Land at Lottage Farm, Aldbourne

Drainage Strategy

For: Ashford Homes (South West) Ltd

Date: 27/04/2026

File Ref: 19901-TUM-RP-XXX-0001



Document Control

Issued by	Tumu Consulting Limited Castlemead, Lower Castle Street Bristol BS1 3AG enquiries@tumuconsulting.com www.tumuconsulting.com
Client	Ashford Homes (South West) Ltd
Project name	Land at Lottage Farm, Aldbourne
Report title	Drainage Strategy
Reference	19901-TUM-RP-XXX-0001
Issue date	27/04/2026

Revision History

Rev	Date	Details	Author	Checked by
A	27.04.26	First Issue	RJP	BJS

Tumu Consulting Limited has prepared this report in accordance with the instructions of the Ashford Homes (South West) Ltd for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

In the production of this report, Tumu Consulting Limited has relied upon information obtained and provided by others. The accuracy and completeness of this information cannot be guaranteed by Tumu Consulting Limited however all reasonable measures have been implemented to ensure that the data/information is accurate and that the observations made regarding the information are precise. Tumu Consulting Limited cannot be made liable for any omissions or errors or for any losses/consequential losses following decisions made based on this report's findings.

Executive Summary

Tumu Consulting Ltd has been appointed by Ashford Homes (South West) Ltd to undertake a Drainage Strategy to support a reserved matters application for the development of the Land at Lottage Farm, Aldbourne. It is proposed to construct 31 dwellings on the existing agricultural site, as well as associated infrastructure works.

The strategy follows the agreed principles within the outline drainage strategy by PFA Consulting Ltd, as well as the subsequent technical notes/addendums following extensive consultation with Wiltshire Council. The development was granted outline planning permission in September 2024 under reference 21/01004/OUT.

Infiltrating permeable paving is proposed to the site access road, which will remain private. Ground investigation at outline planning stage confirmed varied rates across the site, with each section of permeable paving based upon the rate of infiltration of the nearest test pit. Calculations confirm the surface water strategy can accommodate with 1% AEP event with a 40% climate change allowance.

Foul water is proposed to discharge through two new private foul drainage systems to the Thames Water network located within Lottage Road. The northern network will discharge to a new foul sewer within Lottage Road, which eventually discharges to the existing Thames Water foul sewer and will be offered for adoption under a S104 agreement.

Contents

1 Introduction 2

1.1 Proposed Development 2

1.2 Outline Drainage Strategy 2

2 Surface Water Drainage Strategy 3

2.1 Surface Water Drainage Hierarchy 3

2.2 Surface Water Drainage System/SuDS 4

2.3 Infiltration Rates 4

2.4 Calculations 5

2.5 Half Drain Time 5

2.6 Water Quality 6

2.7 Flood Exceedance Routing 6

2.8 Maintenance Arrangements 7

3 Foul Water Drainage Strategy 9

4 Conclusion 10

Appendix A – Decision Notice 11

Appendix B – Proposed Site Plan 12

Appendix C – Proposed Drainage Layout 13

Appendix D – Drainage Details and Sections 14

Appendix E – Areas Plan 15

Appendix F – Engineering Layout 16

Appendix G – Causeway Flow Calculations 17

Appendix H – Half Drain Calculations 18

Appendix I – Thames Watter Asset Map 19

Figures

Figure 2-1 Infiltration Testing *(Earth Environmental and Geotechnical Ltd ref. B1351/20)* 3
Figure 2-2 Groundwater Monitoring *(Earth Environmental and Geotechnical Ltd ref. B1691/21)* 3

Tables

Table 2-1 Infiltration Rates *(Earth Environmental and Geotechnical Ltd ref. B1351/20)* 5
Table 2-1 Infiltrating Sub Base Depth ..... **Error! Bookmark not defined.**
Table 2-3 Infiltrating Sub Base Depth 5
Table 2-2 Simple Index Approach *(CIRIA753 The SuDS Manual)* 6
Table 2-3 Operation and Maintenance Requirements for Chambers, Drains and Inspection Chamber 7
Table 2-4 Operation and Maintenance Requirements for Pervious Pavements 7

1 Introduction

Tumu Consulting Ltd has been appointed by Ashford Homes (South West) Ltd to undertake a Drainage Strategy to support a Reserved Matters submission for the development of 31 plots on a greenfield site located at the Land at Lottage Farm, Aldbourne.

The project was granted outline planning permission in September 2024 with reference 21/01004/OUT, with condition 11 and 12 relating to surface and foul water drainage, which this report aims to discharge. The two pre-commencement conditions have been attached in Appendix A of the report.

1.1 Proposed Development

It is proposed to develop an existing agricultural site with 31 new dwellings, as well as associated infrastructure including new access, drainage and earthworks. Refer to Appendix B for the Proposed Site Plan.

1.2 Outline Drainage Strategy

Extensive correspondence between PFA Consulting and Wiltshire Council regarding drainage proposals was undertaken in 2021. The reserved matters drainage design will follow the agreed upon principles set out in the approved documentation listed below:

- *Flood Risk Assessment Ref.H659 (January 2021) – PFA Consulting Ltd*
- *Addendum to Flood Risk Assessment (July 2021) – PFA Consulting Ltd*
- *Drainage Technical Note (November 2021) – PFA Consulting Ltd*
- *Email between Mark Skivington (PFA Consulting Ltd) and Katherine Adams (Atkins Realis on behalf of Wiltshire Council)*

The site proposes to discharge surface water through infiltrating permeable paving sub base of the access road to the site to the chalk underlying strata below. Flows from roofs of dwellings will be discharged into the sub-base by private drainage serving each plot. The access road, and subsequent permeable paving drainage is to remain private.

As established at outline stage of the project, the key principles for the drainage strategy are:

- Disposal route is through infiltration of the permeable paving sub base.
- SuDS to be utilised is permeable paving.
- Drainage ownership is to remain private.
- Design parameters include;
    - FEH Rainfall Data
    - Factor of Safety of 10
    - Half drain storage sized for the 3.3% AEP rainfall event.
    - 40% climate change allowance for the 1% AEP rainfall event.
    - 10% urban creep to roof area

2 Surface Water Drainage Strategy

The surface water drainage strategy has been developed in accordance with the relevant design standard and guidance, including but not limited to; CIRIA C753 The SuDS Manual, The NPPF, The Approved Documents: Building Regulations 2010 Part H: Drainage and Waste Disposal.

The surface water drainage strategy which gained outline planning permission was based upon the old non-technical standards for SuDS which have since been superseded by the national standards for SuDS in 2025. This strategy for reserved matters will build upon the agreed principles which were relevant at the time of writing the strategy, and gained outline planning permission under reference 21/01004/OUT.

Refer to Appendix C & D for the Proposed Drainage Strategy and Drainage Details and Sections.

2.1 Surface Water Drainage Hierarchy

The site proposes to discharge through infiltration, utilising permeable paving. During ground investigation undertaken in September 2020 by Earth Environmental and Geotechnical Ltd ref. B1351/20, at outline stage, it was found that the chalk band of strata underlays the site. The chalk ranged from a depth of 0.1 – 2.0mbgl, produced infiltration rates of between $2.48x10^{-6}$m/s – $3.16x10^{-4}$m/s during BRE365 compliant infiltration testing. Refer to the figure below for the recorded infiltration rates across two separate studies (C J Associates 2017, Earth Environmental and Geotechnical 2020)

Table 6 – Summary of In Situ Soakaway Test Results

Investigation	Location	Depth (m)	Soil Infiltration Rate (m/s)		
			Test 1	Test 2	Test 3
EEGSL 2020	SA1	1.70	1.41×10^{-4}	9.02×10^{-5}	6.48×10^{-5}
	SA2	1.90	1.05×10^{-5}	2.72×10^{-6}	2.48×10^{-6}
	SA3	1.90	1.33×10^{-5}	8.00×10^{-6}	1.03×10^{-5}
CJA 2017	TP1	2.00	7.77×10^{-5}	6.97×10^{-5}	4.67×10^{-5}
	TP2	2.40	1.62×10^{-4}	1.55×10^{-4}	1.32×10^{-4}
	TP3	2.30	3.11×10^{-4}	2.15×10^{-4}	1.67×10^{-4}
	TP4	2.30	3.16×10^{-4}	2.77×10^{-4}	1.62×10^{-4}

Figure 2-1 Infiltration Testing *(Earth Environmental and Geotechnical Ltd ref. B1351/20)*

Supplementary groundwater monitoring by was undertaken by Earth Environmental and Geotechnical Ltd ref. B1691/21 with six windowless sample boreholes installed to a depth of 3m. The monitoring was undertaken from February – April 2021. In WS3-WS5 no groundwater strikes were encountered. In WS1 & WS2, strikes were encountered in February and March. This equates to a maximum groundwater level of 131.65mAOD which has been used for design purposes within the Reserved Matters drainage design. Refer to the extract in the figure below for the groundwater strike depths during the monitoring. The outline strategy confirmed the lowest sub base invert level of 132.65mAOD.

Table 4 - Summary of Groundwater Levels

Location	Depth to Groundwater (mbgl)				
	22/02/2021	09/03/2021	22/03/2021	07/04/2021	20/04/2021
WS1	1.65	2.00	2.85	DRY	DRY
WS2	1.50	1.80	DRY	DRY	DRY
WS3	DRY	DRY	DRY	DRY	DRY
WS4	DRY	DRY	DRY	DRY	DRY
WS5	DRY	DRY	DRY	DRY	DRY

Figure 2-2 Groundwater Monitoring *(Earth Environmental and Geotechnical Ltd ref. B1691/21)*

2.2 Surface Water Drainage System/SuDS

As set out in the outline submission, the site would adopt an infiltrating (Type A) permeable paving solution for the discharge of surface water from the development. Permeable paving also provides water quality benefits, through filtration of pollutants within the sub base of the permeable paving. The report uses the simple index approach in section 2.6 to evaluate the mitigation the SuDS provide against anticipated pollutants associated with the developed land use. The proposed SuDS arrangements are shown on the Layout Drawings in Appendix C and sections in Appendix D. The proposed catchments are shown in Appendix E.

The site has been split into six permeable paving sections, increased from the 5 sections shown in the outline drainage strategy (C split into C and C1). These sections have been split due to the ease in modelling. To ensure that infiltration is feasible, and as noted in the PFA Consulting Drainage Technical Note (November 2021) Appendix C, the invert level of the permeable paving sub base should be situated within the chalk band.

The permeable paving will be terraced, with check dams placed at changes in elevation. The invert level of the sub base will be flat and located at the chalk band at a depth as reported in the ground investigation. This has resulted in varying sub base depth of across the whole permeable paving system.

Engineering levels, shown in Appendix F, have been developed with required tie ins, and due to generally raised levels on site, the depth to the infiltrating chalk band has increased in some locations. In instances where it is unfeasible to increase sub base depth to reach the chalk band, it is proposed to link a lowered sub base, with a geoceullular tank, to a section of raised sub base in order to convey water to the infiltrating medium. The upper sub base and geocellular tank will be wrapped in an impermeable membrane, apart from the membrane between the conveyance structures, which will be permeable geotextile.

Where the base of the attenuation feature is higher than the chalk level, the impervious soil will be excavated and replaced with suitable material to ensure that the surface water can infiltrate to the chalk layer, to ensure 1m freeboard above the highest groundwater level of 131.65mAOD. A small section of Permeable Paving A1 does not achieve 1m freeboard, which is reduced to 500mm for an isolated section. The sub base terraces up to achieve 1m freeboard, as soon as levels allow.

The outline drainage strategy reported private parking bays would be self-draining and serve only themselves. However, upon development of engineered levels, it became apparent the sub base would need to be substantially deeper than first anticipated to reach the infiltrating chalk strata. It is therefore proposed that the parking bays will be tanked, and discharge directly into he access road infiltrating permeable paving, utilising distribution boxes where necessary.

