

Engineers Comments Regarding Surface Water Drainage

Application Reference:	BR/67/25/PL	Reviewer Reference:	ADC/SB
Planning Officer:	Amber Willard	Date of Review:	19/08/2025
Site Name:	57 Queensway Bognor Regis PO21 1QN		
Application Description:	Demolition of existing brick-built garages, removal of canopy structure, remediation of contaminated land and construction of 18 No. flats over 3 storeys with pitched roofs. This application is in CIL Zone 4 (Zero Rated) as flats.		
Assessment Number:	1 of 1		

Policy and Guidance Information

Arun District Council Surface Water Drainage Guidance - <https://www.arun.gov.uk/surfacewater>

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/> and <https://www.arun.gov.uk/land-drainage-consent/>

Arun District Council surface water pre-commencement conditions - <https://www.arun.gov.uk/planning-pre-commencement-conditions>

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>

The SuDs Manual [C753] by CIRIA

Response	Objection
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Critical Items for Surface Water Drainage Design Conditions

The failure to adequately address the following items will result in an objection to a surface water drainage design.

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.

Critical Item	Reason	Status
Winter groundwater monitoring data.	<p>Adequate winter groundwater monitoring data must be supplied to evidence that infiltration designs have sufficient freeboard from the base of structures and the peak groundwater level.</p> <p>The same data is necessary to ensure that the potential for buoyancy has been adequately considered in attenuation designs.</p>	Not supplied

<p>Winter infiltration testing data.</p>	<p>Adequate winter infiltration testing must be supplied to justify the proposed discharge method and design infiltration rates.</p> <p>Infiltration tests must be completed strictly in accordance with BRE DG 365, CIRIA R156 or a similar approved method. Testing depths must account for peak groundwater levels and correspond with the location and depth of proposed infiltration features.</p> <p>Designs must be based upon the <u>slowest</u> infiltration rate evidenced closest to a proposed infiltration feature. Average design rates will not be accepted.</p> <p>The results of incomplete tests should not be extrapolated to obtain design values for infiltration rates.</p>	<p>Not supplied</p>
<p>The hierarchy for sustainable drainage.</p>	<p>The proposed discharge method must accord with the SuDS hierarchy as given below. Evidence must be supplied to justify the proposed discharge method.</p> <ol style="list-style-type: none"> 1. Rainwater reuse where possible. 2. Complete discharge into the ground (infiltration). 3. Hybrid infiltration and restricted discharge to an appropriate water body or surface water sewer. 4. Restricted discharge to an appropriate water body. 5. Restricted discharge to a surface water sewer. 6. Restricted discharge to a combined sewer. <p>A water body may be defined as a river, watercourse, ditch, culverted watercourse, reservoir, wetland or the sea.</p> <p>Engineers cannot support any proposed connection of surface water to the foul sewer.</p>	<p>Not supplied</p>
<p>Calculations</p>	<p>Calculations for pre-development run off rates must be based upon the positively drained area only.</p>	<p>Insufficient</p>

	<p>Proposed discharge rates must not increase flood risk on site or elsewhere. Discharge rates must be restricted to QBAR or 2 l/s/ha, depending on whichever is higher.</p>	
	<p>Designs must be based on the most recently available rainfall data at the time of conditions being applied. <u>FSR rainfall data will not be accepted.</u> FEH rainfall data is based upon more recent records and continues to be updated.</p>	<p>Compliant on proposed design. Insufficient on greenfield and pre-development model.</p>
	<p>Designs must use the correct climate change allowances at the time of determination of the outline or full planning application.</p> <p>CV values for all events must be set to 1. This includes summer, winter, design, and simulation events.</p> <p>The correct allowance for urban creep must be applied.</p> <p>Additional storage must be set to zero unless it can be evidenced where this is provided.</p> <p>Infiltration half-drain times must be less than 24 hours.</p> <p>Infiltration design rates must be applied to the sides of soakaways, or to the base of infiltration blankets. Design rates must not be applied to both the base and sides of infiltration structures.</p> <p>A surcharged outfall must be modelled.</p>	<p>Insufficient - Simulation settings not supplied. Design settings acceptable. Unknown if surcharged outfall should be modelled.</p>
<p>Natural catchments design.</p>	<p>The submission must define the natural drainage characteristics within, and hydraulically linked to, the site and demonstrate that the drainage proposals will integrate with and not compromise the function of the natural and existing drainage systems.</p> <p>The condition, performance (including capacity where appropriate) and ownership of any existing site surface water drainage infrastructure must be accurately reported.</p> <p>Appropriate easements to watercourses and other services must be shown on all plans.</p> <p>Where there are areas of flood risk from any source on the site, it must be shown how a</p>	<p>Insufficient</p>

