case 100yr + 45% climate change event can be safely contained within the lower dock area (~772m<sup>3</sup>) and is therefore considered acceptable.</p> <p>The results also show any offsite flooding in the existing highway has been reduced from the pre-development modelling. The results show a betterment of approx. 20% thereby reducing flood risk.</p> |  |  |  |

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| 6. | <p>Existing highway is modelled to flood 263.4803m<sup>3</sup> at node 6 on the critical 3.33% AEP + CCA event. This demonstrates that without adjustments to the existing network (with an increase in discharge rate at the outfall), the existing network does not have spare capacity for the additional flow generated by this development.</p>                                                          | <p>The existing highway network comprises a 750mm surface water sewer. Based on the Colebrook white equation a 750mm SW sewer full bore at minimum self-cleansing velocity of 1m/s (1:750) can accommodate approx. 450 l/s. Our development on-site needs 11 l/s which is less than 2.5% of the pipe's capacity. Capacity is therefore not the issue, the existing flooding is a result of a volumetric issue not a conveyance one.</p> <p>We have demonstrated through detailed hydraulic modelling that the existing network theoretically floods in the more extreme events due to the limited outfall – as you highlight in the existing 3.33% AEP (1 in 30 year) + 40% climate change event there is currently 263m<sup>3</sup> flooding (pre-development). Post-development our proposal reduces this existing theoretical flooding significantly to just 154m<sup>3</sup> in the same event, this is an improvement of 41%.</p> <p>In summary, the existing system has plenty of capacity to convey the flows. The proposed design makes a demonstrable and significant improvement to the existing flood risk with a 41% reduction in the volume of flooding caused by the connection of our system and significant additional storage through that proposed in our site.</p> |  |  |  |
| 7. | <p>Insufficient information and detail have been submitted regarding the proposed rainwater harvesting.</p> <p>Please submit evidence (including calculations) that demonstrates that the rainwater harvesting has been designed in accordance with BS EN 16941-1:2024 Rainwater Harvesting Systems.</p> <p>Please refer to the Environment Agency's Rainwater harvesting: regulatory position statement.</p> | <p>Rainwater harvesting is a great way to re-use rainwater and reduce both incoming potable water and re-use some of the stored rainfall but as there is no guarantee toilets etc will be flushed at the same time as a storm, from a drainage modelling perspective it shouldn't be considered (ensuring a robust model/approach).</p> <p>The developer is fully committed to the use of rainwater harvesting and this is stipulated through the developer specification – extract below (as well as highlighted on the BWB drainage drawing 0537 C01):</p> <div style="border: 1px solid black; padding: 5px;"> <p>A Grey water (rainwater storage) system shall be employed to serve the cisterns within the main office. It shall be distributed using HEP<sub>2</sub>O pipework or equal and approved. System capacity shall be based on 24 hours storage with full capacity make up. All greywater pipework will be labelled and identified in line with WRAS and local supply company guidelines</p> </div>                                                                                                                                                                                                                                                                    |  |  |  |

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|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>We've confirmed the intention is to use Stormsaver, additional information has been appended to this response. Rainwater Harvesting typically falls into an M&amp;E/specialist package. Detailed calculations will be provided by the Contractor's supply chain/manufacture once in contract following the discharge of planning conditions. All details including operation of the rainwater system would be included in the H&amp;S file at the end of the project.</p> <p>Planning condition 22 is in relation to surface water drainage (which shouldn't take rainwater harvesting into account in the calculations). We've confirmed that rainwater harvesting is being implemented meeting the hierarchy principles. We trust the above is enough to meet the condition.</p> |  |  |  |
| 8. | Please submit construction details for the rainwater harvesting tanks and more detail regarding their connection to the wider network.                                                                                                                                                                                                                                                                                                                             | <p>Please see comment 7 response.</p> <p>In line with any rainwater harvesting system they allow for bypass/overflow systems to deal with prolonged rainfall and conversely a potable water main top up connection to account for periods of drought.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |
| 9. | <p>The submitted groundwater monitoring demonstrates that groundwater levels in the same boreholes were higher in the winter of 2022-2023 than 2024-2025. Infiltration is not viable in the north and east of the site as 1m due to high groundwater levels (BH301 and BH303).</p> <p>However, at BH(WS)302 groundwater levels peaked at approximately 1.35m below ground level. This may allow for shallow infiltration which the submitted design precludes.</p> | <p>Previous ARUN correspondence dated 13/08/2025 noted the groundwater information submitted as being compliant.</p> <p>The anticipated groundwater levels in the centre of the site are indicated by the extract below (insert 12.2):</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |

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|     | <p>No groundwater monitoring has been submitted for the centre of the site and the contours that have been submitted in insert 12.2 are based on winter 2024-2025 when groundwater levels were lower.</p> <p>Understanding the groundwater levels in the centre of the site is important to understand the infiltration potential – which may be critical for interception.</p> | <div></div> <p>This is a reasonable assessment of the most recent ground water monitoring information covering the last 2 years (2024 &amp; 2025). As you point out the results from previous years (2022 &amp; 2023) suggest it could even be higher. As explained previously, infiltration is limited on site and this is reflected in the drainage design.</p> <p>The centre of the site is likely to have a max ground water level of 2.0m AOD (it could even be higher). The base of any infiltration would therefore need to be at 3.0m AOD min. This is what is proposed for example the filter drain picking up the footway along the main road.</p> <p>The FFL of the buildings are at 3.725m AOD with falls away in line with best practise/Ciria C635 designing for exceedance so this leaves very little scope for infiltration.</p> | <div><p>Approximate Peak GW Contours (mAOD)</p><p>Panattoni Park<br/>Newlands Road, Bognor Regis<br/>Peak Groundwater Levels<br/>Monitored by Ashdown Site Investigation Ltd<br/>September '24 – February '25<br/>Peak Levels occurred on 6<sup>th</sup> January 2025</p><p>Contours derived from 3 data points within the site – WS301 / WS302 / WS303</p><p>Prepared: DLH<br/>Checked: TAJ<br/>Authorised: DLH</p><p>Date: 02 / 09 / 25 Ref 243912-GW-01-V1<br/>Sheet 1 of 2</p></div> |  |  |  |
| 10. | <p>Infiltration testing was completed in December 2023 broadly in accordance with BRE DG 365 (the pits were undersized, but not significantly so). Test depths were 0.5m below ground level which is</p>                                                                                                                                                                        | <p>As identified in the response above (no. 9), the use of infiltration is very limited due to potentially high winter groundwater.</p> <p>We have amended the drainage layout drawing 243912-BWB-EXT-XX-D-C-0500-[A5-C07] and added a note stating that any filter drain or permeable paving that has an invert within 1m of</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |

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|     | <p>likely to be too deep when groundwater levels are considered. The testing was also more centrally located than the groundwater monitoring boreholes. Groundwater levels in these locations are unknown.</p> <p>The infiltration rates, whilst not usable for the detailed design for extreme events, demonstrate that parts of the site have reasonable infiltration potential at shallow depth. This may be critical to help achieve interception drainage, however, further information regarding groundwater levels will be necessary (see point 3).</p> <p>The designer has proposed the use of filter drains to allow some shallow infiltration. However, some of these are in the areas where groundwater has been demonstrated to be too high to allow for infiltration.</p> <p>The use of shallow infiltration should be prioritised and coordinated with the ground investigations to ensure a compliant design.</p> | <p>the anticipated maximum ground water level is to incorporate an impermeable liner/membrane.</p> <p>We have encouraged infiltration at higher levels where possible, for example by not lining the higher SuDS features incorporated into the masterplan identified on BWB drawing 243912-BWB-EXT-XX-G-C-0537-[A5-C02] and shown on the sections. This includes the SuDS feature to the east of Unit 1 at the back of the service yard area, the SuDS pond to the north of Unit 1 car park as well as the SuDS feature to the north of Unit 3 car park.</p> |  |  |  |
| 11. | <p>No interception assessment has been submitted. Please refer to our guidance at <a href="https://www.arun.gov.uk/interception-drainage-guidance-note">https://www.arun.gov.uk/interception-drainage-guidance-note</a> for information</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>Interception relates to the 'good practise' of trying to capture the first 5mm of rainfall as outlined in the Ciria SuDS manual section 3.3.1 and 24.8. Primarily the purpose is to deal with the first flush which is generally the most contaminated flow (as it picks up any residue silts/oil on the surface etc).</p>                                                                                                                                                                                                                                 |  |  |  |