2.3 Infiltration Rates

The infiltration rates varied across the site, as discussed in section 2.1. The rate for each section of permeable paving has been tabulated below, and are consistent with the approved outline drainage strategy. The rates are ultimately based on the worst BRE365 infiltration test in the nearest trial pit, across the two ground investigations and have been tabulated below.

Permeable Paving Section	Nearest Test Pit	Infiltration Rate (m/s)	Infiltration Rate (m/hr)
A	SA1	$6.48x10^{-5}$	0.23328
A1	SA2	$2.48x10^{-6}$	0.00893
B	SA2	$2.48x10^{-6}$	0.00893
C	TP1	$4.67x10^{-5}$	0.16812
C1	TP1	$4.67x10^{-5}$	0.16812
D	SA3	$8.00x10^{-6}$	0.02880

Table 2-1 Infiltration Rates *(Earth Environmental and Geotechnical Ltd ref. B1351/20)*

2.4 Calculations

Causeway FLOW modelling software has been used to size the permeable paving sections, to gain a minimum sub base depth. In the instance where an upper and lower sub base is used, only the lower sub base has been utilised, since the upper sub base and geocellular tank is wrapped in an impermeable geomembrane. The invert level has been modelled as flat, as the permeable paving is terraced. A factor of safety of 10 has been applied to the calculations, consistent with the outline drainage strategy. A climate change allowance of 40% has been considered for the 1% AEP rainfall event and adopted for the calculations, consistent with the outline drainage strategy.

Contributing areas for each individual permeable paving section are outlined in Appendix E. A 10% urban creep allowance has been added to the roof areas of proposed dwelling and garages.

No flooding was experienced in any of the systems during the modelling, up to the 1% AEP rainfall event with a 40% allowance for climate change and 10% allowance for urban creep Any flooding in an event greater than the 1% AEP event with a 40% allowance for climate change will be directed away from dwellings and utility.

Refer to Appendix G for the Causeway FLOW calculations.

2.5 Half Drain Time

In accordance with the strategy outlined by PFA Consulting, and through correspondence with Wiltshire Council, it was agreed that the permeable paving should be designed half-drain time sized for the 30 year storm. Separate calculations have been provided for the lower sub base only, as attached in Appendix H, which has been sized for the 30 year event. Due to infiltration rates in sections of permeable paving being as low as $2.48x10^{-6}$m/s, and utilising a factor of safety of 10, this essentially would make the rate $2.48x10^{-7}$m/s, where half drain cannot be achieved in 24 hours. Therefore, further mitigation has been considered as outlined in the table below.

Permeable Paving Section	Half Drain Time (hr)	<24 Hours?	Further Mitigation
A	2.6	Y	N/A
A1	75.6	N	10.7m³ storage required for 3.33% AEP event. Sub base sized at total of 20.4m³. Therefore 9.7m³ additional storage for subsequent event.
B	92.4	N	45.6m³ storage required for 3.33% AEP event. Permavoid layer 300mm deep provides additional storage sized at a minimum 63.3m³. Therefore storage for subsequent event.
C	6.8	Y	N/A
C1	6.7	Y	N/A
D	31.3	N	27.4m³ storage required for 3.33% AEP event. Permavoid layer 300mm deep and 350mm upper sub base provides additional storage sized at a minimum 17m³.

Table 2-2 Half Drain Times

2.6 Water Quality

The CIRIA 753 SuDS Manual has been consulted to ensure that the SuDS provided successfully mitigate the anticipated pollutants, which may arise from the proposed land use. Table 26.2 of CIRIA753 outlines the pollution hazard indices for the land use type. This has been tabulated against the mitigation indices of the proposed SuDS for the surface water network, found in table 26.3 of CIRIA753.

Land Use	Hazard Level	TSS	Metals	Hydrocarbons
Low Traffic Road (<300 Movements)	Low	0.5	0.4	0.4
SuDS		**TSS**	**Metals**	**Hydrocarbons**
Permeable Pavement		0.7	0.6	0.7
Mitigation>Pollution?		Y	Y	Y

Table 2-3 Simple Index Approach *(CIRIA753 The SuDS Manual)*

As the SuDS mitigation indices are equal or greater than the pollution hazard indices, the proposed SuDS successfully mitigate the pollutants expected to arise from the proposed land use.

2.7 Flood Exceedance Routing

In the unlikely event the on-site drainage becomes blocked, or the system experiences a storm more intense than current design standards, exceedance routes need to be considered.

Where exceedance flows discharge to localised low spots, inundation will occur prior to draw down post rainfall event. Exceedance routes will also be diverted onto Lottage Road and the ditch which borders the road, where low spots are located the western side of the site. Dwellings will be raised from proposed ground levels by a minimum of 150mm and therefore flood exceedance routes will not inundate dwellings.

2.8 Maintenance Arrangements

Drainage serving the development will need to adhere to a maintenance regime, to ensure its performance throughout the lifecycle of the development. The responsibilities for adoption and maintenance of drainage features is outlined below:

- Private Plot Drainage – Plot owners and residents.
- Shared Private Drainage and SuDS (Permeable Paving) – Management company selected by the client.
- Access Road – Management Company.
- Foul Sewers Within Adopted Roads – Thames Water.

Operation and maintenance will be undertaken in accordance with the recommendations outlined in the SuDS Manual (CIRIA C753), provided in Tables 2-3, 2-4 and 2-5.

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Inspect surface structures, removing obstructions and silt as necessary. Check there is no physical damage.	Monthly
	Remove cover and inspect, ensuring water is flowing freely and that the exit route for water is unobstructed. Remove any debris and silt Undertake inspection after leaf fall in autumn.	Annually
	Jet the pipes leading from overflow structures and check water is going through the overflow	Annually
Remedial Actions	Repair physical damage	As required

Table 2-4 Operation and Maintenance Requirements for Chambers, Drains and Inspection Chamber

Maintenance Schedule	Required Action	Typical Frequency
Regular inspections	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional Maintenance	Removal of weeds	As required – once per year on less frequently used pavements.
Remedial action	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 2-5 Operation and Maintenance Requirements for Pervious Pavements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae, or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Table 2-5 Operation and Maintenance Requirements for Geocellular Attenuation

3 Foul Water Drainage Strategy

The foul water drainage strategy has been designed in accordance with The Approved Documents: Building Regulations 2010 Part H: Drainage and Waste Disposal, and the Appendix C of the Design and Construction Guidance (DCG) for foul and surface water sewers offered for adoption.

On site, all drainage is to remain private. Two separate private foul networks will discharges flows to the western site boundary, where the systems will discharge to the Thames Water foul sewerage network, refer to Appendix I for the Thames Water Asset Maps. The northern private foul network will discharge to a new foul sewer within Lottage Road, which is to be offered for adoption under a S104 agreement. The southern network will discharge via a lateral to the existing Thames Water Network. Refer to Appendix C for the Proposed Drainage Layout.

4 Conclusion

- The proposed drainage strategy for reserved matters approval follows the principles set in the outline drainage strategy and subsequent addendums and technical notes.
- As demonstrated in the outline planning permission documentation, it is proposed to discharge surface water through infiltrating permeable paving into the chalk underlying strata.
- The chalk band is located between 0.1 and 2.0m below exisitng ground level. As it is proposed to raise levels generally throughout the site, it is proposed to link an upper and lower sub base by geocellular crates. This allows the permeable paving's invert level to be sited within the chalk, while preventing excessive sub base depths.
- Where the groundwater level is elevated in relation to the permeable paving sub base it is proposed to raise the invert level of the sub base to a minimum of 132.65mAOD. Any strata between the chalk band and the base of the permeable paving will be replaced with fill material at the same infiltration rate of the chalk, or better.
- Plot surface water drainage is proposed to discharge into the permeable paving through distribution boxes.
- Exceedance flows will be directed away from property which is to be raised 150mm above proposed ground levels. Any localised inundation on the surface of the permeable paving will be drawn down post rainfall event.
- The site will be served with two private foul drainage systems which eventually discharge to the Thames Water sewer located within Lottage road. A new foul sewer will be constructed within Lottage Road and offered for adoption under a S104 agreement.

It is concluded that the development can be undertaken in a sustainable manner without increasing the flood risk to the proposed development or to existing properties/systems.

Appendix A – Decision Notice

Wiltshire Council

The Town and Country Planning Act 1990

Approval of Outline Planning Permission (Some Matters Reserved) with Conditions

Application Reference Number: 21/01004/OUT

Decision Date: 19 September 2024

Applicant:	. DAMMAS HOUSE, DAMMAS LANE, SWINDON, SN3EF
Particulars of Development:	Outline planning application for up to 32 Dwellings, Public Open Space, Landscaping and Associated Engineering Works
At:	Land at Lottage Farm, Lottage Road, Aldbourne, SN8 2ED

In pursuance of its powers under the above Act, the Council hereby grant **PLANNING PERMISSION** for the above development to be carried out in accordance with the application and plans submitted (listed below). In accordance with paragraph 38 of the National Planning Policy Framework, Wiltshire Council has worked proactively to secure this development to improve the economic, social and environmental conditions of the area. Subject to the following conditions:

Conditions: (25)

1 The development hereby permitted shall be begun either before the expiration of three years from the date of this permission, or before the expiration of two years from the date of approval of the last of the reserved matters to be approved, whichever is the later.

REASON: To comply with the provisions of Section 92 of the Town and Country Planning Act 1990 as amended by the Planning and Compulsory Purchase Act 2004.

2 No development shall commence on site until details of the following matters (in respect of which approval is expressly reserved) have been submitted to, and approved in writing by, the Local Planning Authority:

(a) The scale of the development;
(b) The layout of the development,
(c) The external appearance of the development;
(d) The landscaping of the site;

The development shall be carried out in accordance with the approved details.

REASON: The application was made for outline planning permission and is granted to comply with the provisions of Section 92 of the Town and Country Planning Act 1990 and Article 4(1) of the Town and Country Planning (Development Management Procedure) (England) Order 2010 (as amended).

3 An application for the approval of all of the Reserved Matters shall be made to the Local Planning Authority before the expiration of three years from the date of this permission.

REASON: To comply with the provisions of Section 92 of the Town and Country Planning Act 1990.

4 The development hereby permitted shall be carried out in accordance with the following approved plans and documents unless otherwise varied by details submitted to and approved in writing by the local planning authority in accordance with the conditions of this planning permission:
• Site Location Plan (P20-1326_01-2 Rev C)
• Site Access Arrangements and Visibility Splays (H659/01 Rev H)
• Landscape and Ecological Strategy Plan (20104.101 Rev C)
• Flood Risk Assessment (H659 - dated January 2021) and Addendum (dated 14th July 2021)
• Arboricultural Impact Assessment (1584 – 19th January 2021)
• Site Waste Management Plan (P20-1326 January 2021)
REASON: For the avoidance of doubt and in the interests of proper planning.

5 Applications for the approval of the Reserved Matters shall be in accordance with the principles and parameters described and illustrated in the Design and Access Statement (P20-1326-04D). A Design Compliance Statement shall be submitted with each Reserved Matters application which demonstrates this by way of comparison.

REASON: To ensure that high standards of urban design and comprehensively planned development is achieved in accordance with policies of the Core Strategy and, in accordance with the aspirations of NPPF paragraph 135, to ensure that “the quality of approved development is not materially diminished between permission and completion, as a result of changes being made to the permitted scheme.”

6

Details shall be submitted as part of Reserved Matters applications of the pedestrian access route to the Southwest corner of the site as shown on Illustrative Masterplan P20-1326_01 Rev G. The pedestrian access route shall be implemented prior to first occupation in accordance with the approved details.

REASON: In the interests of reducing the amount of private car movements to and from the development.

