BP CIVILS

LAND SOUTH OF HOOK LANE, ALDINGBOURNE

PROPOSED RESIDENTIAL DEVELOPMENT

Flood Risk Assessment, Drainage Strategy &
Lidsey Drainage Impact Assessment

Prepared on Behalf of

Paul Wilson Homewood

D2308/FRA1.0

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1 INTRODUCTION

1.1 Background

1.1.1 BP Civils is instructed by Paul Wilson Homewood to prepare a flood risk assessment and drainage strategy to accompany a planning application for 2 no. residential plots at Land South of Hook Lane, Aldingbourne.

1.1.2 This report has been undertaken in accordance with National Planning Policy Framework (NPPF) and The Planning Practice Guidance Flood Risk and Coastal Change in addition to the use of SuDS for achieving sustainable development.

1.1.3 The proposed development will involve the approval of 2 no. residential plots, with access and parking as designed and plot massing to be confirmed, as demonstrated by the development proposals contained within **Appendix A**.

1.1.4 In preparing this report, BP Civils has referred to the following documents and information:

- Environment Agency Flood Maps for Planning
- Environment Agency Product 4 Data
- Long Term Flood Risk Maps for Rivers or the Sea, Surface Water and Reservoirs
- British Geological Survey (BGS) Information and Records
- Ashdown Site Invesitgation Site-Specific Intrusive Works
- Arun District Council Strategic Flood Risk Assessment
- West Sussex County Council Strategic Flood Risk Assessment
- Southern Water Public Sewer Records

1.1.5 This report has been prepared to assess flood risk at the site, and to advise of any mitigation which may be required in order to ensure that the proposed development remains safe for its design life in accordance with current design standards.

1.1.6 This report has been prepared for the benefit of the named client only.

2 SITE LOCATION AND DESCRIPTION

2.1.1 The proposed site is located on the south of Hook Lane, Aldingbourne, on land adjacent to and west of 1 Elm Cottage. The National Grid Reference for the site is SU 93123 04810.

2.1.2 The site measures c. 776m^2 (0.08Ha) and is located in a residential setting, bound to the east and west by existing residential properties.

2.1.3 A topographical survey has been undertaken by Inco Surveys, dated March 2024. The survey is contained within **Appendix B**.

2.1.4 The topographical survey identifies levels in the range of 10.2 to 9.30mAOD, falling from the southeast to northwest.

2.1.5 Drawing **PL002** has been prepared to demonstrate the general trends in topography at the site.

3 GROUND CONDITIONS

3.1.1 Review of British Geological Survey (BGS) mapping shows the site with a Bedrock geology of London Clay (**Figure 1**) and Raised Beach Deposits (**Figure 2**).

Figure 1. Bedrock Geology (BGS Viewer)

Figure 2. Superficial Deposits Geology (BGS Viewer)

3.1.2 In addition, a British Geological Survey (BGS) borehole log in the vicity of the site (SU90NW72) found ground strata of:

- Brickearth (up to 2.2mbgl) – silt, clay
- Head Gravel (2.2m to 3.0mbgl) – clayey gravel
- Raised Beach Deposits (3.0 to 6.0mbgl) – clayey sand, sandy gravel
- London Clay (6.0mbgl +)

Figure 3. BGS Borehole Index

3.1.3 A copy of the BGS borehole records reviewed can be found within **Appendix C**.

3.1.4 Groundwater monitoring undertaken October 2024 to March 2025 found peak groundwater levels of 0.07mbgl (metres below ground level). There was no flooding or groundwater emergence observed throughout the weekly observation period however, despite high groundwater levels and observed flooding in the fields to the south.

3.1.5 The Arun District Council Strategic Flood Risk Assessment provides mapping identifying Susceptibility to Groundwater Flooding. This mapping identifies the site as being in an area which is susceptible to groundwater flooding. Extracts from the Arun District Council Strategic Flood Risk Assessment can be found within **Appendix D**.

3.1.6 Mapping managed by MAGIC (magic.defra.gov.uk) provides geographic information concerning the natural environment from across government. This mapping tool has been referred to in order to confirm aquifer designations, as well as whether the site is located within any groundwater source protection zones, groundwater vulnerability zones, drinking water protected areas or drinking water safeguard zones.

3.1.7 The site falls within an area designated an 'Unproductive' bedrock aquifer, as well as a 'Secondary A' superficial drift aquifer.

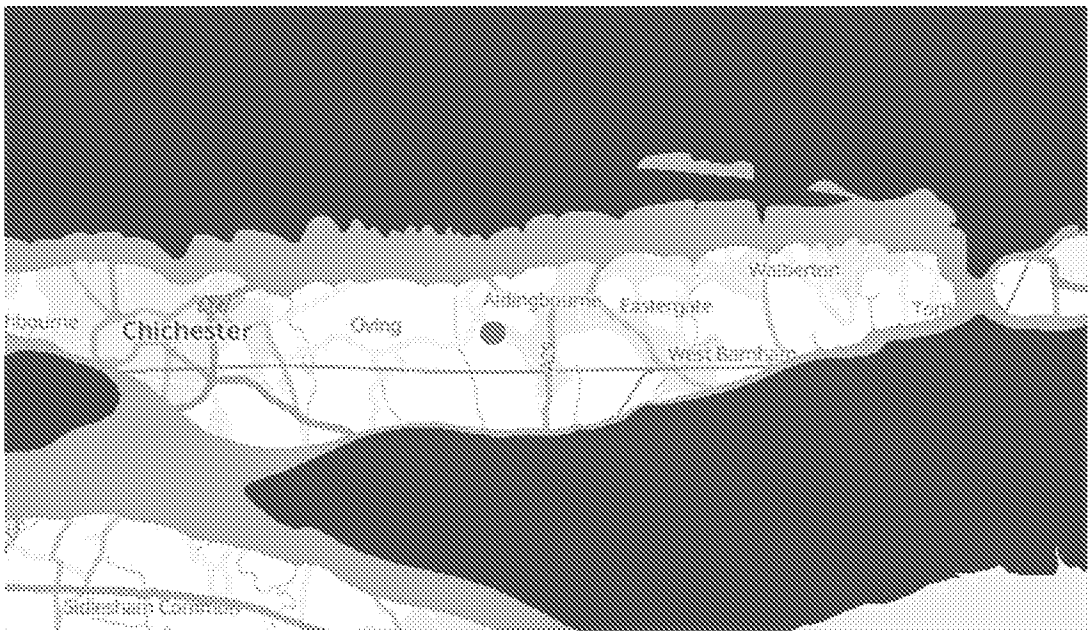

Figure 4. Bedrock Aquifer Designation Map (DEFRA)

