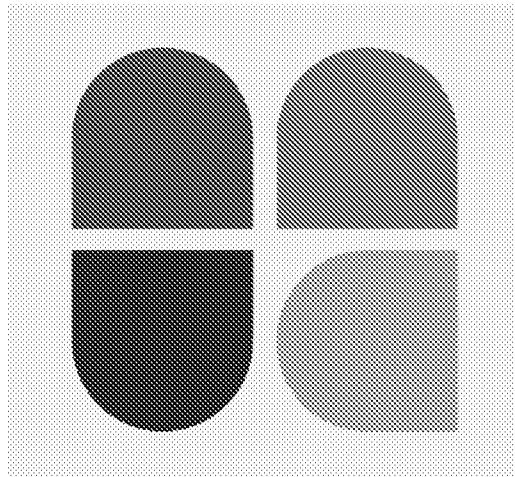




BRIGHT PLAN CIVILS

LAND AT SUMMER LANE, PAGHAM

PROPOSED RESIDENTIAL DEVELOPMENT

Drainage Strategy Report

Prepared on Behalf of

Foreman Homes

D1915/DS2.1

27 July 2023

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CONTENTS

1	INTRODUCTION	5
1.1	Background.....	5
1.2	Site Location and Description	5
1.3	Ground Conditions	5
1.4	Existing Drainage	6
2	FLOOD RISK	8
2.1	Previous Flood Risk Assessment	8
2.2	Flood Maps and Modelling	8
3	PROPOSED DEVELOPMENT	9
3.1	Description of Development	9
4	PROPOSED DRAINAGE STRATEGY	10
4.1	Surface Water	10
4.2	Treatment	11
4.3	Foul Water Drainage	12
4.4	Climate Change.....	13
4.5	Urban Creep	13
5	MAINTENANCE.....	14
5.1	Proposed Maintenance Regime	14
6	OFFSITE IMPACTS	18
7	SUMMARY.....	19

DRAWINGS

200-203	Proposed Levels & Contours
300-303	Proposed FW & SW Drainage Strategy
304	Proposed FW Off-Site Discharge
400-401	Proposed Impermeable Areas
402-403	Catchment Overview

APPENDICES

Appendix A	Geotechnical Investigation
Appendix B	Existing Drainage Findings
Appendix C	Flood Risk Assessment Extracts
Appendix D	Approved Planning Extracts
Appendix E	Surface Water Hydraulic Modelling Results
Appendix F	Foul Network Models

1 INTRODUCTION

1.1 Background

- 1.1.1 Bright Plan Civils is instructed by Foreman Homes to prepare a Drainage Strategy Report and preliminary design to support a planning application for a Proposed Residential Development at the Land at Summer Lane, Pagham.
- 1.1.2 This report has been undertaken in accordance with National Planning Policy Framework (NPPF) and The Planning Practice Guidance on the use of SuDS for achieving sustainable development.
- 1.1.3 The proposed development will involve the construction of 350 residential homes - as demonstrated within the preliminary site layout, contained within **Appendix A** of this report.
- 1.1.4 In preparing this report, Bright Plan Civils has referred to the following documents and information:
- Environment Agency Flood Maps for Planning
 - Long Term Flood Risk Information; Flood Risk Maps
 - Southern Water and Local Authority Drainage Records
 - British Geological Survey & Records
- 1.1.5 This document has been prepared to propose assess drainage constraints and propose a drainage strategy that is appropriate for the design life of the development, without causing offsite impacts from runoff in a design event.
- 1.1.6 This report has been prepared for the benefit of the named Client only.

1.2 Site Location and Description

- 1.2.1 The existing site consists of agricultural fields, at the western edge of the residential area of Pagham, within the District of Arun in West Sussex. It is bordered by Summer Lane to the north, Pagham Road to the east, and fields to the west.
- 1.2.2 A topographical survey of the site has been undertaken and provided by the client, which shows that the site falls from the northern central area of the site at approximately 5.50mAOD, westwards and eastwards to approximately 4.50mAOD, and southerly to approximately 3.50mAOD.
- 1.2.3 The previous site is drained by overland runoff to the existing boundary watercourse network, which flows away from the site, to the Pagham Rife 550 metres to the north, and the Pagham Lagoon 550 metres to the south.
- 1.2.4 The existing site has a total area of approximately 173,097m² (17.31 Ha.), with approximately 10.5 Ha. to the southern parcel and 6.7 Ha. to the northern parcel.