	<p>sustainable surface water drainage design can be accommodated on the site without conflicting with those areas of flood risk.</p> <p>Designs must replicate the natural drainage catchments of the site. All surface water drainage designs must therefore drain via gravity to corresponding points of discharge.</p> <p>The use of pumps for surface water drainage is not sustainable and will only be considered where the designer has fully demonstrated that they are proposed as a last resort.</p>	
Plans	Plan areas, depths and levels of drainage infrastructure must accurately correspond with the supporting calculations.	Insufficient
Water quality benefits.	An assessment of water quality is necessary to evidence that the proposed design provides adequate treatment of surface water.	Insufficient
Biodiversity and amenity benefits.	The surface water drainage design must provide biodiversity and amenity benefits.	Insufficient
Trees and planting	<p>There should be no conflict between surface water drainage infrastructure and existing or proposed trees or planting.</p> <p>The design must consider the potential growth of proposed trees and adequate mitigation must be provided to protect drainage infrastructure where conflict cannot be avoided.</p>	Insufficient

Drainage Impact on Other Planning Matters

This application has been assessed with regards to surface water drainage design only.

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, groundwater source protection zones)
- Southern Water (foul drainage and surface water disposal to public sewer network)**
- Portsmouth Water (groundwater source protection zones)
- Lead local flood authority (all other sources of flooding and ordinary watercourses)**
- Other:
- None

Additional comments to the planning officer

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' 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.

This consultation has been primarily informed by The SuDS Manual and the National Standards for SuDS [NSfS], which supersede 'Sustainable drainage systems: non-statutory technical standards'.

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

- Drainage Strategy Ref: 560- Rev.V1
- Flood Risk Assessment Ref: U0560 FRA - v1
- U0560 - response letter to Council 3.6.25
- 6304-9 – Block Plan
- Remediation Strategy & Verification Plan, reference GE22978/RSVP/MAR25

Comments:

STANDARD 1: RUNOFF DISPOSAL LOCATIONS

It is proposed that surface water (runoff) will be collected for non-potable reuse. The storage from the water butts is not accounted for in the modelling for extreme events as it cannot be assumed that they will be empty at the time of a storm event. This is appropriate and acceptable.

The designer has indicated that infiltration is not possible on this site due to lack of space for SuDS components. However, the constraint of lack of space is due to the scale and layout of the proposed development rather than the site itself. No evidence has been submitted to demonstrate that infiltration is not viable on the site and that it should not be prioritised in accordance with the hierarchy for SuDS. If infiltration is viable then it is expected that the scale and layout of the development is designed to maximise its use.

When considering the blank canvass of the block plan, if infiltration is viable, there may be a significant proportion of the site where it may be used. This is based on the constraint of no

features within 5m of the highway. Once it was established if infiltration was viable the scale and layout of the development should have been progressed with that in mind.

Although pre-application advice was sought from the Local Planning Authority [LPA], a drainage consultation was not requested or paid for. Planning of a new site layout should be informed by the requirements of the surface water management systems to both effectively drain and ensure all areas of the site are served by SuDS where possible. Lack of engagement with surface water drainage consultees would indicate that this was not considered a constraint to the development of the site layout.

It is noted that there are areas of contamination on the site, this is referred to in the site characteristics section of the Drainage Strategy, but nowhere else in the document, aside from the plans. The NSfS is clear that the use of higher priority final destinations shall not be discounted because the development site is, or was, contaminated where practical remediation strategies can be developed in conjunction with the drainage system design. Indeed, the Remediation Strategy & Verification Plan makes no assessment as to the suitability of infiltration drainage on the site.

The potential use for infiltration has not been properly ruled out. This cannot be appropriately resolved through the imposition of conditions as the designer has already acknowledged that the proposed site layout will preclude the use of infiltration.