Figure 5. Superficial Drift Aquifer Designation Map (DEFRA)

3.1.8 The site in falls within a 'Medium - Low' groundwater vulnerability zone.

Figure 6. Groundwater Vulnerability Map (DEFRA)

3.1.9 The site is not indicated as within or in the vicinity of any drinking water protected areas, or any Source Protection Zones.

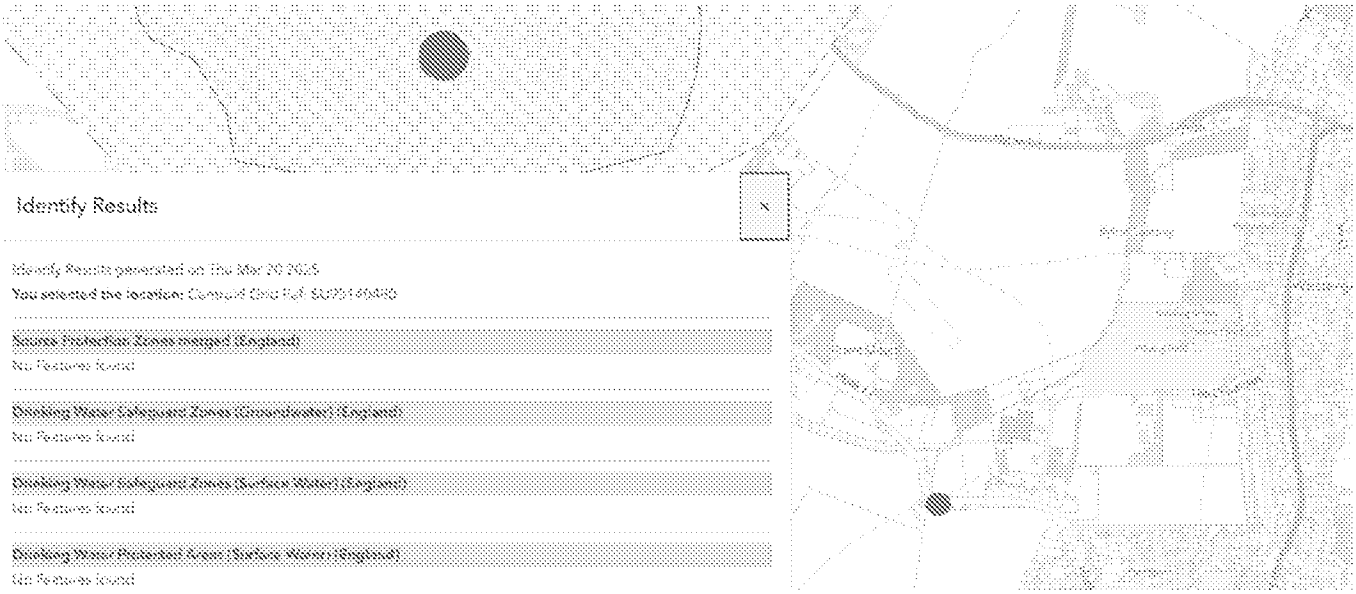

Figure 7. Drinking Water Protected Areas and Drinking Water Safeguard Zone & Source Protection Zone Map (DEFRA)

4 EXISTING DRAINAGE

4.1 Surface Water

4.1.1 Existing runoff from the garden is presumed to follow the natural topography of the site, broadly falling towards the site's northwestern boundary, with ditches to the north opposite Hook Lane from the site and to the west of the site, opposite the vehicular access to the site and neighbouring properties.

4.1.2 Public sewer records from Southern Water (**Appendix E**) do not show any surface water sewers in the site area.

4.1.3 A greenfield run-off rate has been established in relation to the site area (0.08 Ha.) using HR Wallingford's 'Greenfield run-off rate estimation' tool, included in **Appendix F**. The rate has been established as 0.16l/s.

4.2 Foul Water

4.2.1 Southern Water's public sewer records identify a 150mm dia. public foul water sewer to the east of the site, on Hook Lane, with the nearest manhole (2801) around 100 metres from the site. This indicates a cover level of 10.25m AOD and an invert level of 8.39m AOD.

4.2.2 There is no existing connection from the site to the foul sewer.

4.3 Highway Drainage

4.3.1 Highway drainage from Hook Lane would appear to discharge to the watercourse via overland runoff.

5 PROBABILITY

5.1 Sources of Information

5.1.1 The NPPF requires that all sources of flooding are considered being tidal, fluvial, pluvial, groundwater, sewers and man made reservoirs/canals.

5.1.2 The likelihood of the site flooding has been established by reviewing the following information:

- Environment Agency Flood Maps for Planning
- Long-Term Flood Risk Map for Rivers or the Sea
- Long-Term Flood Risk Map for Surface Water
- Long-Term Flood Risk Map for Reservoirs
- Consultation with the Environment Agency (Product 4)
- Arun District Council Strategic Flood Risk Assessment
- Arun District Council Local Flood Risk Management Strategy

5.2 Flood Maps and Modelling

5.2.1 The Environment Agency's (EA) revised Product 4 Response provided flood maps for rivers, sea and surface water as seen in **Appendix G**. The Product 4 response confirmed the site is in Flood Zone 1 and thus has a less than 0.1% (1 in 1,000) chance of flooding in any given year from rivers or the sea). Therefore, the likelihood of flooding from rivers and sea in this area is estimated as 'very low'.