1.3 Ground Conditions

- 1.3.1 Ashdown SI undertook ground investigation in winter 2018-2019, as well as groundwater monitoring in winter 2019-2020.
- 1.3.2 The site investigation found River Terrace Deposits underlying the topsoil to a depth between 3.3-4.0

metres below ground level (mbgl). This is underlain by London Clay Formation Bedrock.

- 1.3.3 Soakage testing was not undertaken due to instability encountered within the soils and groundwater recorded at depths of between 0.2mbgl and 2.8mbgl.
- 1.3.4 Ashdown SI undertook ground investigation in winter 2018-2019, as well as groundwater monitoring in winter 2019-2020. Groundwater standing water levels were recorded at between 0.2mbgl and 1.7mbgl. Maximum groundwater levels at each groundwater monitoring location were recorded between 0.2-0.8mbgl, meaning that infiltration SuDS are unviable across the site.
- 1.3.5 It is noted however that groundwater levels were recorded in proximity to the boundary watercourses, which may have locally affected groundwater levels. Site level raising will also ensure that tanked SuDS features are above maximum groundwater levels wherever possible.
- 1.3.6 Extracts of the groundwater monitoring by Ashdown SI are included within **Appendix A**.

1.4 Existing Drainage

- 1.4.1 The local Water Authority is Southern Water, who provide sewerage services within the area. Public sewer records have been obtained from Southern Water, as contained within this report in **Appendix B**.

1.4.2 Surface Water:

- The Southern Water public sewer records (**Appendix B**) show public surface water sewers draining the existing residential areas to the east of the site. In addition, it would appear that a 675mm surface water sewer adjacent the Haven Church Farm Holiday Village (south of the site) drains the boundary watercourse network to the Pagham Lagoon.
- The existing site appears to be drained by overland runoff to the existing boundary watercourse network, which flows away from the site, to the Pagham Rife 550 metres to the north, and the Pagham Lagoon 550 metres to the south.
- The nearest surface water feature is the Pagham Lagoon, 550 metres south of the site.
- The nearest watercourse appears is the Pagham River (Main River) 550m north of the site, which runs west and south before becoming tidal approximately 650 metres southwest of the site as part of Pagham Harbour.
- The previous approved Drainage Strategy (Ridge & Partners) found Greenfield runoff rate to be 3.5l/s/Ha, giving catchment flow rates of 14.2l/s for the south site and 9.3l/s for the north site.
- Updated runoff rates from Wallingford show the Qbar rate for the proposed catchment areas as 12.5l/s for the south site and 7.8l/s for the north site, so design rates have been reduced.

1.4.3 Foul Water:

- The Southern Water public sewer records (**Appendix B**) show a 375mm rising main running northwest across the site.

- At present, there is no confirmation of the foul water connection from the site, and investigation is required to establish connection arrangements of the proposed development to the existing public foul sewer.
- The approved drainage strategy proposed a foul pumping station between the northern and southern parcels of the site, to connect to Southern Water Manhole 0302 at the junction between Pagham Road and Church Way. The existing manhole has a recorded cover level of 5.10mAOD and invert level of 4.49mAOD.

1.4.4 Highway Drainage:

- Pagham Road is drained by highway gullies to the boundary watercourse along the eastern side of the site. Summer Lane is drained by over-the-edge runoff to the existing watercourse network.