The SuDS hierarchy operates on an evidential basis. This is emphasised by the National Standards which make clear that to utilise a lesser priority final destination, appropriate evidence shall be provided that demonstrates all higher priority final destinations have been used to the maximum extent practicable. In this case the scheme has failed to justify movement beyond consideration of infiltration, and there is no obvious reason why any departure from the above should be agreed. Further consideration of the other option identified is nonetheless necessary in order to fully assess the scheme's effects.

Despite infiltration being not being considered for the roof runoff, the designer has proposed 'self-draining' permeable surfacing for the access and driveways. This is not appropriate without ground investigations to support the approach. Groundwater may be high enough to enter the subbase, or the infiltration capacity of the soil may be so slow that there is insufficient capacity to drain subsequent events. If the equivalent area currently drains via a different method and infiltration is not viable then this proposal will increase flood risk.

It is agreed that there are no watercourses available and that should infiltration prove not to be viable, a connection to the public surface water sewer will be appropriate and acceptable.

STANDARD 2: INTERCEPTION

The development must demonstrate that the first 5mm of rainfall for the majority of rainfall events does not result in any runoff from the site. This is to replicate greenfield conditions.

In this instance the existing site is almost entirely impermeable. Therefore, the failure to adequately demonstrate interception drainage conflicts with guidance, national standards and best practice, rather than representing an increase in flood risk.

A departure from national standards has not been sought and agreed to our knowledge.

No formal assessment of interception drainage has been submitted, although the designer has responded to an objection on this ground from the LLFA.

Interception can only be achieved through the use of infiltration, evapotranspiration and water reuse. The only opportunities for evapotranspiration are via the limited area of permeable paving. The surface water drainage system provides no open features or vegetated surfaces, nor is infiltration explored further to provide interception drainage.

In the case of rainwater harvesting systems, these can be assumed to provide interception when they are “*designed for supply purposes (ie it has a regular daily demand)*”¹. The designer has proposed rainwater butts for water reuse, however, these do not appear to be designed for water supply purposes. It is assumed therefore that these will not provide adequate interception drainage as there is a risk that the water butts will not provide this function for the lifetime of the development (as they may not be used or emptied).

The permeable paving will achieve interception for the rainwater that falls on its surface. However, the roof areas appear to achieve no interception drainage.

Where a site uses evapotranspiration only to deliver interception (as here), a simple approach may be used to calculate compliance². A ratio of 1:4 for the vegetated surface area to contributing impermeable area may be used. An allowance may be applied where a feature has side slopes to account for the effective wetted area. This is dependent upon 250mm depth of soil with at least 20% voids beneath the vegetated surface.

Assuming that the contributing roof area and impervious patios are approximately 0.04ha, or 400m², then the vegetated surface area to serve those areas and provide interception drainage would be 100m².

Green roofs can be useful features to achieve interception. However, their use must be planned for at the conceptual development stage and cannot be agreed via condition when the roof plans and elevations are approved as part of the permission.

The applicant is expected to demonstrate compliance with this standard with a formal assessment in accordance with the NSfS and The SuDS Manual. When interception drainage standards are complied with, it is expected that the scale, appearance and layout of the proposed development will be impacted by changes to the surface water drainage scheme.

STANDARD 3: EXTREME RAINFALL AND FLOODING

Proposed Discharge Rates and Volumes

It is not possible to accurately assess whether the proposed discharge rates and volumes will increase flood risk. This is because we have insufficient knowledge of the existing drainage of the site and there are errors in the greenfield and pre-development runoff rate calculations.

It is critical to understand how the proposed discharge rates and volumes compare to the greenfield runoff rates as this will dictate which standards need to be met. The pre-development (brownfield) discharge rates are not required by the new National Standards and the proposed discharge rate

¹ Woods Ballard, B. et al, (2015) C753 The SuDS Manual, C753, CIRIA London, UK. p207.

² Woods Ballard, B. et al, (2015) C753 The SuDS Manual, C753, CIRIA London, UK. p528.

related to the brownfield rate to illustrate betterment, is not a requirement. This marks a strengthening in guidance when compared with The SuDS Manual.

The NSfS offer the option to demonstrate compliance on both rates and volumes by restricting discharge rates to 3l/s/ha. For this site, of a modelled contributing area of 0.044ha, that would equate to 0.132l/s.

For the full site area 0.075ha, to reflect the greenfield runoff rate calculations, the discharge rate would be 0.225l/s.