7 Reserved Matters applications:

i) Shall be designed in accordance with the approved Landscape and Ecological Strategy Plan (20104.101 Rev C) and shall include the mitigation and enhancement measures set out in Ecological Impact Assessment (Grassroots ecology, Ref. 1303, November 2020) unless otherwise agreed with the Local Planning Authority through subsequent Reserved Matters application/s.

ii) Shall include plans and calculations to demonstrate that the development will achieve no net biodiversity loss. Calculations using the most recent version of the Natural England Biodiversity Metric shall be supported by a plan showing habitat creation and enhancements demonstrating the extent and area of each habitat in relation to the development footprint. Any identified shortfall in mitigation within the application site shall be made up through a scheme to be submitted and approved in writing by the Local Planning Authority prior to commencement to secure, deliver and manage land off-site for the operational lifetime of the development.

The scheme shall be implemented in full accordance with the approved plans.

REASON: The application contained insufficient information to enable this matter to be considered prior to granting planning permission and the matter is required to be agreed with the Local Planning Authority before development commences to ensure it complies with Council policy.

8 Reserved Matters applications shall be accompanied by a 'Lighting Design Strategy for Biodiversity'. The strategy will cover both construction and operation phase and shall:

1. Identify those features/ routes that are important to light sensitive/ nocturnal species such as bats, badgers and hedgehog and to be retained within dark corridors.

2. Show full details of proposed construction and operational lighting, including lux plots to show there is no lighting impact to the features/ routes identified. Lux plots

should be presented on a scaled site drawing and the light levels must be shown at ground level and at 2m above the ground (horseshoe bats fly typically within this range). The light levels should also be shown as "from new", not as normally calculated levels after some months or years of use.

All external lighting shall be installed in accordance with the specifications and locations set out in the strategy, and these shall be maintained thereafter in accordance with the strategy. Under no circumstances should any other external lighting be installed without prior consent from the local planning authority.

REASON: As required by Core Policy 50 to ensure the long-term functioning of wildlife corridors and Core Policy 52 the retention and green infrastructure.

9 Prior to the submission of the first Reserved Matters application:

A written programme of archaeological investigation including a timeframe for on-site work and off-site work such as the analysis, publishing and archiving of the results shall be submitted and approved in writing by the Local Planning Authority.

b) The programme shall be carried out in accordance with the approved timeframe.

REASON: To enable the investigation of the presence of heritage assets at the site, incorporation of any mitigation measures and recording of any matters of archaeological interest.

10 No development shall progress above ground floor slab level until full details of the materials and finishes to be used for external walls, roofs and porches have been submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details.

The details to be submitted under this condition shall include for example, product literature and photographic examples (submitted electronically in pdf format) and shall not include links to manufacturer/ vendor web sites. If requested, samples of materials and finishes are to be made available for inspection on the development site.

REASON: In the interests of visual amenity and the character and appearance of the area.

11 No development shall commence on site until a scheme for the discharge of surface

water from the site/phase, including SuDS (sustainable drainage systems) and all third-party approvals (as necessary), has been submitted to and approved in writing by the Local Planning Authority in consultation with the Lead Local Flood Authority and the sewerage undertaker. The scheme shall demonstrate to the satisfaction of the Lead Local Flood Authority that surface water shall not enter the public network.

REASON: To comply with Core Policy 67: Flood Risk within the Wiltshire Core Strategy (adopted January 2015) and to ensure that the development can be adequately drained without increasing flood risk to others.

12 No development shall commence on site until details of the works for the disposal of sewage including the point of connection to the existing public sewer have been submitted to and approved in writing by the Local Planning Authority. No dwelling shall be first occupied until the approved sewerage details have been fully implemented in accordance with the approved plans.

REASON: To ensure that the proposal is provided with a satisfactory means of drainage and does not increase the risk of flooding or pose a risk to public health or the environment.

13 No development shall commence on site until the existing buildings on site have been permanently demolished in accordance with the approved plans and all of the demolition materials and debris resulting has been removed from the site unless otherwise agreed through other approved documents or discharge of conditions.

REASON: In the interests of the character and appearance of the area and neighbouring amenities.

14 No development shall commence on site (other than that required to be carried out as part of a scheme of remediation approved by the Local Planning Authority under this condition), until steps (i) to (iii) below have been fully complied with. If unexpected contamination is found after development has begun, development must be halted on that part of the site affected by the unexpected contamination to the extent specified by the Local Planning Authority in writing until step (iv) has been complied with in full in relation to that contamination.

Step (i) Site Characterisation:

An investigation and risk assessment must be completed to assess the nature and extent of any contamination (including asbestos) on the site, whether or not it

originates on the site. The investigation and risk assessment must be undertaken by competent persons and a written report of the findings submitted to and approved in writing by the Local Planning Authority. The report of the findings must include:

- A survey of the extent, nature and scale of contamination on site;
- The collection and interpretation of relevant information to form a conceptual model of the site, and a preliminary risk assessment of all the likely pollutant linkages;
- If the preliminary risk assessment identifies any potentially significant pollutant linkages a ground investigation shall be carried out, to provide further information on the location, type and concentration of contaminants in the soil and groundwater and other characteristics that can influence the behaviour of the contaminants;
- An assessment of the potential risks to
• human health,
• property (existing or proposed) including buildings, crops, livestock, pets, woodland and service lines and pipes,
• adjoining land,
• groundwater and surface waters,
• ecological systems,
• archaeological sites and ancient monuments;
This must be conducted in accordance with DEFRA and the Environment Agency's "Model Procedures for the Management of Land Contamination, CLR 11" and other authoritative guidance.

Step (ii) Submission of Remediation Scheme:

If any unacceptable risks are identified as a result of the investigation and assessment referred to in step (i) above, a detailed remediation scheme to bring the site to a condition suitable for the intended use must be prepared. This should detail the works required to remove any unacceptable risks to human health, buildings and other property and the natural and historical environment, should be submitted to and approved in writing by the Local Planning Authority. The scheme must include all works to be undertaken, proposed remediation objectives and remediation criteria, a timetable of works and site management procedures.

Step (iii) Implementation of Approved Remediation Scheme:

The approved remediation scheme under step (ii) must be carried out in accordance with its requirements. The Local Planning Authority must be given at least two weeks written notification of commencement of the remediation scheme works.

Step (iv) Reporting of Unexpected Contamination:

In the event that contamination is found at any time when carrying out the approved development that was not previously identified it should be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment

should be undertaken in accordance with the requirements of step (i) above and where remediation is necessary, a remediation scheme should be prepared in accordance with the requirements of step (ii) and submitted to and approved in writing by the Local Planning Authority.

Step (v) Verification of remedial works:

Following completion of measures identified in the approved remediation scheme a verification report must be produced. The report should demonstrate the effectiveness of the remedial works.

The verification report should be submitted to and approved in writing of the Local Planning Authority
Step (vi) Long Term Monitoring and Maintenance:

If a monitoring and maintenance scheme is required as part of the approved remediation scheme, reports must be prepared and submitted to the Local Planning Authority for approval at the relevant stages in the development process as approved by the Local Planning Authority in the scheme approved pursuant to step (ii) above, until all the remediation objectives in that scheme have been achieved.

All works must be conducted in accordance with DEFRA and the Environment Agency's "Model Procedures for the Management of Land Contamination, CLR 11" and other authoritative guidance.

REASON: Core policy 57, Ensuring high design and place shaping such that appropriate levels of amenity are achievable

15 No development shall commence until a Landscape and Ecology Management Plan (LEMP), in accordance with the measures outlined in the Ecological Assessment, shall be submitted to and approved in writing by the Local Planning Authority. The LEMP shall include long term objectives and targets, management responsibilities and maintenance schedules for each ecological feature within the development, together with a mechanism for monitoring success of the management prescriptions, incorporating review and necessary adaptive management in order to attain targets.

The LEMP shall also include details of the legal and funding mechanism(s) by which long-term implementation of the plan will be secured. The LEMP shall be implemented in full to ensure long-term management of landscape and ecological features for the lifetime of the development, in accordance with the approved details.

REASON:
To ensure the long-term management of landscape and ecological features retained

and created by the development, for the benefit of visual amenity and biodiversity for the lifetime of the scheme.

16 All soft landscaping comprised in the approved details of landscaping, as required by the reserved matters applications and details required by conditions within this decision notice shall be carried out in the first planting and seeding season within or following the completion of each phase, first occupation of the building(s) or the completion of the development whichever is the sooner; All shrubs, trees and hedge planting shall be maintained free from weeds and shall be protected from damage by vermin and stock. Any trees or plants which, within a period of five years, die, are removed, or become seriously damaged or diseased shall be replaced in the next planting season with others of a similar size and species, unless otherwise agreed in writing by the local planning authority. All hard landscaping shall also be carried out in accordance with the approved details prior to the occupation of any part of the development or in accordance with a programme to be agreed in writing with the Local Planning Authority.

REASON: To ensure a satisfactory landscaped setting for the development and the protection of existing important landscape features.

17 No development shall commence on site (including demolition, ground works, vegetation clearance) until a Construction Environmental Management Plan (CEMP) has been submitted to and approved in writing by the local planning authority. The CEMP shall include, but not necessarily be limited to, the following:
a) Risk assessment of potentially damaging construction activities
b) Identification of 'biodiversity and tree protection zones'
c) Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements
d) The location and timing of sensitive works to avoid harm to biodiversity features
e) The times during construction when specialist ecologists need to be present on site to oversee works
f) Responsible persons and lines of communication
g) The role and responsibilities on site of an ecological clerk of works (ECoW) or similarly competent person(s)
h) Use of protective fences, exclusion barriers and warning signs.
i) Ongoing monitoring, including compliance checks by a competent person(s) during construction and immediately post-completion of construction works.
The approved CEMP shall be adhered to and implemented throughout the construction period strictly in accordance with the approved details.
A report prepared by a competent person(s), certifying that the required mitigation

and/or compensation measures identified in the CEMP have been completed to their satisfaction, shall be submitted to the Local Planning Authority for approval in writing every three months from the start of the development until the completion of the final planting.

REASON: The matter is required to be agreed with the Local Planning Authority before development commences in order that the development is undertaken in an acceptable manner, to ensure adequate protection, mitigation and compensation for protected species, priority species and priority habitats.

18 No demolition, site clearance or development shall commence on site until an Arboricultural Method Statement (AMS) prepared by an arboricultural consultant providing comprehensive details of construction works in relation to trees has been submitted to, and approved in writing by, the Local Planning Authority. All works shall subsequently be carried out in strict accordance with the approved details. In particular, the method statement must provide the following:

• A specification for protective fencing to trees during both demolition and construction phases which complies with BS5837:2013 and a plan indicating the alignment of the protective fencing;
• A specification for scaffolding and ground protection within tree protection zones in accordance with British Standard 5837: 2013;
• A schedule of tree works conforming to British Standard 3998: 2010;
• Details of general arboricultural matters such as the area for storage of materials, concrete mixing and use of fires;
• Plans and particulars showing the siting of any servicing and piping infrastructure;
• A full specification for the construction of any arboriculturally sensitive structures and sections through them, including the installation of boundary treatment works, the method of construction of the access driveway including details of the no-dig specification and extent of the areas of the driveway to be constructed using a no-dig specification;
• Details of the works requiring arboricultural supervision to be carried out by the developer's arboricultural consultant, including details of the frequency of supervisory visits and procedure for notifying the Local Planning Authority of the findings of the supervisory visits; and
• Details of all other activities, which have implications for trees on or adjacent to the site.
• In order that trees to be retained on-site are not damaged during the construction works and to ensure that as far as possible the work is carried no demolition, site clearance or development should commence on site until a pre-commencement site meeting has been held, attended by the developer's arboricultural consultant, the designated site foreman and a representative from the Local Planning Authority, to discuss details of the proposed work and working procedures.

• Subsequently and until the completion of all site works, site visits should be carried out on a minimum of a monthly basis by the developer's arboricultural consultant. A report detailing the results of site supervision and any necessary remedial works undertaken or required should then be submitted and approved in writing to the Local Planning Authority. Any further remedial works approved by the Local Planning Authority shall subsequently be carried out under strict supervision by the arboricultural consultant following that approval.