2 FLOOD RISK

2.1 Previous Flood Risk Assessment

- 2.1.1 The approved Flood Risk Assessment (FRA) report by MJA Consulting in 2016 assessed the risk of flooding to the site from all sources.
- 2.1.2 The site was found to be within Flood Zone 1, other than at the southern boundary where the site is within Tidal Flood Zone 3 (Undefended).
- 2.1.3 The site was assessed to be 'not at risk' from all other sources of flooding.
- 2.1.4 It was indicated within the FRA report that although the site is not considered to be at risk of groundwater flooding with no previous incidents found, the existing site is liable to becoming waterlogged due to soil impermeability, surface water ponding and ground saturation, and potential sheet runoff. This is to be taken into account for the levels and drainage design to ensure sufficient drainage infrastructure and site falls to ensure drainage of the site area without exceedance.
- 2.1.5 The FRA report confirmed an undefended tidal flood level for year 2115 of 4.70mAOD within Pagham Harbour, however did not consider the site to be at significant risk of tidal breaches due to the distance from the tidally affected area.
- 2.1.6 The FRA considered the surface water flood risk at the site to be 'very low', with surface water flow paths associated with 'in-bank' flows within the existing drainage ditches.
- 2.1.7 The FRA proposed raised property slab levels to be a minimum of 150mm above the surrounding development finished ground level, and 300mm above the 2115 tidal level.
- 2.1.8 The FRA also confirmed that correspondence with the Environment Agency confirmed the floodplain was tidal and not fluvial, and therefore flood compensation works would not be required at the site.

2.2 Flood Maps and Modelling

- 2.2.1 The initial assessment of flood risk by Bright Plan Civils in November 2020 summarised the FRA findings, and indicated the proposed development areas as confirmed within Flood Zone 1, other than a small area along the southern border of the southern parcel as within Flood Zone 2.
- 2.2.2 The Product 4 response from the Environment Agency confirmed the site as within Flood Zone 1, and the aforementioned area within Flood Zone 2.
- 2.2.3 There are flood defences in the form of a beach and an embankment. The assets are maintained by Environment Agency. Flood modelling information has been provided, based off the flood modelling named 'River Arun to East Head Coastal Modelling (2D)' which was completed by JBA Consulting in 2016.
- 2.2.4 The flood modelling data indicated the southern boundary of the southern parcel at risk of flooding in a 0.5% defended tidal event in year 2115, as well as a 0.5% undefended tidal event in year 2070 and 2115.
- 2.2.5 The flood levels provided by the Environment Agency corresponding to the flood modelling indicate maximum flood levels of 4.25mAOD for a defended flood event (0.5% AEP, year 2115) and 4.74mAOD (0.5% AEP, year 2115).

3 PROPOSED DEVELOPMENT

3.1 Description of Development

- 3.1.1 The proposed development will involve the construction of 350 residential homes, with associated landscaping and hardstanding.
- 3.1.2 The type of development falls within the 'More Vulnerable' classification (Flood Risk and Coastal Change Table 2) and is appropriate in Flood Zone 1 and Flood Zone 2 (Flood Risk and Coastal Change Table 3).
- 3.1.3 The proposed development will increase the hardstanding area of the site; however SuDS measures will be used where possible in order to prevent any increase in the rate of run-off generated by the site.
- 3.1.4 The post-development impermeable/hardstanding area has been determined to be 4.05 Ha. for the southern parcel and 2.76 Ha for the northern parcel, including pond areas.
- 3.1.5 The use of Sustainable Drainage System (SuDS) methods and techniques (where site conditions and constraints allow) within the bounds of the site (whilst adhering to the SuDS hierarchy as stated within Building Regulations (Part H) and The CIRIA SuDS Manual C753) will be used to control the surface water run-off rate to the equivalent of the existing site.
- 3.1.6 The specific Surface Water and Foul Water drainage proposals are detailed in **Section 4** of this report.

4 PROPOSED DRAINAGE STRATEGY

4.1 Surface Water

4.1.1 The SUDS manual and Building Regulations set out a hierarchy of drainage methods to ensure that developments maximise the use of sustainable drainage techniques. The hierarchy favours infiltration methods of disposal over other methods such as watercourse and sewers, as detailed below;

- i. Utilise infiltration techniques
- ii. Attenuate rainwater in ponds or open water features for gradual release
- iii. Attenuate rainwater by storing in tanks or sealed water features for gradual release
- iv. Discharge rainwater direct to a watercourse
- v. Discharge rainwater to a surface water sewer/drain
- vi. Discharge rainwater to a combined sewer