5.2.2 The EA advised that the site is site is approximately 70 metres away from Flood Zone 2, we they are therefore unable to provide data from detailed fluvial or tidal models relevant to the site.

5.2.3 The EA also confirmed in their response the site is is at very low risk of surface water flooding. The accompanying surface water flood map shows an area of low surface water flood risk south of the site, however site observations show that there is not a flow path into the site from this area of surface water flood risk, and the site did not experience any flooding during winter 2024-25 even when the area in question south of the site did have shallow standing water at the surface.

5.2.4 The Product 4 response made no mention of groundwater or artificial flood risk to the site.

5.2.5 The Environment Agency's on-line Flood Maps for Planning (rivers and sea) show that the site is located within Flood Zone 1. The flood zones are also confirmed by information and mapping obtained from The Environment Agency following consultation, which is consistent within other flood risk mapping reviewed.

5.2.6 The Long-Term Flood Risk Map for Rivers or the Sea indicates that the site is at very low risk of flooding, both at present and in the future.

5.2.7

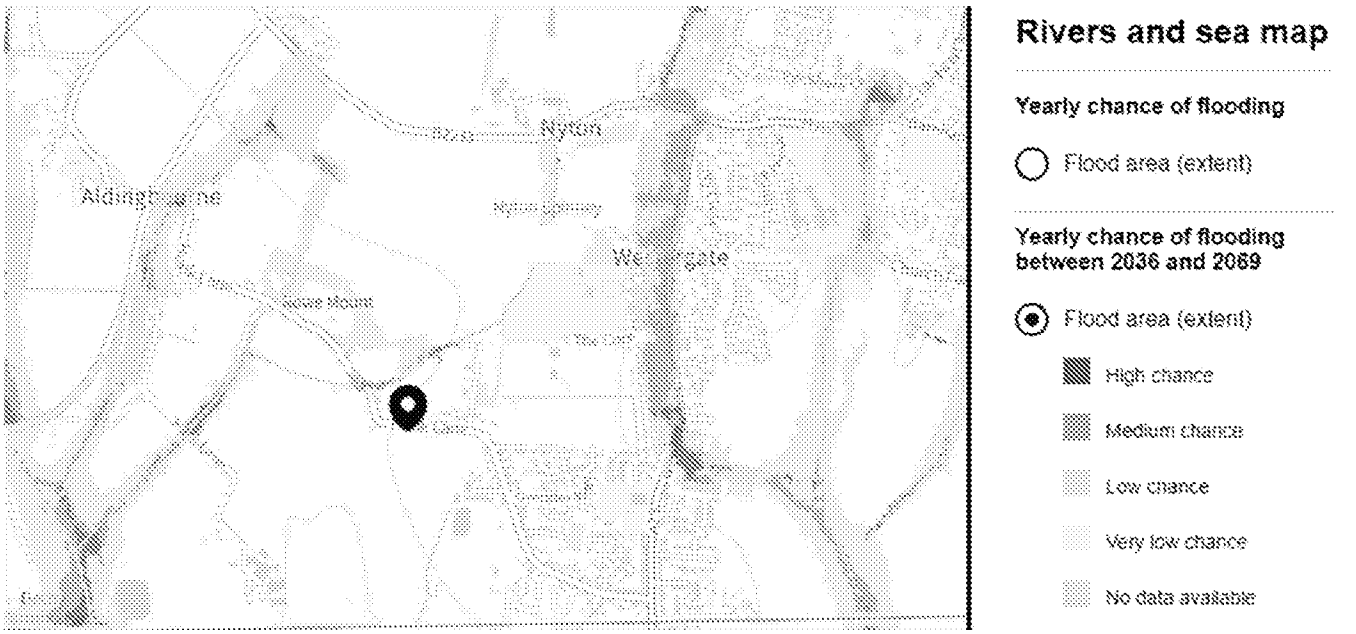

Figure 9. Long-Term Flood Risk Map – Rivers or the Sea (Gov.uk)

5.2.8 The Long-Term Flood Risk Map for Surface Water indicates the site is at a very low risk of surface water flooding both now and in the future.

Figure 10. Long-Term Flood Risk Map – Surface Water (Gov.uk)

5.2.9 The Long-Term Flood Risk response also confirms that "Flooding from groundwater is unlikely in this area" and "Flooding from reservoirs is unlikely in this area".

5.3 Strategic Flood Risk Assessment

5.3.1 Arun District Council has a published Strategic Flood Risk Assessment, dated May 2019.

5.3.2 The site is not specifically referenced within the Strategic Flood Risk Assessment.

5.3.3 Mapping contained within the Strategic Flood Risk Assessment is consistent with that as reviewed from other sources, such as Flood Maps for Planning, Long-Term Flood Risk Maps and BGS information and records.

- SFRA Appendix D shows the site outside of existing and future flood zones.
- SFRA Appendix F shows the site area in an area at (>75%) susceptibility to groundwater flooding.
- SFRA Appendix G shows the site is not within Flood Warning Areas
- SFRA Appendix H shows no historic flood records in proximity to the site.

5.4 Historic Flooding

5.4.1 No records of historic flooding have been identified which have directly impacted upon the site, from the sources of information assessed in the undertaking of this flood risk assessment.

5.5 Summary of Flood Risk

5.5.1 The potential sources of flooding are:

Source of Flooding	Level of Risk
Rivers and Coastal	**Very Low** Online flood mapping and the Product 4 response show that the site is at very low (0.1% AEP) flood risk, now and in the future.
Surface Water	**Very Low** Online flood mapping and the Product 4 response show that the site is at very low surface water flood risk, now and in the future
Groundwater	**Low** Mapping contained within the Arun District Council Strategic Flood Risk Assessment does identify the site as being susceptible to groundwater flooding, and the winter groundwater monitoring did find shallow groundwater at the site. However, both the EA Product 4 Response and the Long-Term flood risk mapping indicated that from groundwater is unlikely in this area, and despite the shallow groundwater flooding at surface level was not observed at the site and is not expected. Shallow groundwater consideration is required for the detailed design of any civils infrastructure proposals.
Sewers	**Low** No instances of historic sewer flooding have been identified following review of the sources of information assessed in the undertaking of this flood risk assessment. Should it become clear that there are localised drainage capacity concerns, mitigation will be applied in the form of runoff restrictions and/or non-return valves to protect the site and existing surrounding infrastructure.
Artificial Sources	**None** The site is not shown to be at risk of flooding due to artificial sources.