|     |                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |
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|     | <p>about how to demonstrate compliance with interception drainage standards.</p>                                                                                             | <p>As you have pointed out in comment 10 above, the use of infiltration is very limited due to the seasonal ground water and ensuring a minimum 1m unsaturated zone outlined in section 1.15 of the NSfS.</p> <p>The site has done everything it can to intercept the first 5mm rainfall including rainwater harvesting, permeable car parking bays, filter drains &amp; catchpits as well as some higher level infiltration SuDS features.</p> <p>In terms of water quality the drainage system proposed will adequately deal with water quality through the above SuDS systems as well as the oil separators that would deal with the higher risk areas.</p> <p>By limiting flows to the greenfield Qbar runoff for all events up to the 100yr + CC event the site not only considers water quality but also ensures the peak discharge is controlled mitigating flood risk downstream.</p> <p>Please could ARUN confirm that the above approach is acceptable, if not then the only alternative would be to agree a derogation to this particular point on the basis of seasonal groundwater restrictions.</p> <p>If a derogation is required would the following wording be sufficient/acceptable:</p> <p>The site follows the surface water drainage hierarchy and has done everything it can to intercept the first 5mm rainfall including rainwater harvesting, permeable car parking bays, filter drains &amp; catchpits as well as some higher level infiltration SuDS features. Due to limited infiltration as a result of high seasonal groundwater, it cannot be demonstrated that the first 5mm rainfall across the <u>whole</u> site would be fully captured and re-used/infiltrated. Given the nature and scale of development and limited infiltration due to seasonal groundwater restrictions an interception derogation is required/agreed.</p> |  |  |  |
| 12. | <p>The network floods on the critical 3.33% AEP event (both onsite and offsite). This is unacceptable. Please redesign so that the system does not flood for this event.</p> | <p>On-site within the red line boundary the drainage strategy demonstrates that there is no flooding within the 3.33% AEP event (refer to results 243912-BWB-EXT-XX-T-0500-[A4-C08] page 20-22).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |

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|     | <p>It is not agreed that the loading docks are designated to hold or convey water as part of the design. The docks are clearly shown as holding a flooded volume within the network model.</p> | <p>In the 3.33% AEP plus additional 40% for climate change the results, based on the overall lower outfall rate of 12.8 l/s, shows minor controlled flooding in the lowest dock area. We have demonstrated on drawing 24391-BWB-EXT-XX-D-C-0538-[S2-P03] that this area would be fully operational in the 30yr + 40% event and not put any property or people at risk. This is considered acceptable both from a flood risk and operational perspective.</p> <p>With regards to the off-site/existing drainage, as highlighted in our response to comment 6, outlined previously and shown on drawings 24391-BWB-EXT-XX-D-C-0535-[S2-P03] &amp; 0538-[S2-P03] the proposed drainage significantly improves the theoretical existing offsite flooding. As the proposed drainage strategy reduces an existing flood risk issue the off-site drainage is therefore also acceptable.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |
| 13. | <p>The temporary flooding of the loading docks for the 1% AEP +CCA event may be acceptable. However, the risk and impact of the proposed flooding has not been adequately assessed.</p>        | <p>The flooding of the docks is a well understood and acceptable way to deal with extreme flood events. The docks by their very purpose are naturally lower than the surrounding areas (i.e. 1.2m below FFL). To ensure they are adequately drained there is a channel drain approx. 8m from the building face. This is the lowest point of the drainage system so inevitably is the first area for water to back up in extreme events. Water will back up vertically from the channel at this low point, so there is no/minimal velocity involved.</p> <p>Panattoni is a major developer of industrial and distribution units delivering buildings for logistics operators all over Europe. They, better than anyone, understand the operation of a loading dock required by their customers. In this area of the site, vehicles reverse into the dock and are rear loaded from level access doors that are set at floor level, consistent with the level of the trailer bed. There is no side loading in the docks, this takes place at a higher elevation through the level access doors. There is no regular requirement for foot traffic or anything other than high wheelbase HGVs to access the area of the docks. As such, the operation of the loading docks is uninhibited by flooding in the extreme event.</p> <p>The Panattoni development specification accepts flooding of the loading docks in all events greater than the current 3.33% AEP to be 'designed in' to the system. This provides a balance of issues, including the drainage system functionality, the visual impact issues influenced by the finished floor level, sustainability and carbon impacts caused by excessive fill imports and</p> |  |  |  |