SUDS Technique	Suitable	Comments
Living Roof	No	Not consistent with architects proposals.
Basins and Ponds (such as Wetlands, Balancing Ponds, Detention Basins, Retention Ponds)	Yes	Viable, with areas of open land at the site low points adjacent to the existing ditches available.
Filter strips and swales	Yes	Viable, with areas of open land at the site low points adjacent to the existing ditches available.
Infiltration Devices - Soakaways - Infiltration trenches and basins	No	Underlying ground conditions are indicated impermeable with high groundwater levels, preventing infiltration methods.
Permeable surfaces and filter drains (such as gravelled areas and porous block paving)	Yes	As above, however permeable surfaces provide a source of treatment and shallow attenuation.
Tanked systems (such as oversized pipes or cellular tanks)	Yes	No initial constraints, would provide considerable attenuation volume.

- 4.1.2 It is not considered that infiltration measures are viable, given underlying Clay bedrock and high groundwater levels across the site.
- 4.1.3 It is proposed that surface water runoff is captured and attenuated within permeable block pavement (min 400-550mm subbase thickness, see modelling calculations for site variance), geocellular underground storage, and open ponds across the site, adjacent to the existing boundary watercourses.
- 4.1.4 For the southern site, permeable paving will have a total plan area of 7,586m², providing approximately 1,000m³ storage (based on a sub-base depth of between 400-550mm and 30% voids). Geocellular storage will provide a total attenuation volume of 804m³, based on tank depths of 0.4-0.8m and 95% voids. The open storage ponds total an area of 4,724m³, with 1:3 sloped sides and depths of 0.85-1.525m.
- 4.1.5 Updated Greenfield runoff calculations for the southern parcel show the Greenfield runoff rate for the proposed catchment to be 12.5l/s.
- 4.1.6 Further to the above, run-off from the southern parcel of development will be discharged to the adjacent watercourse network at a rate of 12.5l/s, ensuring no increase in runoff rate from the catchment.
- 4.1.7 For the northern site, permeable paving will have a total plan area of 7,246m², providing approximately 1000m³ storage (based on a sub-base depth of between 450-500mm and 30% voids). Geocellular storage will provide a total attenuation volume of 551m³, based on tank depths of 0.4-0.8m and 95% voids. The open storage ponds have a total area of 3,121m², with 1:3 sloped sides and depths of between 1.30 and 1.50m.
- 4.1.8 Updated Greenfield runoff calculations for the northern parcel show the Greenfield runoff rate for the proposed catchment to be 7.8l/s.
- 4.1.9 Further to the above, run-off from the southern parcel of development will be discharged to the adjacent watercourse network at a rate of 7.5l/s, ensuring no increase in runoff rate from the catchment.
- 4.1.10 The proposed surface water drainage strategy is detailed in **Drawings 300-303**.
- 4.1.11 It is proposed that all captured runoff from the proposed hardstanding areas is captured up to the 100-year event including 40% climate change without exceedance.
- 4.1.12 The strategy above will ensure that there is no increase in the rate of run-off leaving the site, therefore no increase in the risk of flooding from this source.

4.2 Treatment

- 4.2.1 The use of permeable paving will ensure that run-off from the site receives a level of treatment required by the SuDS manual, with hydrocarbons being filtered by the aggregate and geotextile layers.
- 4.2.2 The use of open ponds will provide a two stage treatment to these flows, as well as providing treatment for all runoff and exceedance flows from the development area.
- 4.2.3 In accordance with the CIRIA SuDS Manual C753 regarding methods for managing pollution risks, the risk posed by surface water runoff to the receiving environment depends on the pollution hazard at the site (the source), SuDS treatment techniques (the pathway), and the sensitivity of the environment (the receptor).
- 4.2.4 The simple index approach considers whether SuDS techniques are appropriate for the site. The states

that for SuDS components to deliver adequate treatment, the total pollution mitigation index for each contaminant type should equal or exceed the pollution hazard index.

4.2.5 The SuDS Manual outlines three categories of pollution hazard identification, which vary depending on proposed land use, which are as follows:

- Total Suspended Solids (TSS).
- Metals (M).
- Hydrocarbons (H).