Both of these rates are significantly slower than the 2.4l/s that is proposed.

The NSfS allow for a relaxation factor to be applied for previously developed sites. This means that they may (with agreement from the approving body), discharge at up to 5 times the greenfield runoff rate.

The submitted 50% AEP greenfield runoff rate for the site is 0.5l/s, and the 1% AEP event is 1.2l/s. At face value the proposed discharge rate would appear to meet this criterion. However, the contributing area should be equal between the greenfield and proposed design. The greenfield model uses the full site area which is not accounted for in the proposed design and therefore the rate may be artificially increased. In addition, the Soil Index input into the model is 5, this represents exposed solid rock and would increase the runoff rate when compared to the expected geology of the site.

The designer has purchased and used FEH 22 point data to inform their proposed design. This includes rainfall data and information about the ground conditions on the site (BFIHost19, SAAR) to input into greenfield models. Therefore, it is unclear why this data has not been used to ensure that the greenfield model is as accurate as possible.

If discharge rates need to be restricted further, then additional storage will be required to ensure that flood risk will not be increased. This may impact the scale and layout of the proposed development. The designer has indicated that achieving discharge rates closer to the greenfield scenario may not be achievable due to how constrained the site is, and that by doing so self-cleansing velocities may not be achieved on the pipes. This argument demonstrates further that the proposed scale and layout of the proposed development are constraining the drainage to such an extent that compliance with national standards may not be achievable.

Plans and Modelling

The proposed design settings on the model are acceptable however, the simulation settings, which will override the design ones, have not been submitted. These must be included to ensure that the correct inputs have been entered.

It is also not possible to corroborate the levels information that is in the model. There is no topographical survey, or proposed levels plan to demonstrate that the modelling is accurate. If cover levels are lower than those modelled, then this may mean that runoff floods the site when it is not designed to. The drainage layout lacks sufficient detail to enable comparison with the modelling beyond the tank and the flow control.

Existing Drainage and Capacity of Receiving Sewer

The designer has not submitted any evidence of the site's existing drainage regime. Their response the LLFA objection states that a detailed drainage survey is not considered necessary and that all existing site drainage will be removed prior to construction. However, to understand if flood risk will be increased it is critical to understand how the site currently drains. If it does not drain to the public surface water sewer, the proposed new connection may increase flood risk.

No evidence to demonstrate that there is adequate capacity in the receiving surface water sewer has been submitted. This is expected in the form of a capacity check. The capacity of the sewer may further dictate the permissible discharge rate from the site to ensure that flood risk is not increased. This is irrespective of any capacity check requirements (or lack of) associated with the Section 106 connection under the Water Industry Act 1991.

If the discharge rate needs to be further reduced due to the capacity of the receiving sewer, then then this will increase the amount of storage that is required which may affect the scale and layout of the proposed development.

The submission contains inaccuracies and lacks sufficient detail to demonstrate that it will not increase flood risk in extreme events.

STANDARD 4: WATER QUALITY

A water quality assessment is included within the Drainage Strategy. This assumes that the permeable paving will provide water treatment for all the runoff generated by the impermeable surfaces on the site. In fact, the permeable paving is designed to be self-draining as discussed above. This means that the roof areas have not been adequately assessed. It is acknowledged that when assessed correctly the roof areas will only require removal of gross solids and sediment and that this is unlikely to impact the scale and layout of the development. Correction of this could be approved via condition.

STANDARD 5: AMENITY

No assessment of amenity benefit has been submitted. However, the surface water drainage design 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. The designer has stated that the spatial constraints of the site do not allow for open features. If amenity benefits are provided this may impact the scale and layout of the development and is unlikely to be included via condition.

STANDARD 6: BIODIVERSITY

It is unclear how the surface water drainage for the site will add biodiversity value. No assessment or statement regarding SuDS biodiversity has been submitted. It is expected that SuDS provide biodiversity benefits, features that do this may also assist in meeting amenity and interception standards. If open features are needed to meet those standards, then this will affect the scale and layout of the development.

STANDARD 7: CONSTRUCTION, OPERATION, MAINTENANCE, DECOMMISSIONING AND STRUCTURAL INTEGRITY

There is the potential for conflict between proposed trees and drainage infrastructure on the site. As landscaping is to be determined by this application it is expected that these conflicts are resolved.