REASON: In order that the Local Planning Authority may be satisfied that the trees to be retained on and adjacent to the site will not be damaged during the construction works and to ensure that as far as possible the work is carried out in accordance with current best practice and section 197 of the Town & Country Planning Act 1990.

19 No development shall commence on site until a construction management plan has been submitted to and approved in writing by the Local Planning Authority. The plan shall include details of the measures that will be taken to reduce and manage the emission of noise, vibration and dust during the demolition and/or construction phase of the development. It shall include details of the following:

i. The movement of construction vehicles;
ii. The cutting or other processing of building materials on site;
iii. Wheel washing and vehicle wash down facilities;
iv. The transportation and storage of waste and building materials;
iv. The recycling of waste materials (if any)
v. The loading and unloading of equipment and materials
vi. A named person for residents to contact with phone number
vii. The location and use of generators and temporary site accommodation
viii. Where piling is required this must be Continuous flight auger piling wherever practicable to minimise impacts
ix. Details regarding dust and noise mitigation
x. There shall be no burning undertaken on site at any time.

The construction/demolition phase of the development will be carried out fully in accordance with the construction management plan at all times.

REASON: Core policy 57, Ensuring high design and place shaping such that appropriate levels of amenity are achievable.

20 No construction or demolition work shall take place on Sundays or Public Holidays or outside the hours of 0800 to 18:00 Monday to Friday and 08:00 to 13:00 on Saturdays.

REASON: Core policy 57, Ensuring high design and place shaping such that appropriate levels of amenity are achievable.

21 Reserved Matters application/s shall be accompanied by a Sustainable Energy Strategy to be submitted and approved in writing by the Local Planning Authority outlining the low-carbon strategy for the proposal.

No dwelling shall be occupied until the measures proposed within the approved Strategy are implemented and brought into operation in accordance with the approved scheme and thereafter retained.

REASON: In the interests of achieving sustainable development in accordance with WCS Core Policy 41.

22 No dwelling hereby permitted shall be occupied until the main site access has been implemented in accordance with the details shown on approved plan Site Access Arrangements and Visibility Splays (H659/01 Rev H).

REASON: In the interests of highway safety.

23 No dwelling hereby permitted shall be occupied until the parking areas to include at least 1 Electric Vehicle space per unit have been completed in accordance with the details shown on the approved plans. The parking and vehicle turning/ manoeuvring areas shall always be maintained for those purposes thereafter and maintained free from
the storage of materials.

REASON: To ensure adequate off-street parking provision and vehicle turning manoeuvring space in the interests of amenity and highway safety.

24 Upon first occupation of the new homes, a Travel Information Pack setting out the options for sustainable travel in the area shall be provided to all residents as detailed within the submitted Transport Statement.

REASON: In the interests of reducing the amount of private car movements to and from the development.

25 Reserved Matters applications shall include the following information in relation to waste storage and collection to be submitted and approved in writing by the Local Planning Authority:

• Vehicle tracking plans to demonstrate that refuse collection vehicles (RCVs) can move through the development and turn at the ends of roads, especially taking account of cars parked in allocated spaces and at the roadside. Adequate turning room should be provided to take account of the restrictions on carry distances for residents set out in Part H of Building Regulations (25m), the limitations on carry distances for waste collection crews, where the vehicle should be able to stop within 10m of a collection point and due to the requirement to minimise reversing to meet the requirements of BS 5906:2005.

• Each dwelling shall be provided with a collection point that is on level hardstanding off any roadway or footway at the curtilage of the property, as further described in section 5.2 of the Council's waste SPD. Plans should clearly identify these areas for each dwelling and demonstrate that they do not impact on space available on driveways and that soft landscaping won't prevent or encumber the collection crew when emptying bins.

• Each dwelling shall be provided with suitable waste storage space designed in accordance with the Council's waste SPD. Submitted plans are recommended to show storage containers to scale in situ to demonstrate compliance.

• Plans should demonstrate that for each dwelling residents should not have to carry their waste containers more than 25m from the storage point to the collection point. Preferably this should be demonstrated with a supplementary table listing the carry distances per dwelling, for ease of reference. Section 5.3 of the Council's waste SPD provides further details on matters to consider when designating these routes.

REASON: In the interests of the amenities of the area and in the interests of highway safety.

Informatives: (9)

26 The applicant is advised that the development hereby approved may represent chargeable development under the Community Infrastructure Levy Regulations 2010 (as amended) and Wiltshire Council's CIL Charging Schedule. If the development is determined to be liable for CIL, a Liability Notice will be issued notifying you of the

amount of CIL payment due. If an Additional Information Form has not already been submitted, please submit it now so that we can determine the CIL liability. In addition, you may be able to claim exemption or relief, in which case, please submit the relevant form so that we can determine your eligibility. The CIL Commencement Notice and Assumption of Liability must be submitted to Wiltshire Council prior to commencement of development. Should development commence prior to the CIL Liability Notice being issued by the local planning authority, any CIL exemption or relief will not apply and full payment will be required in full and with immediate effect. Should you require further information or to download the CIL forms please refer to the Council's Website https://www.wiltshire.gov.uk/dmcommunityinfrastructurelevy.

27 This permission shall be read in conjunction with an Agreement made under Section 106 of the Town and Country Planning Act, 1990 and dated the 11th September.

28 The attention of the applicant is drawn to the contents of the letter from Thames Water dated 19 February 2021 pertaining to foul and surface water disposal and to existing services on the site.

29 The applicant should note that under the terms of the Wildlife and Countryside Act (1981) and the Habitats Regulations (2010) it is an offence to disturb or harm any protected species, or to damage or disturb their habitat or resting place. Please note that this consent does not override the statutory protection afforded to any such species. In the event that your proposals could potentially affect a protected species you should seek the advice of a suitably qualified and experienced ecologist and consider the need for a licence from Natural England prior to commencing works. Please see Natural England’s website for further information on protected species.

30 Please also be advised that works should not take place that will harm nesting birds from March to August inclusive. All British birds (while nesting, building nests and sitting on eggs), their nests and eggs (with certain limited exceptions) are protected by law under Section 1 of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000. If birds are nesting on/in or within the vicinity of the proposed development, work should be undertaken outside the breeding season for birds to ensure their protection, i.e. works should only be undertaken between August and February. Further advice on the above can be sought from the Council Ecologists

31 Any alterations to the approved plans, brought about by compliance with Building Regulations or any other reason must first be agreed in writing with the Local Planning Authority before commencement of work.

32 The consent hereby granted shall not be construed as authority to carry out works on the highway. The applicant is advised that a license may be required from Wiltshire's Highway Authority before any works are carried out on any footway, footpath, carriageway, verge or other land forming part of the highway. All appropriate licences for skips or waivers for construction-related vehicles should be sought from the appropriate teams within the Council.

33 The applicant is requested to note that this permission does not affect any private property rights and therefore does not authorise the carrying out of any work on land outside their control. If such works are required it will be necessary for the applicant to obtain the landowners consent before such works commence. If you intend carrying out works in the vicinity of the site boundary, you are also advised that it may be expedient to seek your own advice with regard to the requirements of the Party Wall Act 1996.

34 Please note that Council offices do not have the facility to receive material samples. Please deliver material samples to site and inform the Planning Officer where they are to be found.

Parvis Khansari **- Corporate Director, Place**

NOTES

1 **Other Necessary Consents.** This document only conveys permission for the proposed development under Part III of the Town and Country Planning Act 1990 and the applicant must also comply with all the byelaws, regulations and statutory provisions in force in the area and secure such other approvals and permissions as may be necessary under other parts of the Town and Country Planning Act 1990 or other legislation.

1.1 the need in appropriate cases to obtain approval under Building Regulations. **(The Building Regulations may be applicable to this proposal. Please contact the Council's Building Control team before considering work on site);**

1.2 the need to obtain an appropriate order if the proposal involves the stopping up or diversion of a public right of way or other highway (including highway verge);

1.3 the need to obtain a separate "Listed Building Consent" to the demolition, alteration or extension of any listed building of architectural or historic interest;

1.4 the need to make any appropriate arrangements under the Highways Act 1980, in respect of any works within the limits of a highway. The address of the Highway Authority is County Hall, Trowbridge, BA14 8JD (It is the responsibility of the applicant to ascertain whether the proposed development affects any listed building or public right of way / other highway, including highway verge).

2 **Appeals.** If the applicant is aggrieved by the decision of the local planning authority to grant permission subject to conditions, he may appeal to the Secretary of State for the Environment in accordance with Section 78(1) of the Town and Country Planning Act 1990 within six months of the date of this decision. (Information and forms relating to the appeals process can be found at the Planning Portal - http://www.planningportal.gov.uk/planning/appeals).

3 **Climate Change.** Wiltshire Council acknowledges the climate emergency and is seeking to make the county carbon neutral. You are encouraged to include energy efficiency that exceeds building regulations and to meet residual energy demand through renewable energy and low-carbon technologies, including high levels of electric vehicle charging points. The developer is encouraged to contact the climate team to discuss this further. climate@wiltshire.gov.uk

Appendix B – Proposed Site Plan



1 Site Plan Proposed
1 : 500

Revit Links Schedule - Shifted T Junction		
Name	Type Mark	Mark*
1	Wolverland	OM
2	Wolverland	OM
3	Elmhurst (Gable Fronted)	OM
4	Pickford	OM
5	Pickford	OM
6	Elmhurst (Gable Fronted)	OM
7	Elmhurst (Gable Fronted)	OM
8	Fullwell	OM
9	Wolverland (SW)	OM
10	Elmhurst (Gable Fronted)	OM
11	Pickford (SW)	OM
12	Fullwell (SW)	OM
13	Pickford (SW)	OM
14-16	Bratton 2B4P Terrace x3	AR
17	2B4P Wide Bratton Type (68sqm)	SO
18	2B4P Wide Bratton Type (68sqm)	SO
19	Bratton 3B5P Alt Footprint (82.2sqm)	SO
20	2B4P Bungalow	OM
21	Longhaven	SO
22	Longhaven	SO
23-24	Bratton 1B Flat Type x2	AR
25-26	Bratton 1B Flat Type x2	AR
27	Hazel	OM
28	Hazel	OM
29	Elmhurst	OM
30	Elmhurst	OM
31	Elmhurst (Gable Fronted)	OM

Bin Storage
Patio/Paths
Affordable Housing

Rev.	Date	Notes	Init.
P4	22/04/2026	Planning	RB
P3	14/04/2026	Planning	RB
P2	30/03/2026	Planning	RB
P1	25/03/2026	Planning	RB

Lottage Farm - Lottage Road
Aldbourne

Site Plan

Drawing Number
25058-NPA-XX-XX-DR-A-1001

Revision
P4

Project Number	25058
Suitability	PLANNING
Scale	1 : 500 @A1
Drawn by	RB

nash partnership

Head Office : 01225 442424 | 23a Sydney Buildings, Bath, BA2 6BZ
E: mail@nashpartnership.com | **W:** nashpartnership.com

Responsibility is not accepted for errors made by others in scaling from this drawing. Contractors must check all dimensions on site. Discrepancies must be reported immediately to the architect before proceeding. This drawing is copyright ©2024 Nash Partnership. All rights reserved.

Appendix C – Proposed Drainage Layout

PERMEABLE PAVING A
PGL 133.42-133.75mAOD
EGL 132.65-133.57mAOD
CHALK (1.0m DEEP) 131.65-132.57mAOD
GWL 131.65
PGL 133.40 -133.77
480m² 150mm PERMAVOID SUB BASE REPLACEMENT MIN. IL 133.06
SUB BASE MIN. IL 132.65
150mm PERMAVOID SUB BASE REPLACEMENT
410mm MIN. LOWE SUB BASE

300Ø REPLACEMENT
HIGHWAY DRAIN.
INVERT LEVEL
INTERPOLATED BETWEEN
U/S AND D/S CHAMBERS.