5.5.2 The surface water drainage system for the proposed new dwelling shall be designed in order to provide capacity up to the design event and provide consideration of potential exceedance routes, so as to not increase the risk of surface water flooding on or off the site.

6 PROPOSED DEVELOPMENT

6.1 Description of Development

6.1.1 The proposed development will involve 2 no. residential plots, as demonstrated by the development proposals contained within **Appendix A**.

6.1.2 The site is located within existing and future Flood Zone 1.

6.1.3 The type of development proposed falls within the "More Vulnerable" flood risk vulnerability classification (Annex 3: Flood risk vulnerability classification, NPPF) and is appropriate in Flood Zone 1 (Flood Risk and Coastal Change Table 2).

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	**Highly Vulnerable**	**More Vulnerable**	**Less Vulnerable**	**Water Compatible**
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	Exception Test Required	✓	✓	✓
Flood Zone 3a†	Exception Test Required †	✗	Exception Test Required	✓	✓
Flood Zone 3b*	Exceptions Test Required *	✗	✗	✗	✓*

✓ = Development is appropriate
✗ = Development should not be permitted

6.1.4 The proposed development will result in the introduction of new impermeable areas at the site; however permeable pavement will be utilised to capture, treat and slow runoff from the site and will discharge the surface water at a controlled rate of 2.0l/s.

6.1.5 The post-development impermeable/hardstanding area has been determined to be 363m^2 (0.036Ha). This is a conservative estimate based on likely plot layout, and a drainage design will be considered that has capacity for an increased hardstanding area.

6.1.6 The specific surface water and foul water drainage proposals are detailed in **Section 8** of this report.

7 SEQUENTIAL AND EXCEPTION TESTS

7.1 Sequential Test

7.1.1 Paragraph 024 of Flood Risk and Coastal Change confirms that 'The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account. Where it is not possible to locate development in low-risk areas, the Sequential Test should go on to compare reasonably available sites; within medium risk areas; and then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas.'

7.1.2 The site is located within Flood Zone 1, with no identified increased risk of flooding from rivers, sea or surface water in the future. Therefore, it is deemed that the Sequential Test is passed.

7.2 Exception Test

7.2.1 Paragraph 031 of Flood Risk and Coastal Change states 'The Exception Test requires two additional elements to be satisfied (as set out in paragraph 164 of the National Planning Policy Framework) before allowing development to be located or permitted in situations where suitable sites at lower risk of flooding are not available following application of the sequential test. It should be demonstrated that; development that has to be in a flood risk area will provide wider sustainability benefits to the community that outweigh flood risk; and the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.'

7.2.2 As confirmed in 7.1, the proposed development will be located in Flood Zone 1, and therefore, passes the Sequential Test.

7.2.3 As detailed in 6.1.3, "More Vulnerable" development is appropriate in Flood Zone 1, and application of the exception test is not required.

8 PROPOSED DRAINAGE STRATEGY

8.1 Surface Water

8.1.1 The SUDS Manual (CIRIA C753) and Building Regulations, Approved Document H (Drainage and Waste Disposal) 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	Yes	Viable, but dependent on architects proposals
Basins and Ponds (such as Wetlands, Balancing Ponds, Detention Basins, Retention Ponds)	No	Peak groundwater levels are very shallow and this would therefore not allow use of open SuDS features due to viability of designing against flotation.
Filter strips and swales	No	Peak groundwater levels are very shallow and this would therefore not allow use of open SuDS features due to viability of designing against flotation.
Infiltration Devices - Soakaways - Infiltration trenches and basins	No	Site specific investigation found failed soakage tests and very shallow groundwater
Permeable surfaces and filter drains (such as gravelled areas and porous block paving	Yes	These could be utilised as tanked features for surface water runoff capture and treatment, but would need design against flotation.
Tanked systems (such as oversized pipes or cellular tanks)	Yes	No, due to the depth restrictions of the proposed discharge to the adjacent watercourse.

8.1.2 The proposed development will utilise 184m^2 of tanked permeable pavement within the parking area to capture, treat and slow runoff from the driveway. This will attenuate runoff within a subbase of up to 450mm (which could be less dependent on final proposed impermeable areas), then discharge into the adjacent watercourse at a controlled rate of 2.0l/s, which is the minimum discharge rate to a water body in accordance with local surface water drainage policy.

8.1.3 The proposed surface water drainage arrangement is shown on drawing **PL005**.

8.2 Foul Water Drainage

8.2.1 It is proposed that the dwellings will discharge to the public foul sewer utilising a private foul pumping station, from within the site. A rising main will be installed within the public highway, and an adoptable break chamber and gravity sewer would allow connections from neighbouring properties in the future also. A S106 connection application would be required.

8.2.2 Should a connection to the foul sewer not be viable, with the existing public foul sewer being over 100 metres from the site, a private foul treatment plant could be installed within the site in place of the pumping station, with a discharge of treated effluent to the watercourse – utilising the same connection as the controlled surface water discharge.

8.2.3 The proposed foul drainage arrangement is shown on drawing **PL005**.

8.3 Lidsey Drainage Impact Assessment: Lidsey Wastewater Treatment Works Catchment Area

8.3.1 The proposal is for 2 no. new properties connected to the foul sewer network as a result of the development, subject to confirmation that the development could be connected to the public sewer network as opposed to use of a private foul treatment plant.