Most notably on the west side of the site where two trees are proposed directly over the attenuation tank for the site. Tree roots damage drainage infrastructure. Should groundwater levels be high, the tree roots damaging the liner of the tank could cause groundwater to consume storage that is reserved for surface water. This would increase flood risk in an extreme event if groundwater levels are high.

OVERCOMING THE OBJECTION

Multiple conflicts with National Standards for SuDS have been identified. To achieve compliance with national standards and demonstrate that flood risk is not increased, it is highly likely that the scale and layout of the proposed development will need to be reconsidered.

Therefore, we **object in principle** to the proposed development.

If the planning officer is minded to allow the applicant additional time to submit further documents to support this application, then the following evidence may overcome our objection. Please do not submit further documents without prior discussion with the planning officer as to whether it will be possible for these to be assessed or influence their determination.

- Revised surface water drainage design and accompanying calculations showing surface water drainage requirements can be met within the proposed layout. Please see checklist below.

Checklist

A reduced **site-specific** version of our full surface water drainage design checklist is provided below. This has been edited to remove elements that are not applicable to this site, either due to the scale of the proposal or the method of disposal. The checklist is provided to assist the applicant and designer in preparing a revised design to meet our requirements. It is applicable to 57 Queensway only.

- Items highlighted as must be provided prior to determination to overcome our objection.
- Additional comments or notes are provided by the reviewer **in bold**.
- If an item has been submitted this is checked:
- For HH, OUT, RES and PL applications only: All other items are assumed to be handled via a condition applied to the permission if given.

Our requirements and comments are elaborated upon or condensed within a separate 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 if needed.

The full unedited surface water design checklist is available on our website at <https://www.arun.gov.uk/surfacewater/>. **If the design is amended following receipt of our consultation the designer may need to refer to the full checklist to ensure that the revised design meets our requirements.**

57 Queensway Designer Checklist

Ground Investigation Results

Groundwater monitoring

- Plan showing location of monitoring points provided.
- Depths of holes detailed.
- Dates of observations and depth to groundwater recorded.
- Evidence of the strata within borehole or monitoring pits provided.

Requested to aid speed of assessment

- Plan showing the peak groundwater levels at each monitoring point in mAOD.
- Peak groundwater levels recorded in metres below ground level and mAOD.
- If in an area of possible tidal influence, provide a comparison of readings against tide times/levels.

Infiltration testing

- Completed strictly in accordance with BRE DG 365, CIRIA R156 or a similar approved method.
- Plan showing location of trial pits provided.
- Pit dimensions provided.
- Depths of testing provided.
- Dates, times and readings of each test recorded.
- Calculations for the infiltration rate for each test provided.
- Evidence of the strata within trial pits provided.
- Test locations, and depths correspond with the expected location and depths of proposed infiltration features.

Requested to aid speed of assessment

- Depths of testing provided in m below ground level and mAOD.

Other

As appropriate, dependent upon specific site conditions

- Geotechnical advice relating to the siting of infiltration features and risk of dissolution. (Usually where chalk strata is evidenced.)
- Geotechnical advice relating to the risk of slope instability due to infiltration.
- Geotechnical and structural advice where infiltration is proposed closer than 5m to buildings or structures.
- Contamination evaluation assessment where infiltration is proposed in ground that may be contaminated.
- Geotechnical advice where infiltration is proposed into made ground (to be generally avoided).
- Geotechnical advice relating to infiltration capacity, and risk of settlement or instability where careful use of ground raising is proposed.

Surface Water Drainage Statement

Disposal method (Select as appropriate)

- Rainwater reuse is proposed where possible.
- Infiltration is proposed and maximised wherever possible.
- Hybrid infiltration and restricted discharge to an appropriate water body or surface water sewer is proposed where a full infiltration design is not possible.

- ~~Restricted discharge to a water body is proposed where a full infiltration design is not possible.~~
- Restricted discharge to a surface water sewer is proposed where a full infiltration design is not possible and there are no nearby water bodies.

Disposal method justification

- Infiltration has been adequately investigated, in winter, at appropriate and varying depths where appropriate, above peak recorded winter groundwater levels at the given location.
- Surface water sewer network is investigated (location, mapping, network, flow direction, ownership/responsibility, depth, **capacity**, and condition).
- Any relevant permissions or legal agreements from asset or landowners that are needed are identified and evidence of consents provided.