PERMEABLE PAVING A1
PGL 132.90-133.90mAOD
EGL 132.65-133.04mAOD
CHALK (0.1m DEEP) 132.55-132.94mAOD
GWL 131.65
540mm MIN. SUB BASE

PERMEABLE PAVING B
PGL 133.90-135.10mAOD
EGL 132.75-135.14mAOD
CHALK (0.5m DEEP) 132.25-134.64mAOD
GWL 131.65
190mm MIN. UPPER SUB BASE
300mm MIN. PERMAVOID SUB BASE REPLACEMENT
550mm MIN. LOWER SUB BASE

KEY

- PROPOSED PRIVATE SURFACE WATER DRAIN
- PROPOSED PRIVATE FOUL WATER DRAIN
- PROPOSED PUBLIC S104 FOUL SEWER
- PROPOSED HIGHWAYS DRAIN
- EXISTING THAMES WATER FOUL SEWER
- EXISTING DITCH
- PROPOSED PRIVATE/ADOPTED FOUL PPIC
- PROPOSED PUBLIC S104 PCC RING CHAMBER
- PROPOSED HIGHWAYS CHAMBER
- PROPOSED PERMEABLE PAVING WITH CHECK DAM
- WAVIN AQUACELL 400mm DEEP GEOCELLULAR CRATES
- PERMAVOID 150mm DEEP SUB BASE REPLACEMENT GEOCELLULAR CRATES
- PROPOSED PERMEABLE PAVING DRIVEWAY AND CAR PARKING
- SERVICE STRIP

REV.	DESCRIPTION	Date	BY	CHK
C	ADDITIONAL SERVICE STRIPS ADDED	27/04/26	TS	RJP
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: 0 1:200 10 metres

PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

TITLE: DRAINAGE STRATEGY SHEET 1

Project Ref: 19901 | Originator: TUM | Stage: PL | Phase: XXX | Number: 0200

REV: C

PERMEABLE PAVING C
PGL 134.80-136.70mAOD
EGL 133.60-135.30mAOD
CHALK (0.5m DEEP) 133.10-134.80mAOD
GWL 131.65
350mm MIN. UPPER SUB BASE
400mm WAVIN AQUACELL CRATE
760mm MIN. LOWER SUB BASE

GRASSCRETE OR SIMILAR SELF DRAINING AGRICULTURAL ACCESS TRACK.

SHARED SURFACE REQUIRES 2m SERVICE STRIP. BLOCK FINISH TO MATCH PERMEABLE PAVING.

PERMEABLE PAVING D
PGL 134.12-134.90mAOD
EGL 132.29-132.63mAOD
CHALK (0.5m DEEP) 132.25-134.64mAOD
GWL 131.65
350mm MIN. UPPER SUB BASE
300mm MIN. PERMAVOID SUB BASE REPLACEMENT
600mm MIN. LOWER SUB BASE

PERMEABLE PAVING C1
PGL 134.90-139.30mAOD
EGL 132.63-139.30mAOD
CHALK (1.0m DEEP) 131.63-138.30mAOD
GWL 131.65
750mm MIN. LOWER SUB BASE.

KEY

- PROPOSED PRIVATE SURFACE WATER DRAIN
- PROPOSED PRIVATE FOUL WATER DRAIN
- PROPOSED PUBLIC S104 FOUL SEWER
- PROPOSED HIGHWAYS DRAIN
- EXISTING THAMES WATER FOUL SEWER
- EXISTING DITCH
- PROPOSED PRIVATE/ADOPTED FOUL PPIC
- PROPOSED PUBLIC S104 PCC RING CHAMBER
- PROPOSED HIGHWAYS CHAMBER
- PROPOSED PERMEABLE PAVING WITH CHECK DAM
- WAVIN AQUACELL 400mm DEEP GEOCELLULAR CRATES
- PERMAVOID 150mm DEEP SUB BASE REPLACEMENT GEOCELLULAR CRATES
- PROPOSED PERMEABLE PAVING DRIVEWAY AND CAR PARKING
- SERVICE STRIP

REV.	DESCRIPTION	Date	BY	CHK
C	ADDITIONAL SERVICE STRIP ADDED	27.04.26	TS	RJP
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: 0 1:200 10 metres

PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

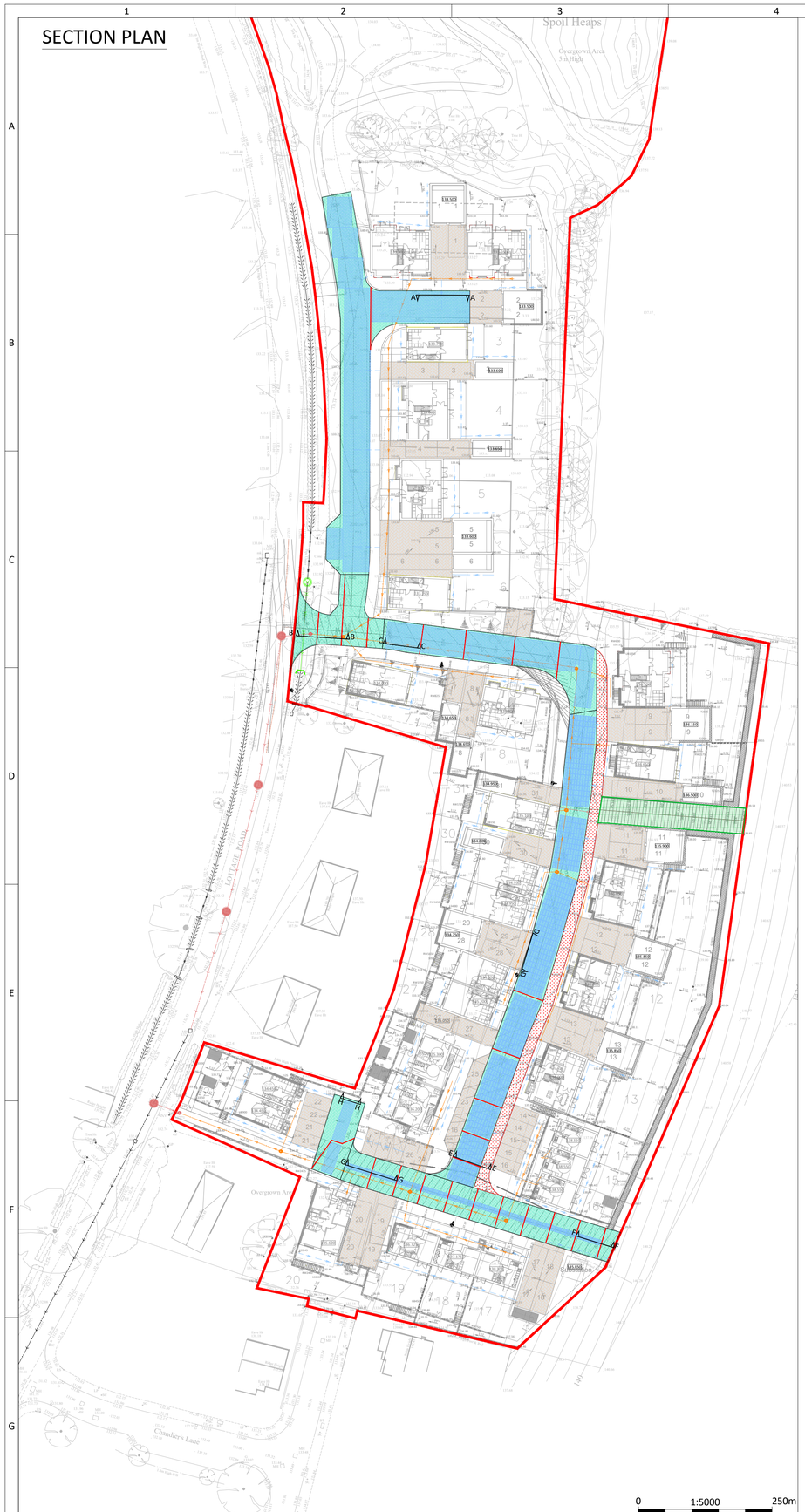
TITLE: DRAINAGE STRATEGY SHEET 2

Project Ref: 19901 Originator: TUM Stage: PL Phase: XXX Number: 0201

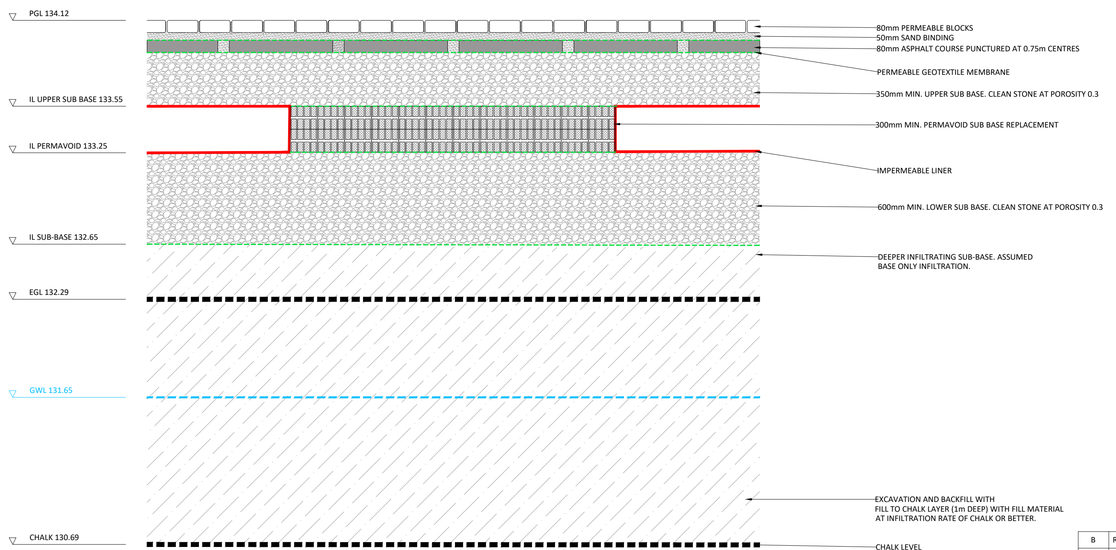
REV: C

Appendix D – Drainage Details and Sections

SECTION PLAN



PERMEABLE PAVING D
CROSS-SECTION H-H
SCALE 1:20



REV.	DESCRIPTION	Date	BY	CHK
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: AS SHOWN

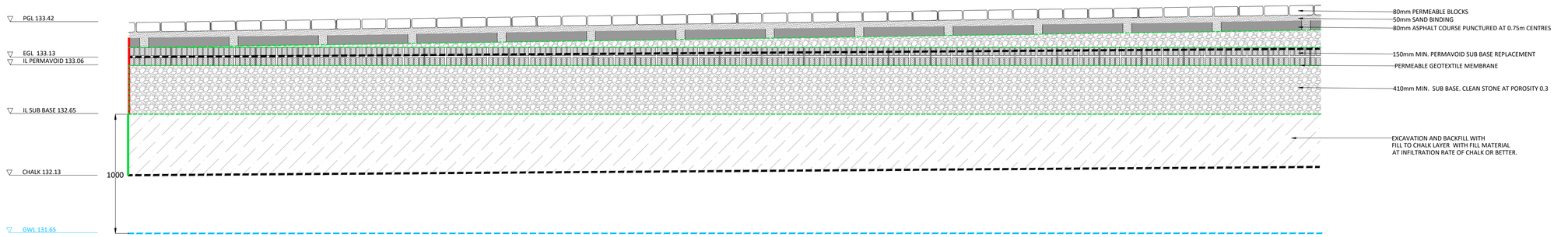
PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

