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DRAINAGE TECHNICAL NOTE



WOODGATE
WEST SUSSEX





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DRAINAGE TECHNICAL NOTE

for

FORMER WOODGATE CENTRE, OAK TREE LANE,
WOODGATE, WEST SUSSEX

Client:
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1.0 Executive Summary

As part of our wider appointment to develop the detailed drainage design for the proposed development at Woodgate Centre, Oak Tree Lane, Woodgate, Arch Associates Limited has been commissioned by Lovell to prepare a Technical Note to discharge the following relevant planning condition conditions from the decision referenced AL/107/21/PL.

15 Prior to the commencement of construction works details of a proposed foul drainage system shall be submitted to and approved in writing by the Local Planning Authority (including details of its siting, design and subsequent management / maintenance) and no dwelling shall be occupied until works for the disposal of sewage have been fully implemented in accordance with the approved details.

Reason: To ensure the development has a satisfactory means of disposing of foul sewerage in accordance with policies W DM1 and W DM3 of the Arun Local Plan. It is considered necessary for this to be a pre-commencement condition as the foul drainage system goes to the heart of the planning permission.

17 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. 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 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 SPI, W DM1, W DM2 and W DM3 of the Arun Local Plan. This is required to be a pre-commencement condition because it is necessary to implement the surface water drainage system prior to commencing any building works.

18 Development shall not commence until full details of the maintenance and management of the surface water drainage system is set out in a site-specific maintenance manual and submitted to and approved in writing, by the Local Planning Authority. The manual is to include details of financial management and arrangements for the replacement of major components at the end of the manufacturer's recommended design life. Upon completed construction of the surface water drainage system, the owner or management company shall strictly adhere to and implement the recommendations contained within the manual.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies W DM1, W DM2 and W DM3 of the Arun Local Plan. It is considered necessary for this to be a pre-commencement condition to ensure that the future maintenance and funding arrangements for the surface water disposal scheme are agreed before construction commences.

For clarity and ease of reference, the following technical submission will be itemised for each planning condition.

2.0 Technical Submission

2.1 Pre-Commencement Condition 15

Prior to the commencement of construction works details of a proposed foul drainage system shall be submitted to and approved in writing by the Local Planning Authority (including details of its siting, design and subsequent management / maintenance) and no dwelling shall be occupied until works for the disposal of sewage have been fully implemented in accordance with the approved details.

RESPONSE:

The foul water strategy design put forward at planning stage by Charles & Associates (documents prefixed 20-061-007) has now been taken forward by Arch Associates to the detailed design stage. The design concept remains the same, whereby the system discharges by gravity to an existing 225mm diameter Southern Water public foul sewer that runs west to east through the middle of the site. The sewer is also diverted within the site along a portion of its length to facilitate the development, which was also identified at planning stage. For ease of reference, the relevant planning drainage documents can be found in Appendix 1 of this report and includes the Southern Water Asset Location Map.

Correspondence with Southern Water at planning stage (November 2020) confirmed that the network lacked the capacity to accommodate the required 1.5 litres per second that the development would generate. However, Southern Water also confirmed that they would aim to provide the sufficient capacity within 24 months of the granting of planning permission, which was granted 9th October 2023.

2.2 Pre-Commencement Condition 17





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. 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 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.

RESPONSE:

The basis of the surface water strategy that was put forward by Charles & Associates at planning stage (Appendix 1) has been carried through into our detailed design. A summary of the previous report is given below:

Site Overview

- The site slopes from the northwest (9.50m AOD) to the southeast, steepening near the eastern boundary towards Lidsey Rife.
- No formal surface water drainage exists; runoff currently flows east into Lidsey Rife, which connects to Aldingbourne Rife.

Ground Conditions

- Superficial deposits: River Terrace Deposits and Raised Beach Deposits; bedrock is London Clay.



- Ground investigations (2019) confirmed poor infiltration rates and shallow groundwater (max 0.87m BGL), making soakaways and infiltration techniques unsuitable.

Drainage Principles

- Arun District Council/SuDS Manual hierarchy:
 1. Infiltration (not viable).
 2. Controlled discharge to water body.
 3. Controlled discharge to sewer.
- Strategy agreed: attenuation with restricted discharge to Lidsey Rife, supported by Microdrainage modelling for 1-in-100-year storm plus 30% climate change uplift and 40% sensitivity check.