|     |                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |
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|     |                                                                                                                                                          | <p>the capital cost of the development. The design presented is entirely consistent with the Panattoni development specification and their customer's expectations.</p> <p>The 100yr + 45% storm is an extreme storm and in reality the likelihood of a HGV utilising the docks in such a severe storm is unlikely. That said the section shown on BWB drawing 0539 shows that it is possible and could be safely managed on site if needed.</p> <p>The principle of utilising lower dock areas to store storm water in the extreme events is prevalent across the logistics sector and is a sustainable, dual use solution e.g. utilising available storage without exporting additional material off site. Occupiers sign up understanding this approach and accept temporary ponding. There are plenty of sites that follow this philosophy, for example: Panattoni Park Basingstoke (3 occupiers), Burgess Hill (EMED), Belvedere and Aylesford to name a few. Further details can be found below:</p> <p>Basingstoke<br/> <a href="https://publicaccess.basingstoke.gov.uk/online-applications/caseDetails.do?keyVal=QH0JLSCRLJP00&amp;caseType=Application">https://publicaccess.basingstoke.gov.uk/online-applications/caseDetails.do?keyVal=QH0JLSCRLJP00&amp;caseType=Application</a></p> <p>Burgess Hill<br/> <a href="https://pa.midsussex.gov.uk/online-applications/applicationDetails.do?activeTab=externalDocuments&amp;keyVal=RH6GIUKT0DA00">https://pa.midsussex.gov.uk/online-applications/applicationDetails.do?activeTab=externalDocuments&amp;keyVal=RH6GIUKT0DA00</a></p> <p>Belvedere<br/> <a href="https://pa.bexley.gov.uk/online-applications/caseDetails.do?keyVal=R2MIUXBEMTO00&amp;caseType=Application">https://pa.bexley.gov.uk/online-applications/caseDetails.do?keyVal=R2MIUXBEMTO00&amp;caseType=Application</a></p> <p>Aylesford<br/> <a href="https://publicaccess.tmbc.gov.uk/online-applications/caseDetails.do?keyVal=R0NCCFQHL9800&amp;caseType=Application">https://publicaccess.tmbc.gov.uk/online-applications/caseDetails.do?keyVal=R0NCCFQHL9800&amp;caseType=Application</a></p> |  |  |  |
| 14. | Rehabilitation following a flood event has not been adequately detailed.                                                                                 | The flooded areas are all flood resilient, so the only rehabilitation expected following a flood event is a de-silt and clean-up of the dock area/yard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |
| 15. | It has not been demonstrated that the temporary flooding within highways following development will be shallow, slow flowing and represent a low hazard. | The flooding of the existing highway is an existing situation resulting from the increase in rainfall statistics between the date of design and today. The manhole that is shown to flood is in close proximity to the watercourse. It has been shown that runoff from this flood would direct overland a short distance to the existing watercourse.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |

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|     |                                                                                                                                                                                                                                                         | The only consequence of the proposed drainage is to reduce this existing flooding, presenting betterment in flood risk. In such circumstances, the measurement of hazard is academic – we are making matters better. If we don't connect, circumstances remain as they are. The results show the proposed drainage offers a reduction in existing flood volumes of between 24% to 41% based on the 100yr + 45% and 30yr + 40% storm events respectively.                                                                                                                                                                                                                                                                                                                                |  |  |  |
| 16. | Water treatment has not been adequately demonstrated and is unlikely to meet national standards for suds. The design relies heavily upon the use of bypass and retention separators to treat water.<br><br>Source control features are not prioritised. | <p>The bypass &amp; full retention oil separators with silt traps &amp; alarms have been assessed in line with the SuDS manual pollution indices and shown to be suitable for the higher risk areas within the site (see comment 19 below).</p> <p>The drainage system also incorporates rainwater harvesting, permeable paving, filter drains, catch pits and open SuDS features to help hold/treat the more extreme flood events.</p> <p>Source control beyond the above is limited due to the high seasonal groundwater level.</p> <p>Whilst the outline planning permission pre-dates the National Standards for SuDS we believe we have adequately demonstrated the water quality benefits of the proposed drainage system through the SuDS Manual Pollution Indices Approach.</p> |  |  |  |
| 17. | The water quality assessment should consider each treatment train individually. This should be for frequent events (i.e. not relying on the system surcharging to achieve water treatment from upstream features).                                      | <p>See comments 16, 18 &amp; 19. We believe we have adequately shown how water quality has been met through the SuDS Pollution Indices Approach.</p> <p>Roofs benefit from rainwater harvesting (a proportion of roof only) and or catchpits.<br/>Car Park areas benefit from permeable paving and bypass oil separators.<br/>Service yard areas are treated via full retention oil separators (including silt trap).</p>                                                                                                                                                                                                                                                                                                                                                               |  |  |  |
| 18. | The simple index assessment incorrectly states that surface water from non-residential roofs requires no treatment.                                                                                                                                     | <p>The runoff from the roof will be relatively clean as there is no risk of heavy metals or hydrocarbons. The only risk would be dust/pollution as rain falls through the atmosphere. The downstream system has been designed to incorporate catch pits to mitigate this.</p> <p>In addition to the above a proportion of the roof will be drained through a rainwater harvesting system which would allow for additional settlement.</p>                                                                                                                                                                                                                                                                                                                                               |  |  |  |
| 19. | The SuDS Manual pollution hazard index of 0.6 (as opposed to 0.8) for                                                                                                                                                                                   | The site incorporates 2-3 small HGV delivery yard areas. Based on table 26.2 of the SuDS manual the closest description of this is the 'Commercial yard and delivery areas' suggesting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |

|                                                                                                                                                                                                                                                                                                                        | metals in the delivery yards has not been adequately justified.                                                                                                       | <p>a medium risk and 0.6 metals index. The 0.8 number is high risk set for heavy pollution sites such as haulage yards &amp; waste sites which this development does not provide.</p> <div><div>TABLE 26.2</div><div>Pollution hazard indices for different land use classifications</div><table><thead><tr><th>Land use</th><th>Pollution hazard level</th><th>Total suspended solids (TSS)</th><th>Metals</th><th>Hydrocarbons</th></tr></thead><tbody><tr><td>Residential roofs</td><td>Very low</td><td>0.2</td><td>0.2</td><td>0.05</td></tr><tr><td>Other roofs (typically commercial/ industrial roofs)</td><td>Low</td><td>0.3</td><td>0.2 (up to 0.8 where there is potential for metals to leach from the roof)</td><td>0.05</td></tr><tr><td>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 &lt; 300 traffic movements/day</td><td>Low</td><td>0.5</td><td>0.4</td><td>0.4</td></tr><tr><td>→ 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<sup>1</sup></td><td>Medium</td><td>0.7</td><td>0.6</td><td>0.7</td></tr><tr><td>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<sup>1</sup></td><td>High</td><td>0.8<sup>2</sup></td><td>0.8<sup>2</sup></td><td>0.9<sup>2</sup></td></tr></tbody></table><div>Notes</div><div><div>1</div><div>Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).</div></div><div><div>2</div><div>These should only be used if considered appropriate as part of a detailed risk assessment – required for all these land use types (Table 4.3). When dealing with high hazard sites, the environmental regulator should first be consulted for pre-permitting advice. This will help determine the most appropriate approach to the development of a design solution.</div></div></div> <p>To ensure a robust drainage design we have even increased the TSS &amp; hydrocarbon indices from medium to high risk ensuring a high degree of protection to the downstream network. The above is considered reasonable and appropriate to the scale and nature of development.</p> | Land use                                                                   | Pollution hazard level | Total suspended solids (TSS) | Metals | Hydrocarbons | 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 <sup>1</sup> | 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 <sup>1</sup> | High | 0.8 <sup>2</sup> | 0.8 <sup>2</sup> | 0.9 <sup>2</sup> |  |  |  |
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| Land use                                                                                                                                                                                                                                                                                                               | Pollution hazard level                                                                                                                                                | Total suspended solids (TSS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Metals                                                                     | Hydrocarbons           |                              |        |              |                   |          |     |     |      |                                                      |     |     |                                                                            |      |                                                                                                                                                                                                                                          |     |     |     |     |                                                                                                                                                                                          |        |     |     |     |                                                                                                                                                                                                                                                                                                                        |      |                  |                  |                  |  |  |  |
| 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 <sup>1</sup>                                                                                                                               | 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 <sup>1</sup> | High                                                                                                                                                                  | 0.8 <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.8 <sup>2</sup>                                                           | 0.9 <sup>2</sup>       |                              |        |              |                   |          |     |     |      |                                                      |     |     |                                                                            |      |                                                                                                                                                                                                                                          |     |     |     |     |                                                                                                                                                                                          |        |     |     |     |                                                                                                                                                                                                                                                                                                                        |      |                  |                  |                  |  |  |  |
| 20.                                                                                                                                                                                                                                                                                                                    | As runoff is proposed to be collected within rainwater harvesting features, the design should incorporate the treatment required for the proposed use. See comment 7. | Refer to comment 7. The specialist Rainwater Harvesting manufacturer will consider what treatment is needed for its use.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                            |                        |                              |        |              |                   |          |     |     |      |                                                      |     |     |                                                                            |      |                                                                                                                                                                                                                                          |     |     |     |     |                                                                                                                                                                                          |        |     |     |     |                                                                                                                                                                                                                                                                                                                        |      |                  |                  |                  |  |  |  |