Requested to aid speed of assessment

- Any previous relevant correspondence or pre-application advice from the Local Planning Authority [LPA] or the Lead Local Flood Authority [LLFA] regarding the surface water drainage design is included with the statement.

Existing Site

Essential

- It is clear what the natural drainage characteristics of the site and hydraulically linked areas are.
- Natural flow paths are identified on a plan (where applicable).
- Existing site drainage features are investigated – condition, performance, and ownership.
- Any appropriate easements to infrastructure are investigated.
- Existing and future flood risk from any source is detailed.

It is suggested that the above is achieved with the following, which may be combined where appropriate:

- An existing topographical plan.
- An existing site surface water drainage plan (where applicable).
- Flood maps (fluvial, tidal, pluvial, groundwater, sewer, and reservoir) are supplied (or Flood Risk Assessment referred to).
- Confirmation and surveys of any existing drainage infrastructure on the site.
- Full details of any known flooding on the site.

Proposed Design

Essential

- Statement confirming the proposed design criteria including fixed design calculation inputs for the SuDS system. Examples include:
- Climate change allowances,
 - Urban creep allowance,
 - CV values,
 - Rainfall data,
 - MADD factor or additional storage.
- The design is gravity based with no use of pumps.
- Where there is existing drainage infrastructure on the site it is clearly explained or illustrated what is being retained, upgraded, or removed.
- Details of necessary off-site works and consents are provided.
- The design provides and evidences interception drainage and is able to capture and retain on site the first 5mm of the majority of all rainfall events.

- Water quality and treatment is adequately assessed – with an assessment appropriate for the scale and proposed use of the site.
- Adequate freeboard is provided between the top water level of any open storage features and the top of the bank.
- There are no clashes with other infrastructure.
- Self-cleansing velocities are achieved where pipes are proposed.

- 1m freeboard is provided between peak groundwater levels and the base of any infiltration feature.

- The proposed discharge rate is explained and justified (for attenuation designs).
- Where discharge is proposed to a public surface water or combined sewer, a capacity check confirming that the sewer can receive the proposed flows is submitted.
- Adequate freeboard is provided between peak groundwater levels and the base of any attenuation feature (refer below if this is not possible).
- Where there is a risk that the base of an attenuation feature may penetrate peak groundwater levels, additional mitigation measures to prevent groundwater ingress are incorporated into the design and construction method statement.
- Where there is a risk that the base of an attenuation feature may penetrate peak groundwater levels the effects of buoyancy have been considered in the design.

- Amenity benefits are provided by the drainage system (assessed by others).
- Biodiversity benefits are provided by the drainage system (assessed by others).
- Landscaping has been designed to ensure ease of maintenance of drainage assets.
- The justification and criteria for tree root avoidance and mitigation measures is clear, referencing adopting body standards where applicable.
- Biodiversity and ecological enhancements do not impede the functionality, maintenance or capacity of the drainage system.

- It is confirmed what elements of the SuDS will be private.
- It is confirmed what the adoption arrangements for SuDS components will be.
- A construction method statement for the SuDS system, appropriate to the scale of the development, is submitted.
- A maintenance plan for the SuDS system, appropriate to the scale of the development, is submitted. [Please refer to our SuDS Maintenance Checklist where this is stipulated by condition.]
- Any potential health and safety issues relating to SuDS implementation and management have been considered and managed.

Preferred

- Ground raising is avoided where possible.
- The drainage system is considered by and contributes to the biodiversity net gain statement (assessed by others).

Impermeable Area/Catchment Plan

Essential

- An impermeable area plan is provided showing all positively drained areas including open surface water storage plan areas.

Preferred

- Impermeable areas are shown in m² on the impermeable areas plan(s).

- Demarcated impermeable areas correspond with the distribution of those areas in the supporting calculations.