4.2.6 In accordance with C753 Table 26.2, the proposed land uses at the site are categorised as follows:

- Residential Roofs and non-trafficked areas – very low/TSS=0.2/M=0.2/H=0.05
- Driveways and low traffic roads – low/TSS=0.5/M=0.4/H=0.4

4.2.7 In accordance with C753 Table 26.3, the values of SuDS Mitigation indices are provided for the proposed SuDS features:

- Permeable Pavement – TSS=0.7/M=0.6/H=0.7
- Pond – TSS=0.7/M=0.7/H=0.5

4.2.8 As the pollution hazard index does not exceed any pollution mitigation index for any contaminant type, the proposed SuDS methods will provide sufficient treatment for the proposed development.

4.3 Foul Water Drainage

4.3.1 The approved Drainage Strategy for the development is for a foul pumping station to discharge runoff to the existing foul sewer at Southern Water Manhole 0302 at the junction between Pagham Road and Church Way. The existing manhole has a recorded cover level of 5.10mAOD and invert level of 4.49mAOD

4.3.2 The proposed foul arrangement is detailed in Drawings 300-303 for the sites, and Drawing 304 for the off-site discharge arrangement.

4.3.3 Post development, there will be an estimated increase in peak foul water flows to 17.50l/s (based on Water UK's Design & Construction Guidance).

4.3.4 Agreement will be needed with Southern Water as to the connection arrangement and timeline to ensure the existing foul sewer network can support the proposed development.

4.3.5 Infrastructure and connection charges (OFWAT Charging Rules) place the onus on the sewerage undertaker to reinforce their network should there no longer be sufficient capacity to serve the new development. Funding for this is provided by revised charging arrangements for infrastructure and connection charges for each dwelling constructed comprising a Network Reinforcement Charge and

Site-Specific Charges. The revised charging arrangement (funded by the developer) covers alterations to the Existing Sewer Network and the sewerage undertaker remains responsible for the cost of reinforcing their Strategic Assets. The developer is responsible for connecting the development to the public sewer network.

- 4.3.6 The existing foul rising main (375mm diameter) required further investigation, with any works in the vicinity subject to agreement with the local water authority, Southern Water.

4.4 Climate Change

- 4.4.1 In May 2022 the Environment Agency updates the latest climate change allowances (available online at <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>), which supports the NPPF in making an allowance for climate change within flood risk assessment. The allowances provide predictions of anticipated change for peak river flow by river basin district and peak rainfall intensity.
- 4.4.2 The table below shows the anticipated changes in extreme rainfall intensity. For flood risk assessments, both the central and upper end allowances should be assessed to understand the range of impact.

Arun and Western Streams Management Catchment peak rainfall allowances		
1% annual exceedance rainfall event	Up to 2050s	Up to 2070s
Upper End	45%	45%
Central	20%	25%

- 4.4.3 Based on the latest allowances, an increase of 45% should be applied to peak rainfall to this development for a 1 in 100 year storm event.
- 4.4.4 The proposed drainage strategy has considered the impact of a 45% increase in rainfall.
- 4.4.5 The impacts of climate change on the tidal flood levels have been accounted for within the tidal modelling provided by the Environment Agency. The proposed levels design has considered the existing tidal flood risk, and the future defended and residual (undefended) flood risk as a result of climate change, for the lifetime of the development.

4.5 Urban Creep

- 4.5.1 The impact of up to 10% urban creep has been considered in accordance with the West Sussex LLFA Policy for the Management of Surface Water.
- 4.5.2 Minor exceedance of the proposed drainage system in an extreme scenario with an urban creep allowance would result in ponding in design low points of the site within the proposed road network, however this would not impact the safety, use, access or egress of the site and would be drained by the proposed drainage network.

5 MAINTENANCE

5.1 Proposed Maintenance Regime

- 5.1.1 Maintenance is required to ensure the long-term operational performance of the proposed surface water drainage system.
- 5.1.2 The drainage system has been designed to minimise maintenance requirements; however a number of key tasks will need to be undertaken so that the system remains in optimal condition. These operations are summarised in the table below, along with the required frequency of works.