Proposed SuDS

- Runoff Control: Restricted to QBar rates for betterment over existing conditions.
- Features:
 - Lined permeable paving, swales, and open storage ponds.
 - Private parking courts with permeable paving; a small pond in the southwest conveys flows to the northeast.
- Groundwater Mitigation: Impermeable liners under SuDS features due to high winter groundwater.
- Design Allowances: Additional 10% impermeable area for urban creep (CIRIA C753 guidance).
- Extreme Events: Overflow directed to landscaped areas away from built development.

Pollution Control

- SuDS manual (C753) requires treatment before discharge; a treatment train approach will be implemented:
 - Roofs: Level 1 pre-treatment (leaf/debris removal).

- Parking Areas: Porous paving and/or petrol interceptors (minimum two levels).
- Roads: Catch-pit gullies, filter strips, swales (minimum three levels).
- Treatment Levels:
 1. Primary: Rainwater harvesting, downpipe filters, permeable paving.
 2. Secondary: Permeable paving, swales.
 3. Tertiary: Swales, attenuation structures.

SuDS Treatment Train Components

Based on the guidance in CIRIA C753, the following analysis has been undertaken with the relative mitigation indices for the proposed levels of treatment taken from CIRIA C753 Tables 26.3 (surface waters) and Table 26.4. The resultant assessment is summarised within the Table below.

Element	Pollution Hazard Indices			
	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Residential Parking*	Low	0.5	0.4	0.4
	Pollution Mitigation Indices			
Detention Basin		0.7	0.7	0.5
Total		0.7	0.7	0.5
Sufficiency		Sufficient	Sufficient	Sufficient

*Given the varied land use across the runoff area, the land use type with the highest pollution index is selected for the assessment.



Regarding pollutants from groundwater, the attenuation pond and swale are to be lined with an impermeable membrane to prevent groundwater seepage. This will also ensure the capacity remains as designed within the hydraulic model for surface water runoff.

The complete pack of Arch Associates Limited drawings submitted in support of this application to discharge Condition 17 can be found in Appendix 2. The surface water network hydraulic modelling calculations can be found in Appendix 3.

2.3 Pre-Commencement Condition 18

Development shall not commence until full details of the maintenance and management of the surface water drainage system is set out in a site-specific maintenance manual and submitted to and approved in writing, by the Local Planning Authority. The manual is to include details of financial management and arrangements for the replacement of major components at the end of the manufacturer's recommended design life. Upon completed construction of the surface water drainage system, the owner or management company shall strictly adhere to and implement the recommendations contained within the manual.

RESPONSE:

The maintenance regime of the surface water drainage system and its components is outlined within the accompanying Arch Associates Limited SuDS Maintenance Manual, which can be found in Appendix 4 of this report. Maintenance of the adopted portions of drainage will be the responsibility of the adopting authority. Maintenance of all remaining private drainage will be the responsibility of the management company.



2.4 Pre-Commencement Condition 21

The development shall not proceed until details have been submitted to and approved in writing by the Local Planning Authority for any proposals: to discharge flows to watercourses; or for the culverting, diversion, infilling or obstruction of any watercourse on or adjacent to the site. Any discharge to a watercourse must be at a rate no greater than the pre-development run-off values and in accordance with current policies. No construction is permitted, which will restrict current and future landowners from undertaking their riparian maintenance responsibilities in respect to any watercourse or culvert on or adjacent to the site.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies W DM1, W DM2 and W DM3 of the Arun Local Plan. And to ensure that the duties and responsibilities, as required under the Land Drainage Act 1991, and amended by the Flood and Water Management Act 2010, can be fulfilled without additional impediment following the development completion. It is considered necessary for this to be a pre-commencement condition to protect existing watercourses prior to the construction commencing.

RESPONSE:

As set out in the aforementioned drainage strategy for planning, the proposed surface water runoff discharges into an existing but reprofiled ditch that feeds into the Lidsey Rife. Refer to Appendix 2 for complete set of drainage and levels drawings. All details relating to the discharge and reprofiling, as well as works required to protect the watercourse during the works, are being submitted to the local authority under and application for Ordinary Watercourse Consent.



As the site topography naturally falls towards the watercourse, surface water run-off during construction will naturally flow overland before entering the watercourse. The swale and basin will likely be formed at the beginning of the site phase, which then become active as soon as the surface water connections are made and will act as the necessary water treatment in the finalised condition.

Refer to the main contractors CEMP for further details on environmental protection measure relating to the watercourse.