Surface Water Drainage Calculations

General

- The most recently applicable, or previously agreed FEH rainfall data is used. **Need simulation settings on proposed.**
- CV values for all events are set to 1. This includes summer, winter, design, and simulation events. **Need simulation settings on proposed.**
- The correct climate change allowances, appropriate for the full lifetime of the development, have been applied to all calculations. **Need simulation settings on proposed.**
- A 10% allowance for urban creep is applied to all residential roof areas. **Need simulation settings on proposed.**
- 50% Annual Exceedance Probability [AEP] + Climate Change Allowance [CCA] (1 in 1 year) event calculations provided. **To be updated.**
- 3.33% AEP + CCA (1 in 30 year) event calculations provided showing that the full surface water volume is contained within the designed system without flooding. **To be updated.**
- 1% AEP + CCA (1 in 100 year) event calculations provided showing that the full surface water volume is contained safely on site, without flooding any part of a building or utility plant susceptible to water or affecting safe access or egress. **To be updated.**

Infiltration – to be investigated and prioritised

- Half drain times do not exceed 24 hours for the 10% AEP + CCA and 1% AEP + CCA events.
- If half drain times exceed 24 hours for the 1% AEP + CCA event, then advice and agreement from the LPA has been sought and submitted.
- The most precautionary design infiltration rate is used.
- Design infiltration rates are applied to the sides of soakaways only.
- Design infiltration rates are applied to the base of permeable paving, infiltration blankets or basins only.
- Where the design infiltration rate is applied to the base an appropriate factor of safety is applied.

Attenuation and Restricted Discharge

- Greenfield run off rates are based upon the ~~positively drained area of the site only~~. same contributing area as the proposed design.
- Discharge rates are restricted to QBAR or ≥ 3 l/s/ha, depending on whichever is higher, for all storms up to the 1% AEP + CCA event.
- Brownfield run off rates are based upon the ~~positively drained area of the site only~~ same contributing area as the proposed design.
- Brownfield sites aspire to achieve greenfield runoff rates and volumes, where infiltration is not viable. If the proposed run off rate is higher than the greenfield run off rate, then an acceptable justification is provided, and the rate has been agreed with any relevant bodies.
- A surcharged outfall to a watercourse or sewer has been modelled. The surcharge level is the 1% AEP + CCA flood event for the receiving watercourse, or to the top of the bank if appropriate hydraulic modelling is not available.

Requested to aid assessment

- FEH22 point descriptors for the site are provided.

Drainage Plans and Specifications

Essential

Plans are provided showing:

- The proposed design within the proposed site layout.
- Existing site levels.
- Proposed site levels.
- Long and cross sections for the proposed drainage system including final finished floor levels.
- Exceedance flow management routes.
- Details of connections to sewers.
- Maintenance access and any arisings storage and disposal arrangements.

These plans must be of sufficient detail that a reviewer can be confident that the design can be constructed without flood risk being increased on site or elsewhere.

Specifications are required for all materials used in the design. We suggest that this is best achieved and illustrated with site specific construction detail drawings. The combination of construction details, with plans and sections, ensure that the proposed standard of construction will facilitate adoption and maintenance by an appropriate body and have structural integrity.

The following checklist is designed to demonstrate the level of detail required:

Easements

- Any appropriate easements as stipulated by any public or private utility provider shown on all plans.
- Infiltration features (aside from permeable paving that does not take any extra impermeable catchment such as a roof) are shown at least 5m from buildings or structures.
- Maintenance easements are shown from the top of the bank from all open SuDS features on all plans.
- Existing trees and their root protection zones are shown on any drainage layout.
- Proposed trees and appropriate easements are shown on any drainage layout.

Detail

- It can be clearly determined what a **pipe's diameter**, pipe materials, **gradients**, flow directions and **invert levels** are from the plans.
- It can be clearly determined what an inspection chamber or manhole's **cover level**, **invert level**, cover loading grade and sump depth (where applicable) are from the plans.
- All infiltration or attenuation features (including permeable paving) are clearly labelled with their dimensions, **invert/base levels** and **cover levels**.
- Control structures are labelled with discharge rates, hydraulic head, **invert and cover levels** and ideally model number.
- Measures to protect drainage from tree root damage are clearly shown on any drainage layout.
- Any areas of necessary ground raising are clearly justified and demarked on a plan, with depths and levels.
- If the 1% AEP + CCA event floods, then the extent and depth of the flooding is shown on a site plan. This plan includes proposed external ground levels and finished floor levels of buildings.
- Potential flow routes off site are shown. The plan also includes proposed external ground levels, finished floor levels of buildings and designed slopes on all impermeable surfaces such as highways or car parks.
- Cross sections and long sections of all open features are provided.
- Construction detail drawings are site specific.
- Construction detail drawings are provided for all components including but not limited to:
 - Infiltration structures

- Attenuation structures
- Manholes/inspection chambers
- Catchpits/silt traps
- Flow control devices
- Permeable paving
- Channel drains
- Gullies
- Pipe bed and surround
- Pipe to pipe connections
- Filter strips or drains
- Swales
- Bio-retention systems
- Ponds
- Tree pits and measures to protect drainage from root incursion
- Water treatment features
- Green roofs
- Measures to protect drainage from tree roots.
- Water butts or alternative methods of water reuse – also to be shown on plans.

The following items are requested to aid assessment or confidence in construction:

- Where features have a non-uniform plan area, a plan showing the coordinates of the perimeter is provided.
- All drainage infrastructure is labelled to correspond with the supporting calculations.

Other

- Open feature planting specification is provided (to be assessed by others).

This checklist is designed to aid an applicant with their submission. The list is not exhaustive, and our engineers may request additional information to enable them to review a proposal to their satisfaction.

The checklist may also request information that an applicant does not feel is relevant to their submission. In this case the applicant can provide an explanation as to why they have omitted certain information in their drainage statement. However, the appraising engineer reserves the right to request this information if they believe it is necessary for their review.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Arun District Council, Civic Centre, Maltravers Rd
Littlehampton, West Sussex, BN17 5LF
www.arun.gov.uk

To register to receive notifications of planning applications in your area please go to
<https://www1.arun.gov.uk/planning-application-finder>



Our priorities...

 Improving the wellbeing of Arun	 Delivering the right homes in the right places	 Supporting our environment to support us	 Fulfilling Arun's economic potential	 
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From: Sarah Burrow <Sarah.Burrow@arun.gov.uk>
Sent: 19 August 2025 15:58
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Cc: Paul Cann <Paul.Cann@arun.gov.uk>; Amber Willard <Amber.Willard@arun.gov.uk>
Subject: RE: Planning Consultation on: BR/67/25/PL

Hi Amber,

Find the consultation – an objection – attached. Apologies for the delay in response.

Kind regards

Sarah Burrow

Flood Risk and Drainage Engineer, Coastal Engineers and Flood Prevention

T: 01903 737815





E: sarah.burrow@arun.gov.uk

Arun District Council, Civic Centre, Maltravers Rd
Littlehampton, West Sussex, BN17 5LF

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Our priorities...

 <p>Improving the wellbeing of Arun</p>	 <p>Delivering the right homes in the right places</p>	 <p>Supporting our environment to support us</p>	 <p>Fulfilling Arun's economic potential</p>	 
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From: Planning.Responses <Planning.Responses@arun.gov.uk>

Sent: 07 May 2025 12:04

To: Land Drainage <Land.Drainage@arun.gov.uk>

Subject: Planning Consultation on: BR/67/25/PL

To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

Town & Country Planning Act 1990 (as amended)

Town and Country Planning (Development Management Procedure) (England) Order 2015

Planning Permission

Application No: BR/67/25/PL

Registered: 7th May 2025

Site Address: 57 Queensway Bognor Regis PO21 1QN

Grid Reference: 493424 99205

Description of Works: Demolition of existing brick-built garages, removal of canopy structure, remediation of contaminated land and construction of 18 No flats over 3 storeys with pitched roofs. This application is in CIL Zone 4 (Zero Rated) as flats.

The Council have received the above application.

[Click here to view the application and documents](#) The website is updated once a day in the evening, so you may need to wait until the day after this notification to view the documents.

Should you have any comments to make, these should be sent by replying to this email by 6th June 2025 . You can also monitor the progress of this application through the Council web site:

<https://www.arun.gov.uk/planning-application-search>

The application will be determined having regard to the development plan policies (if any are relevant) and other material considerations. The development plan can be accessed via the website

<https://www.arun.gov.uk/development-plan> as can information on what comments we can consider

<https://www.arun.gov.uk/planning-application-comments>

Please be aware that any comments you may make will be available on our website so please do not insert personal details or signatures on your reply.

Should the application go to appeal the Planning Inspectorate will publish any comments made to the Council on their website: <https://acp.planninginspectorate.gov.uk/> but they will protect personal details.

In the absence of a reply within the period stated, I shall assume that you have no observations to make.

Yours sincerely

Amber Willard

Planning Officer- Arun District Council

Telephone: 01903 737942

Email: amber.willard@arun.gov.uk

PLCONSULT (ODB) 2020