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Inlet, Outfall and Existing Watercourses	Inspection, vegetation clearance and additional clearing/cleansing of potential outfall blockages	At least once a year
	Desilting	Year 1, Year 3, then every 5 years
Permeable Paving	Surface sweeping to reduce silt and debris accumulation.	Every 8 to 12 weeks
	Removal / management of weed growth	At least once a year
	Silt removal from permeable surfaces, possibly involving raking out of joints, redressing, removal and remedial works.	As required / to be specified by manufacturer
Diffuser units & catch pits, gully sumps and drains	Inspection and additional cleansing as required.	Annual
	Desilting	Year 1, Year 3, then every 5 years
Pipework	Jetting to clear blockages	As required
Flow Control Chamber	Inspection and cleansing	Annual
	Desilting	Year 1, Year 3, then every 5 years
	Additional product-specific requirements	As required / to be specified by manufacturer
Storage Ponds	See table 2.	

Maintenance Table 1

- 5.1.3 The responsibility of maintenance regime will be determined by the Developer, by agreed appointment.

Permeable Paving / Diffuser Units

- 5.1.4 The areas of permeable paving are designed to allow infiltration of surface water run-off through the joints in the block paving surface course and into the subbase below. The water is then collected and discharged into the positive drainage system.
- 5.1.5 As part of the permeable paving system, diffuser units are used to discharge surface water run-off from roof areas into the sub-base, as well as forming links between areas of permeable paving. These diffuser units are small heavy-duty cellular units which allow more efficient discharge of surface water into the sub-base base of the permeable paved areas.

5.1.6 The areas of permeable paving will require additional maintenance measures to ensure they operate as designed. Failure in carrying out this maintenance, could increase the risk of flooding. The additional measures are as follow:

- Periodic surface sweeping to reduce silt and debris accumulation. The permeable surfaces should be swept at least every 8 to 12 weeks with additional sweeps in the autumn to clear fallen leaves
- Removal / management of weed growth, as required. Typically, once or twice a year for regularly used areas
- Periodic silt removal from permeable surfaces as described by the manufacturer. If any areas are showing signs of ponding, they shall be dealt with by raking out the joints and redressing. The entire surface shall be monitored and when there are signs of excessive siltation resulting in poor drainage over the whole area, the blocks shall be taken up and a replacement of bedding layer and geotextile shall be undertaken
- Redressing of joints on the block paving as required
- Catchpits upstream of diffuser units, should be emptied and inspected on the same regime as all catchpits specified previously set out in this document

HydroBrake (Flow Control Chamber)

5.1.7 The HydroBrake flow control system is self-activating, relying on upstream hydraulic head to generate an air-filled vortex within the centre of the casing. Once the vortex is initiated water drains down through a small opening in the back of the device at the designed restricted flow rate.

5.1.8 The flow control device has two measures encase of emergency (i.e. blockage). The first is a door situated in the front of the unit itself, this can be operated from the surface by a release cable situated just under the manhole cover which closes under its own weight and does not require any mechanism to operate. The second is a high-level overflow pipe situated with the flow control manhole. Both measures allow the system to drain down freely, until the blockage can be cleared.

5.1.9 The HydroBrake flow control chamber will require additional maintenance measures to ensure it operates as designed. The additional measures are as follows:

- The sump within the flow control chamber should be monitored for build-up of silts and should be emptied, as a minimum, on the same regime as specified for catchpits previously within this document
- The drain down door located on the centre of the unit will require inspection and opening annually, to ensure it is operating as intended

Proposed Storage Ponds

5.1.10 The proposed attenuation ponds will require a maintenance regime to ensure they remain operational, safe, and optimal in terms of storage capacity, flow and treatment.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass in and around pond	Monthly (during growing season) or as required
	Manage other vegetation and remove nuisance plants	Monthly at start and then as required
	Inspect inlets and outlets for blockages and clear as required	Monthly
	Inspect banks for damage and repair as required	Monthly
	Inspect inlets and pond surface for silt accumulation. Establish silt removal frequency	Monthly for first year then annually or as required
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlet	Annually or as required
Occasional Maintenance	Reseed areas of poor growth	As required
	Trim overhanging trees and remove cuttings	Every 2 years
Remedial Actions	Repair erosion or other damage by reseeding or returfing	As required
	Repair inlets and outlets	As required
	Relevel uneven surfaces and reinstate design levels	As required