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| 21. | <p>Amenity benefits offered by the SuDS design are limited. Some of the areas that are designed to flood in the critical 1% AEP + CCA event will provide multifunctional benefit, as they are used for both flood storage and for vehicle docking. However, the <u>surface water drainage design</u> does little to contribute towards placemaking and environmental enhancement. Water is not kept at or close to the surface and the design is of a conventional subterranean piped network with tanks forming the bulk of the storage.</p> <p>A 'pond' has been included but this has no connection to the network and appears to only drain itself (with no overflow). It also has the potential to conflict with a storage tank that is beneath it (with less than 300mm depth between the two).</p> <p>The 'open features' and depression areas will only provide additional storage in high intensity events therefore their infiltration and amenity potential are extremely limited.</p> <p>The designer refers to coordination with landscaping, however, the landscaping is what delivers the amenity, rather than the drainage of the development.</p> | <p>We understand that the amenity benefits of the SuDS are limited but we consider them appropriate to the nature and scale of development and in keeping with the surrounding industrial area.</p> <p>It is noted that 'Point 5. Amenity' in the summary table on page 2 registers 'No Objection'.</p> <p>The latest drainage layout drawing 243912-BWB-EXT-XX-D-C-0500-[A5-C07] has not decreased any SuDS extents and therefore the 'no objection' to amenity remains.</p> |  |  |  |
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| 22. | No biodiversity risk and opportunity assessment has been submitted or referred to.                                                                                                                                                                                  | <p>As discussed in our recent meeting, the impact on ecology was considered at the outline planning permission stage, with an Ecological Impact Assessment detailing the surveys undertaken and necessary mitigation to be provided. The outline submission pre-dated the mandatory biodiversity net gain requirements and therefore the scheme is exempt from the statutory 10% requirements.</p> <p>Several ecological related conditions were imposed on the grant of planning permission, with condition 18 requiring the submission of a Biodiversity Enhancement Strategy for protected and priority species. This condition was approved by the Council on 18<sup>th</sup> November 2025 under planning reference BE/91/25/DOC. A copy of this report is appended to this note.</p> <p>As a result biodiversity has already been considered in detail through the planning submission and no further assessment is necessary.</p> |  |  |  |
| 23. | Please submit evidence that demonstrates that NSfS standard 6.7 has been complied with.                                                                                                                                                                             | Please see response to point 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |
| 24. | An impermeable liner has been specified (Lotrak 300) in both the construction details and the construction method statement. This will be acceptable where infiltration is not viable, but the strategy implies that filter drains will infiltrate. Please clarify. | Please refer to the comment 10 response.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |
| 25. | The construction method statement does not include detailed information about the construction of the tanks and prevention of groundwater ingress.                                                                                                                  | <p>The tanks will be installed to the manufacturer's details (subject to Contractor supply chain).</p> <p>The construction will be undertaken through the use of trench boxes which will stop ingress of groundwater and where feasible, works will be undertaken in warm/dry weather. Should this not be possible the measures outlined in comments 26 &amp; 27 below will be deployed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |

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| 26. | The construction method statement does not include detailed information regarding how high groundwater levels will be managed (if encountered). | <p>Where excavations require dewatering, the following will be adopted:</p> <ol style="list-style-type: none"> <li>1. The WCL permit to pump system will be used.</li> <li>2. Floating oil booms downstream of work will be used where discharge is to a watercourse.</li> <li>3. Debris netting and/or crash decks will be installed to prevent material entering the river.</li> <li>4. In the event of water being unsuitable to discharge to surface waters there are two options: <ol style="list-style-type: none"> <li>a) Discharge to foul (under trade effluent consent) authorised by sewerage undertaker</li> <li>b) Contain water and remove from site by a licenced waste carrier.</li> </ol> </li> </ol> <div data-bbox="710 620 1821 890">  </div> |  |  |  |
| 27. | The construction method statement does not include detail of how silt will be managed during construction.                                      | <p>To avoid, minimise and reduce potential adverse effects on the water environment, the mitigation measures detailed below will be implemented during construction. This approach focuses on the use of passive silt control options i.e. good working practices, drainage and settlement. Only when this has been exhausted will active controls e.g. the use of flocculants and/or coagulants be used as a method of water treatment subject to EA permits. Additionally, a water quality monitoring programme will be undertaken throughout the construction phase of the project.</p> <p>The section below sets out control measures for water management and any ground water ingress across site that could be deployed to manage silty water:</p>                                                                                           |  |  |  |

#### Site Drainage (Cut-off ditches)

1. Remove field ditches or divert into settlement pond. Create bunds to prevent water run-off into watercourse.
2. Create cut-off ditches and filter drains, where necessary, to intercept existing drainage to enable the controlled movement of surface water on site. These systems should be connected directly to a settlement lagoon/pond.
3. Additional ditches should be cut as the project progresses to intercept surface water runoff from any areas with exposed soils and haul roads or to prevent uncontrolled runoff from site. They must be positioned so that they can remain undisturbed for as long as the work programme requires.
4. Minimise ground disturbance when cutting ditches. Always work uphill of the cut-off ditches.
5. Move all excavated material away from the ditch for reuse on the scheme. Do not place it on the edge of the ditch unless it is specifically being used as a bund or within the flow path of water.
6. Cut-off ditches must be profiled with a flat bottom and sloping banks (30° being the steepest) they must be sufficiently deep to intercept any drains and have sufficient capacity to move water by gravity.