8.3.2 **Appendix D** demonstrates that the site is not located within the Lidsey Wastewater Treatment Works Catchment Area. The site is however shown within the vicinity of the catchment area, and the foul public sewer to the east of the development may drain to the Lidsey WTW, which has presumably triggered the request for a Lidsey Drainage Impact Assessment within the planning validation requirements.

8.3.3 In accordance with the planning validation requirements, consideration of the Lidsey SWMP has been made below:

- The site is not in proximity to any Local Flood Risk Zones, with the closest area LFRZ_018, which is approximately 750 metres from the site (see Figure i – Local Flood Risk Zones)
- The site is in proximity to the Lidsey SWS Wastewater Catchment Area
- The site is not within any identified existing or future flood risk to surface water, rivers or sea.
- The site is not shown to have any identified flood risk or flood hazard within the Lidsey SWMP that requires further attention in addition to the flood risk assessment in **Section 5**.
- The development proposals not introduce surface water to the drainage network, with surface water drainage will be discharged to the watercourse at a controlled rate.

8.3.4 The Lidsey SWMP intervention options (*Table 8-1 of the Lidsey SWMP, included in* ***Appendix D***) that have been included as part of this flood risk assessment and drainage strategy are as follows:

i. Option 3; Source; permeable paving

ii. Optio 19; pathway; separation of foul and surface water

iii. Option 21; receptor, improve resistance to flooding (by use of construction resilience measures to prevent damage to the buildings in up to 300mm of flooding, should the site be subject to shallow surface water or groundwater flooding in an extreme, unconsidered scenario)

8.4 Climate Change

8.4.1 The Product 4 repsonse includes an assessment of the impact of climate change to tidal flood risk for the lifetime of the development.

8.4.2 The 'Peak Rainfall Allowances Map' shows anticipated changes in peak rainfall intensity. Based on the latest allowances, for the 3.3% annual exceedance rainfall event, an increase of 40% should be applied to peak rainfall in relation to the proposed development. For the 1% annual exceedance rainfall event, an increase of 45% should be applied to peak rainfall in relation to the proposed development.

8.5 Urban Creep

8.5.1 A 10% urban creep allowance has been included in accordance with the West Sussex LLFA Surface Water Management Policy.

8.6 Surface Water Treatment

8.6.1 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.

8.6.2 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).

8.6.3 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.

8.6.4 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).

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

- Individual property driveways – low/TSS=0.5/M=0.4/H=0.4

8.6.6 In accordance with C753 Table 26.3, the values of SuDS Mitigation indices are provided for permeable paving:

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

8.6.7 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.

9 RESIDUAL RISK AND MITIGATION

9.1 Residual Risk

9.1.1 The following residual risks have been identified in relation to the proposed development:

i. Extreme rainfall events that exceed the design criteria used for the drainage system causing surface water flooding.

ii. Blockage/failure of the proposed drainage system causing flooding to or from the site.

iii. Groundwater flooding to the site caused by groundwater levels exceeding the ground surface level.

iv. Surface water flooding to the site.

9.2 Mitigation

9.2.1 Consideration has been taken to the residual risks stated in Section 9.1, and the following mitigation measures are proposed:

i. The surface water drainage system proposed has been designed to accommodate a 1-in-100-year storm event, inclusive of an allowance for the potential impacts of climate change (45%). Should an event occur which exceeds this design criteria, exceedance flows would follow the natural topography of the site, which falls northwest from the site to the neighbouring ditches.

ii. Maintenance plays a vital role in managing and reducing flood risk, and the owner of the proposed dwellings and/or a management company will be required to undertake maintenance in relation to the proposed drainage system to prevent future flooding caused by blockages or failure, as detailed in **Section 11**.

iii. The area is considered to be susceptible to groundwater flooding, as is indicated by mapping contained within the Arun District Council Strategic Flood Risk Assessment, and site specific groundwater investigation found peak winter groundwater levels close to the surface. Should groundwater flooding occur, flood water would again follow the topography of the site towards the ditches to the northwest. It is also noted that there is a ditch south of the site which presumably captures overland runoff from the land to the south of the site. Proposed construction measures to limit impact to the development should there be any emergence of groundwater at the site:

- Flood resistance measures; which look to keep water out of the building when flood depths are up to 300mm. This includes tanking and waterproof construction, as well as the use of impermeable building materials to at least 300mm. This will look to keep water out of the building in a extreme flood scenario, and would result in minimal damage or deformation.

iv. There is an identified risk of surface water flooding in the neighbouring site. Surface water flooding is not expected to occur at the site, however should this occur the surface water would be captured by the development drainage, follow overland flow paths to the watercourses to the northwest, and the buildings would be protected from any shallow surface water by the measures outlined above.

10 FLOOD RISK MANAGEMENT

10.1 Safe Access and Egress

10.1.1 The existing access route is located within Flood Zone 1, elevated above existing and future flood levels, and at 'Very Low' risk of surface water flooding.

10.1.2 There is therefore no access or egress concerns with respect to the development.

10.2 Flood Warning

10.2.1 The Arun District Council Strategic Flood Risk Assessment indicates that the site is not within the flood warning areas, and the proposed development and access are outside areas of existing and future flooding so are not considered vulnerable to flooding. A flood warning provision is therefore not required.

11 MAINTENANCE

11.1 Responsibility for Maintenance

11.1.1 The proposed drainage system will not be offered for adoption therefore the responsibility for the ongoing maintenance of drainage network will fall to the end user(s).

11.2 General Maintenance

11.2.1 Maintenance plays an important part in the long-term performance of a surface water drainage system and will be required to ensure that it remains fully operational.

11.2.2 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 effective. These operations are summarised in the table below, along with the required frequency of works. The frequencies given below are a minimum, and in order to establish an effective regime, the level of siltation in each of the components should be monitored in the early stages to inform the long term management and maintenance strategy.

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Catch pits, gully sumps and drains, flap valves	Inspection and additional cleansing as required.	Every 6 months
	Desilting	Year 1, Year 3, then every 5 years
Pipework	Jetting to clear blockages	As required

11.2.3 The responsibility of any drainage infrastructure supporting a single dwelling/plot will be the sole responsibility of the owner/occupier of the associated dwelling.