Maintenance Table 2

Remedial/Repair Actions

- 5.1.11 Significant storm events may cause considerable damage to SuDS and their associated components. As such, it may be necessary to inspect and carry out essential recovery works to return the feature to full working order.
- 5.1.12 Resetting of uneven blocks by lifting block area, removing bedding material and relaying to match original design are all actions which may need to be undertaken.

Accidental Spillages

- 5.1.13 It is not envisaged that any materials are to be stored onsite once the development has been completed, which could cause major spills and potential pollution issues within the drainage system. If this situation alters in the future consultation with a specialist will be required in order to confirm if any upgrades to the existing system are necessary.
- 5.1.14 Minor spillages of fuels and oils will be dealt with by the permeable paving and deep trapped gullies, by bio-degrading and collecting the hydrocarbons respectively.

Future Alterations to the Development

- 5.1.15 Any future alterations to the permeable paving should be confirmed by a specialist. Where possible any future services are to avoid being located through areas of permeable paving. If new services are required to run through areas of permeable paving, services should be installed below the depth of permeable paving with the permeable system reinstalled above.

6 OFFSITE IMPACTS

- 6.1.1 The proposed development will not result in any increase in runoff from the site, and therefore will not cause an increase in flood risk offsite.
- 6.1.2 Post development foul water flows will contribute an increase to the sewer network compared to the previous use – it is expected that the foul sewer flow will be 17.50/s.
- 6.1.3 The effects of climate change have been considered in the design of the proposed surface water drainage system, to ensure there is no off-site impact.

7 SUMMARY

- 7.1.1 The existing site consists of agricultural fields, at the western edge of the residential area of Pagham, within the District of Arun in West Sussex. It is bordered by Summer Lane to the north, Pagham Road to the east, and fields to the west.
- 7.1.2 A topographical survey of the site has been undertaken and provided by the client, which shows that the site falls from the northern central area of the site at approximately 5.50mAOD, westwards and eastwards to approximately 4.50mAOD, and southerly to approximately 3.50mAOD.
- 7.1.3 The previous site is drained by overland runoff to the existing boundary watercourse network, which flows away from the site, to the Pagham Rife 550 metres to the north, and the Pagham Lagoon 550 metres to the south.
- 7.1.4 The existing site has a total area of approximately 173,097m² (17.31 Ha.), with approximately 10.5 Ha. to the southern parcel and 6.7 Ha. to the northern parcel.
- 7.1.5 The site is within Flood Zone 1, with the southern boundary within Flood Zone 2. Flood modelling indicates maximum flood levels of 4.25mAOD for a defended flood event (0.5% AEP, year 2115) and 4.74mAOD (0.5% AEP, year 2115) at the site, and the approved Flood Risk Assessment report recommends finished floor levels to be a minimum of 150mm above the surrounding development finished ground level, and 300mm above the 2115 tidal level.
- 7.1.6 The proposed surface water drainage design has been produced using Causeway Live Design. This has ensured that that level design accurately assesses existing levels, limit level raising and level differences from existing across the site. This also ensures that proposed catchment areas and proposed levels are accurately reflected within the modelled drainage design.
- 7.1.7 Post-development surface water run-off will be managed through sustainable drainage measures, with the installation of permeable paving, geocellular storage and open ponds with off-site discharge to the existing watercourse network at existing greenfield rates for the catchment areas, without causing surface water flooding on site.
- 7.1.8 The wastewater from the proposed development will discharge to the public foul sewer network, with a foul pumping station connecting to the existing public sewer manhole at the Pagham Road and Church Way junction.
- 7.1.9 The foul rising main (Public Sewer) will require further investigation.
- 7.1.10 The completion of the development will not increase flood risk on or off the site.
- 7.1.11 In conclusion, this development is suitable with regards to flood risk and surface water drainage.

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