TITLE: PERMEABLE PAVING SECTIONS SHEET 1

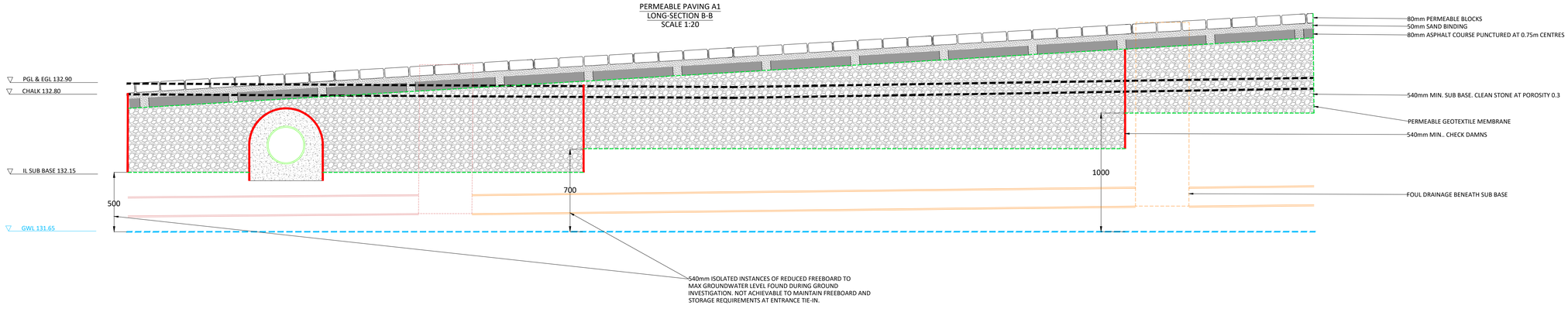
Project Ref: Originator: Stage: Phase: Number: 19901-TUM-PL-XXX-0280

REV: B

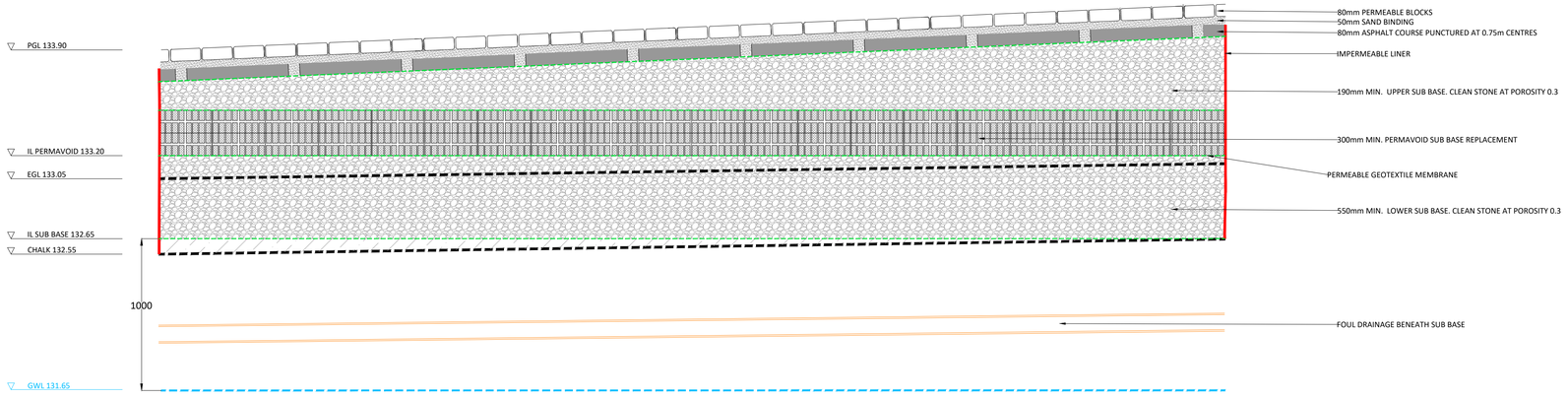
PERMEABLE PAVING A
LONG-SECTION A-A
SCALE 1:20



PERMEABLE PAVING A1
LONG-SECTION B-B
SCALE 1:20



PERMEABLE PAVING B
LONG-SECTION C-C
SCALE 1:20



REV.	DESCRIPTION	Date	BY	CHK
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

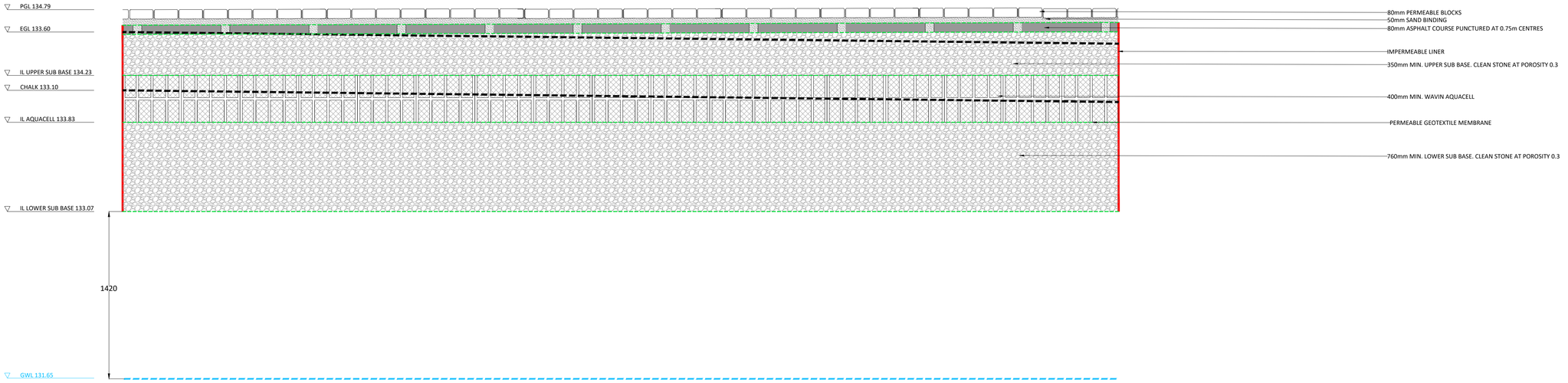
SCALE @ A1: AS SHOWN

PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

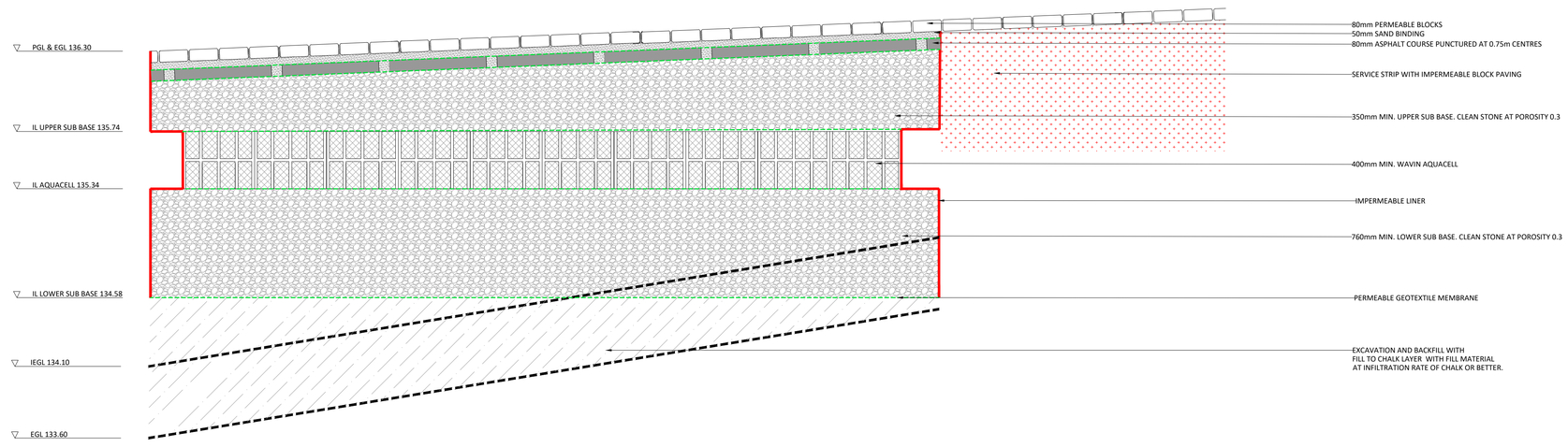
TITLE: PERMEABLE PAVING SECTIONS SHEET 2

Project Ref: Originator: Stage: Phase: Number:	REV:
19901-TUM-PL-XXX-0281	B

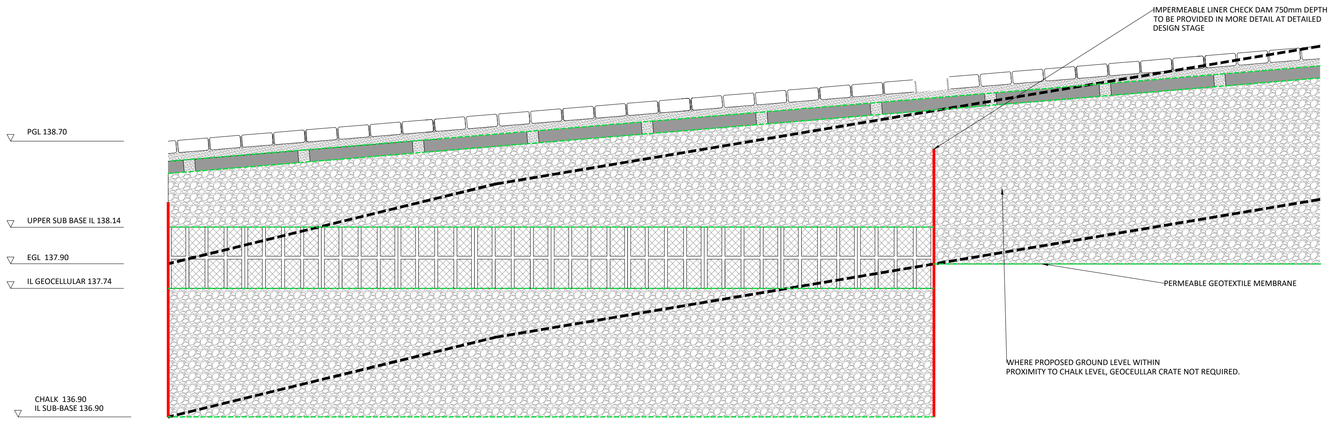
PERMEABLE PAVIN C
LONG-SECTION D-D
SCALE 1:20



PERMEABLE PAVIN C
CROSS-SECTION E-E
SCALE 1:20



PERMEABLE PAVING C1 LONG-SECTION
CROSS-SECTION F-F
SCALE 1:20



REV.	DESCRIPTION	Date	BY	CHK
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY:
tumu

CLIENT:
ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS:
PLANNING APPLICATION