11.3 Permeable Pavements & Diffuser Units

11.3.1 The areas of permeable paving are designed to allow surface water run-off to percolate through the joints in the block paving surface course and into the sub-base below. This provides a volume of attenuated storage (as it is proposed that the permeable paving will be tanked in view of site constraints) before collected run-off is discharged to the receiving outfall(s).

11.3.2 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.

11.3.3 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 follows:

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Permeable Pavement	Surface sweeping to reduce silt and debris accumulation.	Every 8 to 12 weeks
	Replace broken slabs/blocks	As required
	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	Inspection and additional cleansing as required.	Annual
	Desilting.	Year 1, Year 3, then every 5 years

11.4 Remedial/Repair Actions

11.4.1 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.

11.5 Accidental Spillages

11.5.1 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.

11.5.2 In the event of a serious spillage, either by volume or of unknown or toxic compounds, the spillage should be isolated with the use of soil, turf or fabric with outlet pipes from chambers downstream of the spillage blocked with a bung/bungs.

11.5.3 Minor spillages of fuels and oils from motor vehicles will be dealt with by the permeable pavement, by collecting and biodegrading the hydrocarbons.

11.5.4 In the event of localised private spillage, the responsibility lies with the private resident to clear up any spillage before it enters the drainage network. The primary method of dealing with any spillage of hydrocarbons should be using sand (or equivalent) to soak up the leak and mitigate pollution migration. Any contaminated waste shall be disposed of by a licensed contractor.

11.5.5 The Environment Agency should then be contacted immediately on their incident hotline; **0800 807060**.

11.6 Construction Phasing

11.6.1 The main contractor is responsible for dealing with all occurrences of groundwater during the construction period.

11.6.2 The main contractor is responsible for dealing with all occurrences of surface water run-off and siltation during the construction period.

11.6.3 The proposed drainage systems will need a complete maintenance check upon completion of the development and any required remedial tasks undertaken.

11.7 Future Alterations to the Development

11.7.1 Any future alterations to the drainage installations should be confirmed by a specialist.

12 OFFSITE IMPACTS

12.1.1 Post-development surface water flows will be discharged to the watercourse at a controlled rate of 2.0l/s, at a maximum, up to the design event.

12.1.2 Foul water generated by the proposed development will discharge to the public foul sewer via a private foul pumping station.

12.1.3 The effects of climate change have been considered in the design of the proposed site flood mitigation and surface water drainage, with an allowance made for up to 45%.

13 SUMMARY

13.1.1 The proposed development will involve the approval of 2 no. residential plots and associated parking and access, as demonstrated by the development proposals contained within **Appendix A**.

13.1.2 The topographical survey identifies levels in the range of 9.3 to 10.2m AOD, falling broadly from the southeast to the northwest. The site does not currently have formal existing drainage.

13.1.3 Site specific geotechnical investigation found peak groundwater levels were at 0.07mbgl.

13.1.4 The site is shown to be located in Flood Zone 1, and is positioned outside of existing and future flood zones and surface water flood risk areas. The properties will be constructed with additional resistance measures up to 300mm to protect against any emergence of groundwater or surface water.

13.1.5 The proposed driveway will be permeable pavement to provide treatment and slow runoff from the surface, and will discharge to the ditch to the northwest of the site at a controlled rate of 2.0l/s. Calculations demonstrate the proposed system will discharge runoff up to the design event without exceedance.

13.1.6 The completion of the development will not increase flood risk on or off the site.

13.1.7 In conclusion, this development is suitable with regards to flood risk and surface water drainage.

DRAWINGS

A3

NOTES

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Rev.	Date	Amendments
-	-	Original Issue

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Drawing Status
FOR INFORMATION
NOT FOR CONSTRUCTION

Client
Paul Wilson Homewood

Project
Hook Lane, Aldingbourne

Drawing Title
Flood Zone Assessment

Scale at A3	Date	Drawn By	Checked By	Project No.
1:1500	Sept 24	JHL	DJL	D2308

Drawing Code	Drawing No.	Rev.
000-BPC-WD-ZZ-D-C	PL001	-

-EXISTING SITE KEY-

- Site Boundary (776 m^2 - 0.08 Ha.)
- Existing Spot Level
- Existing Contour (Primary)
- Existing Contour (Secondary)
- Overland Flow Arrow
- Site Low Point

Contours are only as accurate as the initial land survey information. Contours are approximate only and spot levels may vary slightly on site.

NOTES

A3

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Drawing Status
FOR INFORMATION
NOT FOR CONSTRUCTION

Client
Paul Wilson Homewood

Project
Hook Lane, Aldingbourne

Drawing Title
Topographic Survey with Contours

Scale at A3	Date	Drawn By	Checked By	Project No.
1:500	Sept 24	JHL	DJL	D2308

Drawing Code	Drawing No.	Rev.
000-BPC-WD-ZZ-D-C	PL002	-

-EXISTING IMPERMEABLE AREAS-

Area - 66m² (0.007Ha)

-PROPOSED IMPERMEABLE AREAS-

Estimated Area - 363m² (0.036Ha)

PLOT 1

PLOT 2

NOTES

A3

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Drawing Status: FOR INFORMATION
NOT FOR CONSTRUCTION