#### Site Drainage (Settlement)

Settlement ponds/lagoons will be used to prevent the uncontrolled release of water from the project to surface watercourses.

1. Install a method to enable the controlled release of water.
2. Ensure that the attenuation feature is sufficient to hold water in a storm event.
3. Create attenuation feature early in the project to allow them to vegetate.

4. In construction use topsoil over clay, create slope roughness by tracking machines up/down the banks to trap the water on the slope reducing its erosive power and vegetate banks at the earliest opportunity.
5. Form a stone bund around the outfall or pump head to prevent soft sediments from being drawn through.



#### Silt fences

If required will be used to reduce risk of silty turbid waters from polluting surface watercourses.



#### Secondary Treatment

Work to maximise the impact of the lagoon/pond in terms of silt settlement prior to release for secondary treatment.

1. Where possible a gravity outfall will be used to release water from the pond into the field drain.
2. Otherwise use a floating pump head or create a stone bund around the pump to reduce the transfer of silt when pumping. Do not allow the pump head to settle on or draw silts from the bed.
3. Provide silt capture channel / lamella tank for secondary treatment to remove colloidal clay, if necessary.

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|  |  | <p>A hierarchical process of treatment will be followed. This is as follows:</p> <ol style="list-style-type: none"> <li>1. Settlement within lagoon/pond with filtration by vegetation in land drain</li> <li>2. Use of flocculant blocks upstream of the pond to provide pre-treatment (blocks to be deployed upstream of the pond within a lined inlet channel and / or blocks within a Pipe Reactor or similar)</li> <li>3. Supplement with Flocculant Mats. Geotextile mats chemically treated with flocculant with some coagulant function to be laid within the land drain, accompanied by Silt Mats, if needed. This will provide supplementary filtration post settlement.</li> <li>4. Use of a Pipe Reactor (or similar) or lamella tank and silt capture channel downstream of pond if necessary. This will polish water exiting the pond.</li> <li>5. Ensure that a minimum of 30 metres of lay-flat hose is used on the exit of the reactor, along with the use of clean stone at the exit of the lay-flat hosing to act as a diffuser / baffle to spread the water and reduce scour</li> <li>6. Where possible water exiting the Pipe Reactor (or similar) hosing will be directed into the vegetated field drain.</li> <li>7. Should filtration not reach the desired water quality then the option exists to throttle back the discharge.</li> <li>8. Where additional treatment is needed then flocculant mats, followed by silt mats will be laid within the field drain.</li> <li>9. Monitor the water quality being released from the pond – this will determine the need for interventions to be upscaled accordingly</li> <li>10. Monitor the water being released from site at the point of discharge for turbidity (NTU), pH and visible oils.</li> </ol> <p><u>Soil Exposure Minimisation</u></p> <p>Compacted stockpiles exposed to inclement weather pose a source of silt pollution due to storm water run-off that may enter drainage systems and / or watercourses. Control measures that will be adopted to prevent silt pollution from exposed ground and stockpiles include:</p> <ol style="list-style-type: none"> <li>1. Vegetation stripping will take place immediately prior to earthworks programme commencing.</li> <li>2. Grass seeding / hydro-seeding / use of jute matting to prevent erosion impacts.</li> <li>3. Topsoil and / or spoil stockpiles will be located at least 10m away from watercourses, drainage system or cut off drains.</li> </ol> |  |  |  |
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|     |                                                                                                                                                                                                                  | <ol style="list-style-type: none"> <li>4. Silt fencing or cut off drains will be installed at the toe of any stockpiles leading downhill to a watercourse or surface water drainage system.</li> <li>5. Stockpiles will be battered to reduce the possibility of a loose surface area eroding.</li> <li>6. French drainage systems, where practicable, to filter the silt as a secondary containment.</li> <li>7. Topsoil and / or subsoil stockpiles that are to be left in situ for longer than six (6) months will be seeded; hence, reducing erosion losses and the risk of polluting watercourses.</li> </ol> <p><u>Access &amp; Egress</u><br/>Control measures that will be adopted to prevent silt pollution from plant and roads entering the stormwater drainage system include:</p> <ol style="list-style-type: none"> <li>1. A 1m vegetation buffer zone will be maintained along the edge of all watercourses.</li> <li>2. Site run-off will be reduced by the use of bunds / berms / silt Fences, as detailed above.</li> <li>3. Roads and bogmats will be kept clean at all times being regularly brushed and scrapped and kept free of mud deposits.</li> <li>4. Use of stormwater gully protection measures e.g., geotextile screens.</li> <li>5. Road sweeper(s) will be used to clean the roads (e.g., during earthwork activities).</li> <li>6. Wheels / tracks of all plant and equipment will be cleaned manually when a build-up of mud can be seen, or plant is being relocated.</li> <li>7. A wheel wash will be used within the main compound on haul roads.</li> <li>8. Regularly checking plant and equipment for leaks (i.e., ensuring good maintenance).</li> <li>9. All construction materials will be stored at least 10m away from site watercourses.</li> </ol> <p>No plant or vehicles are permitted to directly cross watercourses i.e., flumed / culverted crossings should be installed to allow temporary access across watercourses.</p> |  |  |  |
| 28. | Please submit raw FEH 22 point data for the site confidentially to <a href="mailto:land.drainage@arun.gov.uk">land.drainage@arun.gov.uk</a> in accordance with clause 5.1.7 of the FEH Web Service terms of use. | Noted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |

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| 29. | Please submit buoyancy calculations.                                                                                                                                                                                                                                        | <p>The risk of buoyancy for the attenuation tanks has been assessed and is not an issue. As shown on the drainage layout the tanks range from 0.8 - 1.2m depth with covers ranging between 0.93 - 1.25m. The weight of backfill is greater than the uplift force from any water displacement.</p> <p>Average granular backfill weight is 19.6 kN/m<sup>3</sup><br/> Uplift force from water displacement is approx. 10 kN/m<sup>3</sup><br/> Therefore buoyancy is not an issue for the attenuation tanks.</p> <p>The buoyancy calculations for the oil separators will be undertaken once the contractor is instructed and the manufacturer of the tanks determined. If needed the tanks could either be strapped to a concrete slab below or incorporate concrete surround/slab above to counterbalance any uplift forces.</p> <p>Planning condition 25 requires as-built drawings to be issued along with a completion report. It is proposed that buoyancy calculations will be completed during the construction stage once the contractor is instructed and captured in the as-built/completion information.</p> |  |  |  |
| 30. | The planning officer is alerted to ground level variations in excess of 300mm. It is unclear if these changes will affect surface water flow paths as topographical information has not been submitted for the neighbouring site.                                           | <p>The site is bound by roads to the north and west and is at a natural high point which is identified on the topographical survey and flood maps. The proposed site adequately drains itself and ensures the 100yr + CC storm is safely managed within the site without increasing flood risk. Surface water flow paths are therefore irrelevant and the drainage proposed clearly demonstrates that the neighbouring site would not be detrimentally impacted.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |
| 31. | The cover level of SW50 does not appear to correlate with the finished levels plan. Cover level on the drainage layout and modelling is 3.341 and the levels in this area are shown to drop from 3.251 in the centre of the access to 3.080 at the north of the bell mouth. | <p>Roads are built with cross falls and long falls. Our drawings and models are consistent. The CL of SW50 at 3.341m AOD is shown on both the drainage layout and hydraulic model and is taken from the topographical survey of the existing road.</p> <p>The 3.341m AOD level is at the crown of the road whereas the levels 3.251-3.08 are at the lower channel level.</p> <p>The 100yr + 45% climate change water level at SW50 is at 2.886m AOD. The drainage and flood risk has been very carefully considered.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |

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|     | Not all cover levels have been checked due to anticipated design changes, however, please make sure that they correspond between the layout, model and finished levels drawing.           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |
| 32. | Please submit long and cross sections for any open drainage features.                                                                                                                     | Relevant sections have been provided on BWB drawing 243912-BWB-EXT-XX-D-C-0537-[A5-C02].                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| 33. | The SuDS Overview Plan shows an indicative pipe on section b, from the depression in the land (open land drainage feature) to the filter drain. This is not shown on the drainage layout. | This has been picked up on the latest drainage layout drainage 243912-BWB-EXT-XX-D-C-0500-[A5-C07].                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| 34. | Please submit construction details and specifications for all bypass and retention separator units.                                                                                       | <p>All separators have been specified on the drawing layout drawing 0500 (Manufacturer subject to Contractor's supply chain/availability etc). To be installed to manufacturer details.</p> <p>Planning condition 25 requires as-built drawings to be issued along with a completion report. It is proposed that the separator construction details will be completed during the construction stage once the contractor is instructed and captured in the as-built/completion information.</p> |  |  |
| 35. | Please detail venting on attenuation tanks.                                                                                                                                               | <p>Attenuation tanks will be installed to manufacturer details including venting – details subject to Contractor supply chain.</p> <p>Planning condition 25 requires as-built drawings to be issued along with a completion report. It is proposed that the venting details will be completed during the construction stage once the contractor is instructed and captured in the as-built/completion information.</p>                                                                         |  |  |
| 36. | Please submit detail for the channel drains in the loading dock.                                                                                                                          | Slot drain dependent on Contractor's supply chain. Typical detail shown below:                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |