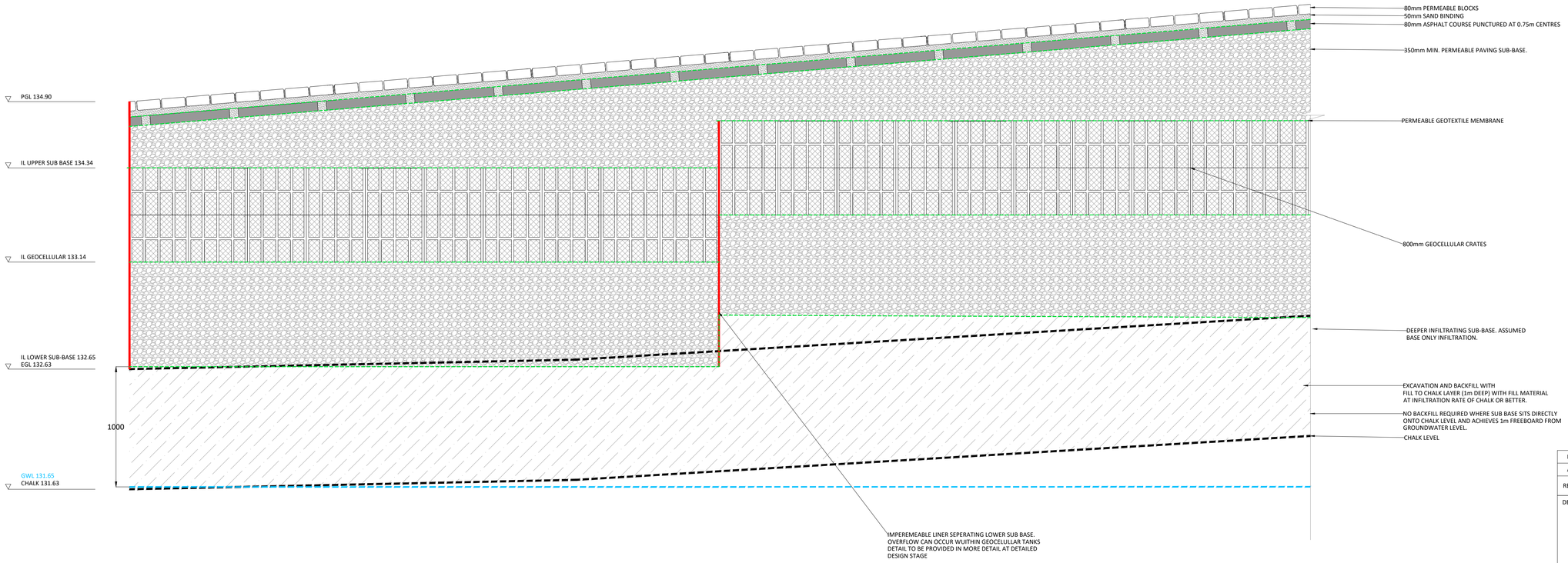
SCALE @ A1:
AS SHOWN

PROJECT:
LAND AT LOTTAGE FARM,
ALDBOURNE

TITLE:
PERMEABLE PAVING SECTIONS
SHEET 3

Project Ref:	Originator:	Stage:	Phase:	Number:	REV:
19901-TUM-PL-XXX-0282					B

PERMEABLE PAVING C1 LONG-SECTION
CROSS-SECTION G-G
SCALE 1:20



REV.	DESCRIPTION	Date	BY	CHK
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY:

tumu

CLIENT:

ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS:

PLANNING APPLICATION

SCALE @ A1:

AS SHOWN

PROJECT:

LAND AT LOTTAGE FARM,
ALDBOURNE

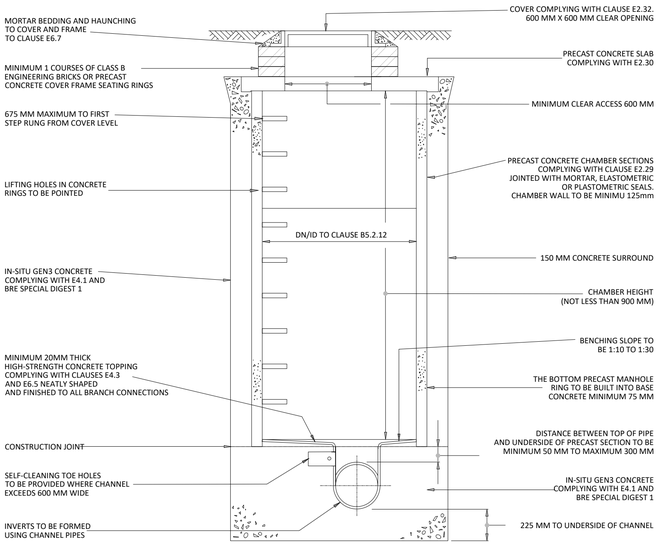
TITLE:

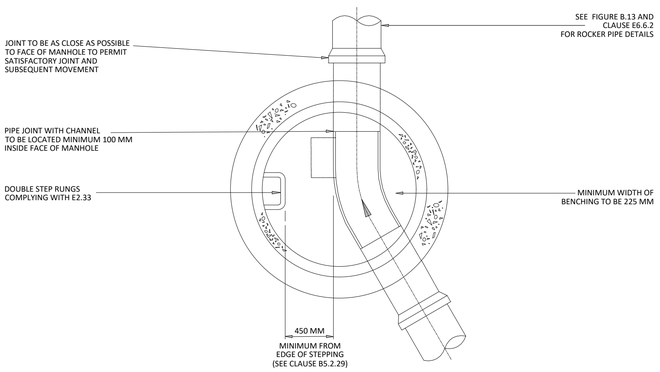
PERMEABLE PAVING SECTIONS
SHEET 4

Project Ref: Originator: Stage: Phase: Number:	REV:
19901-TUM-PL-XXX-0283	B

TYPICAL MANHOLE DETAIL - TYPE B

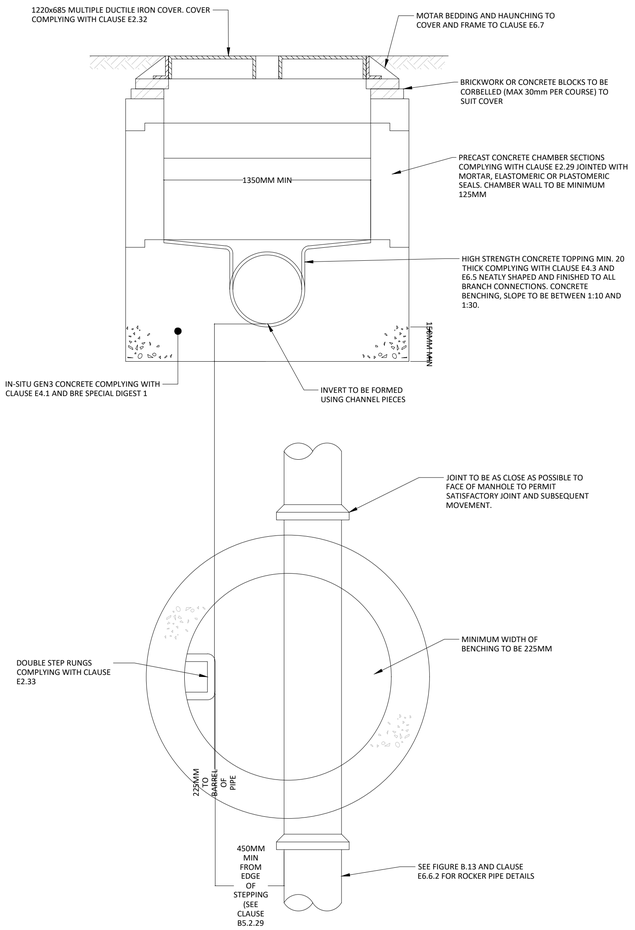
(DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.5m TO 3.0m)
SCALE 1:20





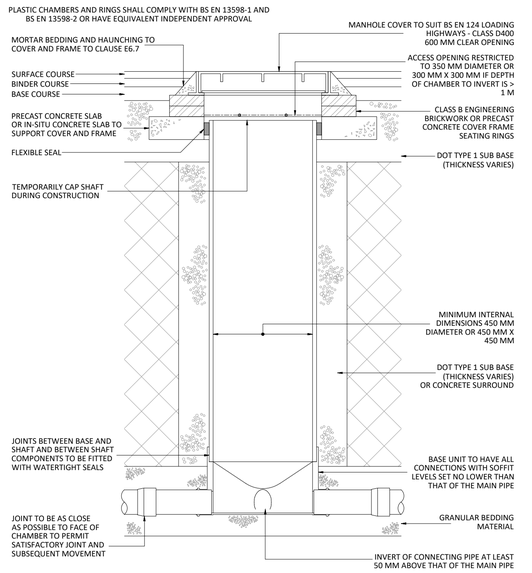
MANHOLE DETAIL - TYPE C

(DEPTH TO SOFFIT LESS THAN 1.5m. MAX PIPE SIZE 450mm Ø)
SCALE 1:20



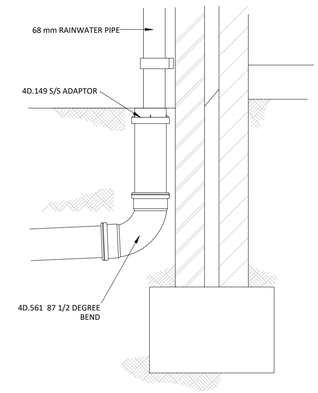
TYPICAL DEEP INSPECTION CHAMBER DETAIL

(MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE IN AREAS SUBJECT TO VEHICLE LOADING 3 M, NON-ENTRY)
SCALE 1:10



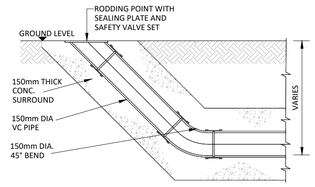
EXTERNAL R.W.P. TO DRAIN

SCALE 1:20



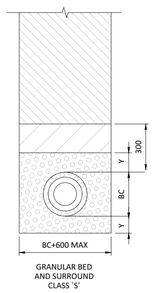
RODDING EYE DETAIL

SCALE 1:20

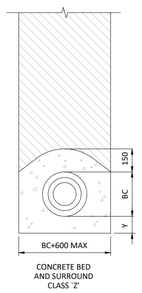


PIPE BEDDING DETAILS

SCALE 1:20



GRANULAR BED AND SURROUND CLASS 'S'



CONCRETE BED AND SURROUND CLASS 'Z'

KEY

- SUITABLE BACKFILL MATERIAL.
- SELECTED SIDEFILL AND SURROUND. CLASS 8 LOWER TRENCH FILL TABLE 6/1 SHW
- SINGLE SIZE GRANULAR MATERIAL. TABLE 5/3 SHW TO BS 13242 COARSE AGGREGATE CLAUSE 4.3.2
- GEN3 CONCRETE BED AND SURROUND.

DN = NOMINAL INTERNAL DIAMETER OF PIPE.
BC = OUTSIDE DIAMETER OF PIPE.

DIMENSION Y

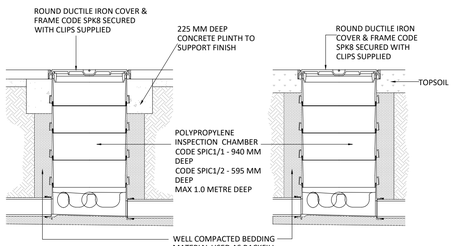
CLASS	MACHINE DUG UNIFORM SOIL	ROCK OR MIXED SOILS
S	NOTE (I)	NOTE (II)
Z	NOTE (II)	NOTE (II)

(I) Y=BC/6, WITH MIN 100 UNDER BARRELS (50 FOR SLEEVE JOINTED) AND MIN 50 UNDER SOCKETS, WHICHEVER IS THE GREATER, WITH MAX OF 400.

(II) Y=BC/4, WITH MIN 200 UNDER BARRELS (150 FOR SLEEVE JOINTED) AND MIN 150 UNDER SOCKETS, WHICHEVER IS THE GREATER, WITH A MAX OF 400.