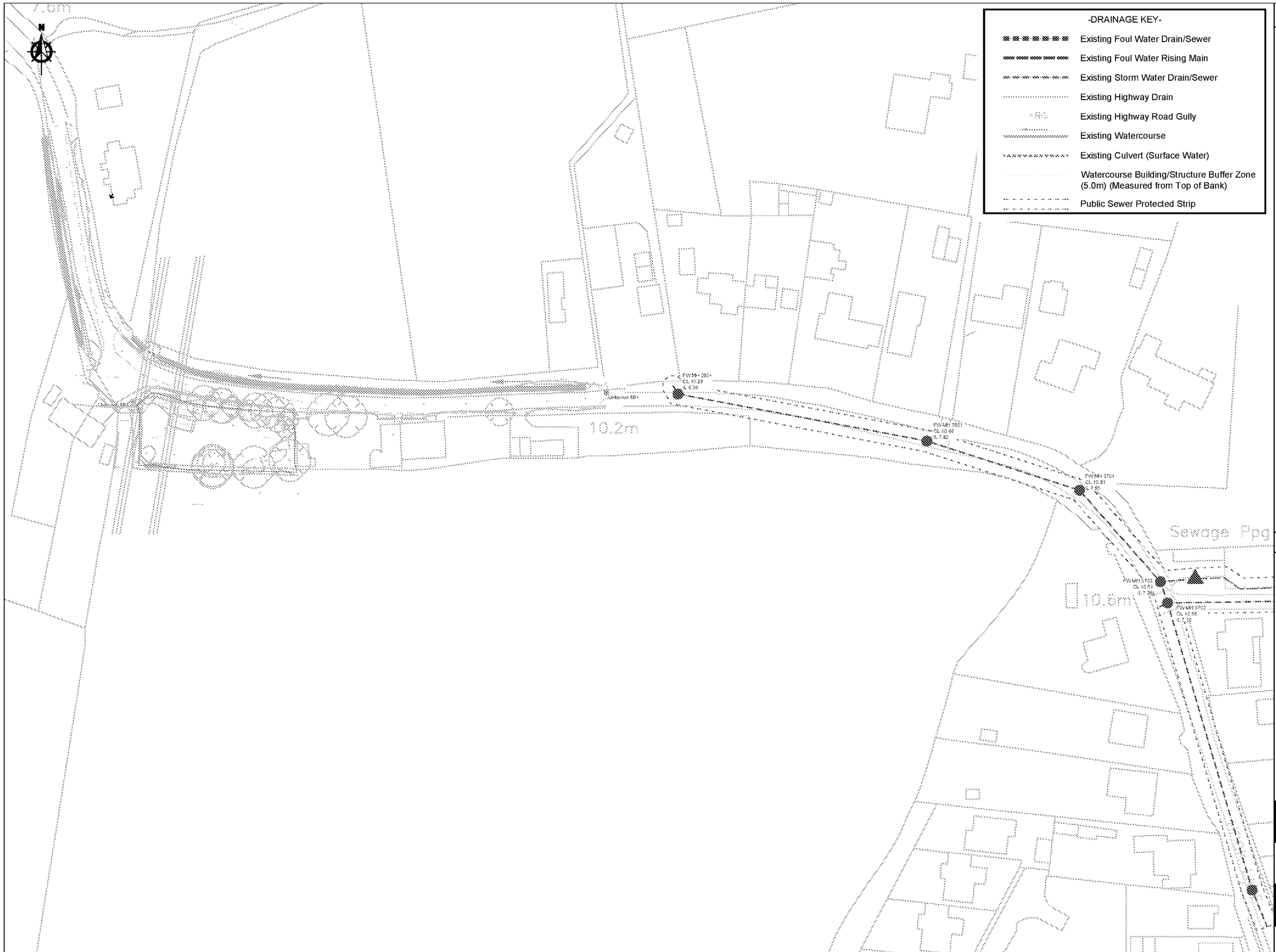
Client: Paul Wilson Homewood

Project: Hook Lane, Aldingbourne

Drawing Title: Impermeable Areas Assessment

Scale at A3	Date	Drawn By	Checked By	Project No.
1:250	Sept 24	JHL	DJL	D2308

Drawing Code	Drawing No.	Rev.
000-BPC-WD-ZZ-D-C	PL003	-



-DRAINAGE KEY-

- Existing Foul Water Drain/Sewer
- Existing Foul Water Rising Main
- Existing Storm Water Drain/Sewer
- Existing Highway Drain
- Existing Highway Road Gully
- Existing Watercourse
- Existing Culvert (Surface Water)
- Watercourse Building/Structure Buffer Zone (5.0m) (Measured from Top of Bank)
- Public Sewer Protected Strip

NOTES

A3

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Drawing Status
FOR INFORMATION
NOT FOR CONSTRUCTION

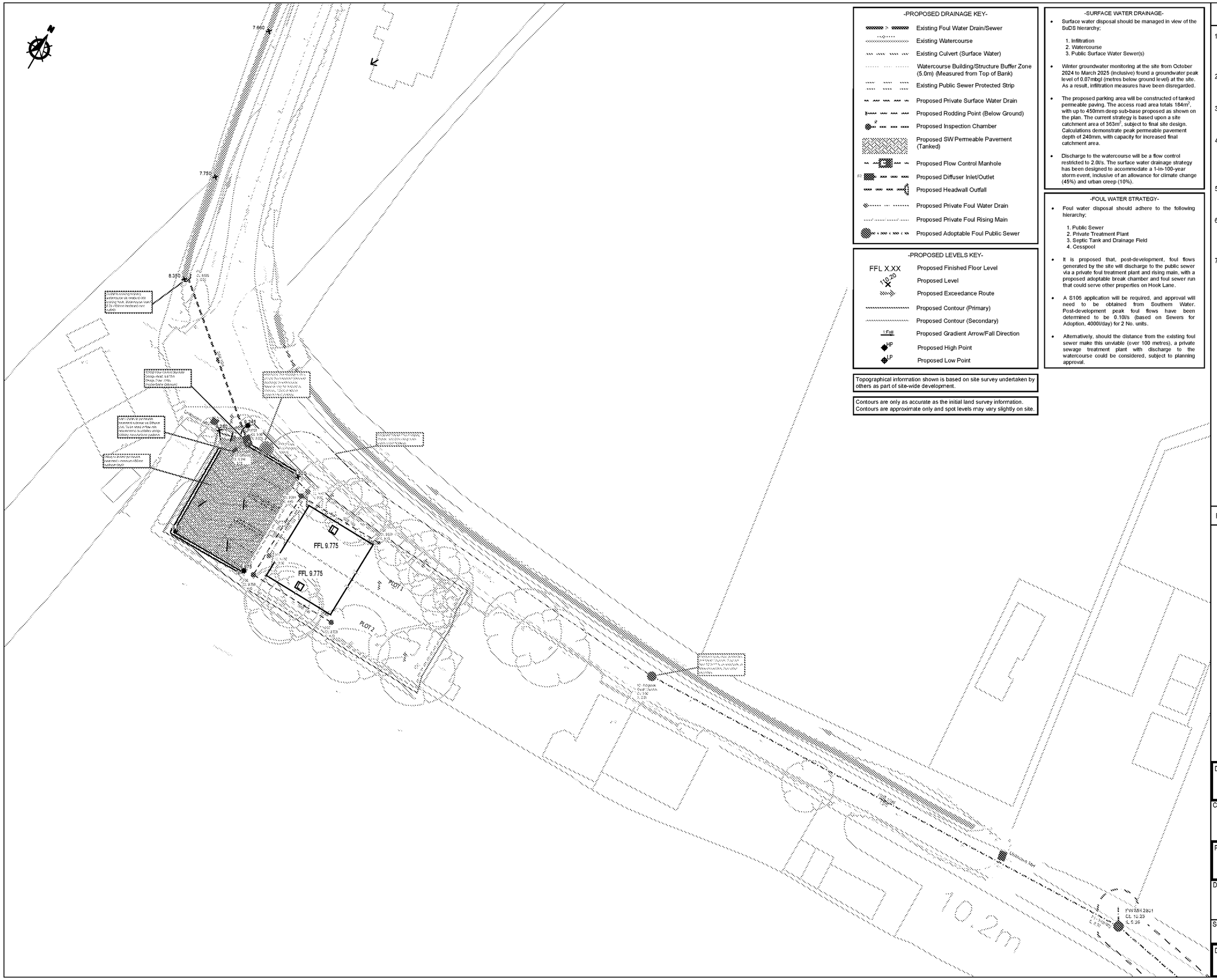
Client
Paul Wilson Homewood

Project
Hook Lane, Aldingbourne

Drawing Title
Existing Drainage

Scale at A3	Date	Drawn By	Checked By	Project No.
1:1000	Sept 24	JHL	DJL	D2308

Drawing Code	Drawing No.	Rev.
000-BPC-WD-ZZ-D-C	PL004	-



-PROPOSED DRAINAGE KEY-

- Existing Foul Water Drain/Sewer
- Existing Watercourse
- Existing Culvert (Surface Water)
- Watercourse Building/Structure Buffer Zone (5.0m) (Measured from Top of Bank)
- Existing Public Sewer Protected Strip
- Proposed Private Surface Water Drain
- Proposed Rodding Point (Below Ground)
- Proposed Inspection Chamber
- Proposed SW Permeable Pavement (Tanked)
- Proposed Flow Control Manhole
- Proposed Diffuser Inlet/Outlet
- Proposed Headwall Outfall
- Proposed Private Foul Water Drain
- Proposed Private Foul Rising Main
- Proposed Adoptable Foul Public Sewer

-PROPOSED LEVELS KEY-

- FFL X.XX — Proposed Finished Floor Level
- 10.20 — Proposed Level
- Proposed Exceedance Route
- Proposed Contour (Primary)
- Proposed Contour (Secondary)
- 1:Fall — Proposed Gradient Arrow/Fall Direction
- HP — Proposed High Point
- LP — Proposed Low Point

Topographical information shown is based on site survey undertaken by others as part of site-wide development.

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-SURFACE WATER DRAINAGE-

- Surface water disposal should be managed in view of the SuDS hierarchy;
  1. Infiltration
  2. Watercourse
  3. Public Surface Water Sewer(s)
- Winter groundwater monitoring at the site from October 2024 to March 2025 (inclusive) found a groundwater peak level of 0.07mbgl (metres below ground level) at the site. As a result, infiltration measures have been disregarded.
- The proposed parking area will be constructed of tanked permeable paving. The access road area totals 184m^2, with up to 450mm deep sub-base proposed as shown on the plan. The current strategy is based upon a site catchment area of 363m^2, subject to final site design. Calculations demonstrate peak permeable pavement depth of 240mm, with capacity for increased final catchment area.
- Discharge to the watercourse will be a flow control restricted to 2.0l/s. The surface water drainage strategy has been designed to accommodate a 1-in-100-year storm event, inclusive of an allowance for climate change (45%) and urban creep (10%).

-FOUL WATER STRATEGY-

- Foul water disposal should adhere to the following hierarchy;
  1. Public Sewer
  2. Private Treatment Plant
  3. Septic Tank and Drainage Field
  4. Cesspool
- It is proposed that, post-development, foul flows generated by the site will discharge to the public sewer via a private foul treatment plant and rising main, with a proposed adoptable break chamber and foul sewer run that could serve other properties on Hook Lane.
- A S106 application will be required, and approval will need to be obtained from Southern Water. Post-development peak foul flows have been determined to be 0.10l/s (based on Sewers for Adoption, 4000l/day) for 2 No. units.
- Alternatively, should the distance from the existing foul sewer make this unviable (over 100 metres), a private sewage treatment plant with discharge to the watercourse could be considered, subject to planning approval.

NOTES

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Drawing Status: FOR APPROVAL
NOT FOR CONSTRUCTION

Client: Paul Wilson Homewood

Project: Hook Lane, Aldingbourne

Drawing Title: Drainage Staretgy

Scale at A3	Date	Drawn By	Checked By	Project No.
1:500	Mar 25	JHL	DJL	D2308

Drawing Code	Drawing No.	Rev.
000-BPC-WD-ZZ-D-C	PL005	-

A3

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Drawing Status
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Client
Paul Wilson Homewood

Project
Hook Lane, Aldingbourne

Drawing Title
Surface Water Flooding Assessment

Scale at A3	Date	Drawn By	Checked By	Project No.
1:1500	Mar 25	JHL	DJL	D2308

Drawing Code	Drawing No.	Rev.
000-BPC-WD-ZZ-D-C	PL006	-