POLYPROPYLENE INSPECTION CHAMBER

SCALE 1:20

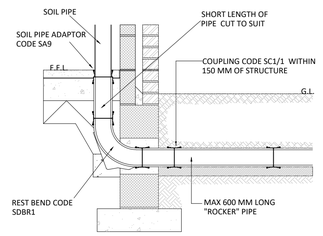


SITED IN DRIVEWAYS / HARD LANDSCAPED AREAS WITH STANDARD ROUND COVER

SITED IN SOFT LANDSCAPED AREAS WITH STANDARD ROUND COVER

SOIL & VENT PIPE / STUB STACK / W.C. PIPE

SCALE 1:20



REV.	DESCRIPTION	Date	BY	CHK
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: AS SHOWN

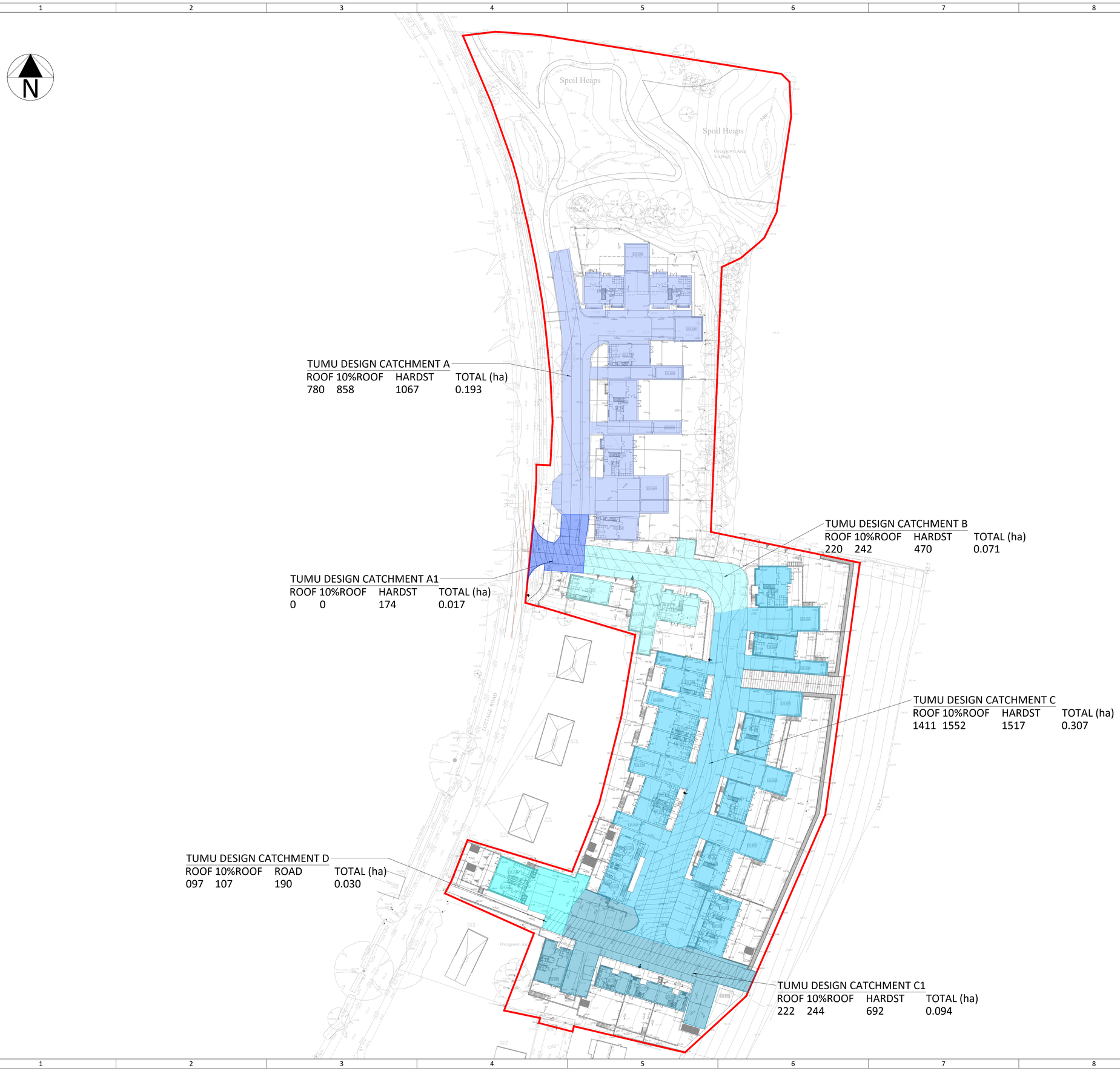
PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

TITLE: DRAINAGE DETAILS

Project Ref: 19901 Originator: TUM Stage: PL Phase: XXX Number: 0285

REV: B

Appendix E – Areas Plan



KEY

- CATCHMENT A ROOF/HARDSTANDING AREA
- CATCHMENT A1 ROOF/HARDSTANDING AREA
- CATCHMENT B ROOF/HARDSTANDING AREA
- CATCHMENT C ROOF/HARDSTANDING AREA
- CATCHMENT C1 ROOF/HARDSTANDING AREA
- CATCHMENT A ROOF/HARDSTANDING AREA

REV.	DESCRIPTION	Date	BY	CHK
C	LAYOUT UPDATED	27.04.26	TS	AB
B	RESERVED MATTERS ISSUE	17.04.26	RJP	BJS
A	FIRST ISSUE	02.04.26	RJP	BJS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: 0 1:500 25 metres

PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

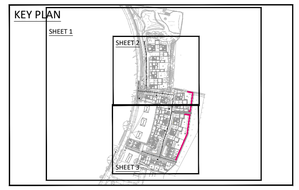
TITLE: DRAINAGE AREAS PLAN

Project Ref: Originator: Stage: Phase: Number: 19901-TUM-PL-XXX-0220

REV: C

Appendix F – Engineering Layout





ENGINEERING LEGEND

- 100.000 — FINISHED FLOOR LEVEL (House/Dwelling)
- 100.000 — FINISHED GARAGE LEVEL
- 100.00 — PROPOSED FINISHED LEVEL
- 100.00 — EXISTING GROUND LEVEL TIE-IN (Exact level to be confirmed by the contractor and any discrepancies reported prior to commencement of any works)
- 1:100 — GRADIENT
- XX.XX — HIGHWAY COUNTOUR
- UB450 — UNDERBUILD (mm) (UB represents maximum height of underbuild beneath normal anticipated outside ground level of 150mm below DPC)
- T450 — TANKING (mm) (T represents maximum height of tanking from normal DPC level)
- RW1500 — RETAINING WALL (mm) (RW represents maximum height. Refer to structural engineers drawings for details. Appropriate detail based on height and loading/use)
- GB450 — GRAVEL BOARD (mm) (GB represents maximum height. Refer to structural engineers drawings for details. Appropriate detail based on height and loading/use)
- 4S — SLIP PROOF STEPS & LANDING (In accordance with Part M to be used Handrail to be provided where there are 3 or more steps to structural engineers details) (Max 0.15m riser, and 0.28m going min)
- @1:2 — EARTHWORKS (1:3 slope unless stated otherwise. Max height 0.59m @ 1:3 in rear gardens. Where slopes are steeper than 1:6, a Geotechnical engineer may be required to conform with NHBC Part 10.2.9)
- CORDUROY TACTILE PAVING
- BLISTER TACTILE PAVING (PCC 400x400mm square)
- INDICATIVE LOCATION OF STREET LIGHTING
- GK1650 — GABION WALL (mm) (GK represents maximum height. Assumed 6° face angle. Dashed line is approximate extent of the toe of the wall)
- FORWARD VISIBILITY SPLAY - 15mph as per MFS (17m)
- JUNCTION VISIBILITY SPLAY - 15mph as per MFS (2.4X17m)

General Notes:

1. All Works are to be constructed in accordance with Wiltshire Council and the Highways Agency's Specification for Highway Works (SHW) March 1998 as amended published by The Stationary Office
2. All levels relate to the survey which is to Ordnance datum. Dimensions not to be scaled.
3. Street lighting, illuminated traffic signs, bollards and associated works shall comply with Wiltshire Council 'Specification for Street Lighting'.
4. Use of this drawing does not absolve the client from his responsibilities under the Health and Safety: The Construction Design and Management Regulations 2015. The Principal Designer is required to contact Tumu Consulting prior to permitting this drawing to be used in connection with any construction works. For site specific CDM 2015 Designers Residual Risks, see drawing series 1140 and should be read in conjunction with Designer Risk Register.
5. Street name plate positions to be agreed with the Highways inspector on site.
6. The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site.
7. Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed excavations are to be checked by the contractor prior to starting work.
8. All underbuild, and retaining wall heights shown are the anticipated maximum finished height required.
9. All step shown are to have a min of 150mm rising and 280mm going dimensions up to a maximum of 12 steps per flight.
10. Where external ground levels are higher than the DPC tanking will be required even if not shown on the drawing.
11. This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other specialist document provided. Any anomalies or contradictions between any of the above is to be reported to Tumu Consulting before construction begins.
12. Refer to Section 38 & 104 drawings for a full set of construction specification notes.

REV.	DESCRIPTION	Date	BY	CHK
C	ADDITIONAL SERVICE STRIPS ADDED TO LAYOUT	24/04/26	TS	AB
B	LEVELS AND RETAINING WALLS UPDATED FOLLOWING ARCHITECTS COMMENTS	13/04/26	TS	AB
A	FIRST ISSUE	02/04/26	TS	BS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: 0 1:500 25 metres

PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

TITLE: ENGINEERING LAYOUT SHEET 1

Project Ref: Originator: Stage: Phase: Number: 19901-TUM-PL-XXX-0210

REV: C



KEY PLAN

SHEET 1

SHEET 2

SHEET 3

ENGINEERING LEGEND

- 100.000 — FINISHED FLOOR LEVEL (House/Dwelling)
- 100.000 — FINISHED GARAGE LEVEL
- 100.00 — PROPOSED FINISHED LEVEL
- 100.00 — EXISTING GROUND LEVEL TIE-IN (Exact level to be confirmed by the contractor and any discrepancies reported prior to commencement of any works)
- 1:100 — GRADIENT
- XX.XX — HIGHWAY COUNTOUR
- UB450 — UNDERBUILD (mm) (UB represents maximum height of underbuild beneath normal anticipated outside ground level of 150mm below DPC)
- T450 — TANKING (mm) (T represents maximum height of tanking from normal DPC level)
- RW1500 — RETAINING WALL (mm) (RW represents maximum height. Refer to structural engineers drawings for details. Appropriate detail based on height and loading/use)
- GB450 — GRAVEL BOARD (mm) (GB represents maximum height. Refer to structural engineers drawings for details. Appropriate detail based on height and loading/use)
- 4S — SLIP PROOF STEPS & LANDING (In accordance with Part M to be used Handrail to be provided where there are 3 or more steps to structural engineers details) (Max 0.15m riser, and 0.28m going min)
- @1:2 — EARTHWORKS (1:3 slope unless stated otherwise. Max height 0.59m @ 1:3 in rear gardens. Where slopes are steeper than 1:6, a Geotechnical engineer may be required to conform with NHBC Part 10.2.9)
- CORDUROY TACTILE PAVING
- BLISTER TACTILE PAVING (PCC 400x400mm square)
- INDICATIVE LOCATION OF STREET LIGHTING
- GK1650 — GABION WALL (mm) (GK represents maximum height. Assumed 6° face angle. Dashed line is approximate extent of the toe of the wall)
- FORWARD VISIBILITY SPLAY - 15mph as per MFS (17m)
- JUNCTION VISIBILITY SPLAY - 15mph as per MFS (2.4X17m)

General Notes:

1. All Works are to be constructed in accordance with Wiltshire Council and the Highways Agency's Specification for Highway Works (SHW) March 1998 as amended published by The Stationary Office
2. All levels relate to the survey which is to Ordnance datum. Dimensions not to be scaled.
3. Street lighting, illuminated traffic signs, bollards and associated works shall comply with Wiltshire Council 'Specification for Street Lighting'.
4. Use of this drawing does not absolve the client from his responsibilities under the Health and Safety: The Construction Design and Management Regulations 2015. The Principal Designer is required to contact Tumu Consulting prior to permitting this drawing to be used in connection with any construction works. For site specific CDM 2015 Designers Residual Risks, see drawing series 1140 and should be read in conjunction with Designer Risk Register.
5. Street name plate positions to be agreed with the Highways inspector on site.
6. The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site.
7. Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed excavations are to be checked by the contractor prior to starting work.
8. All underbuild, and retaining wall heights shown are the anticipated maximum finished height required.
9. All step shown are to have a min of 150mm rising and 280mm going dimensions up to a maximum of 12 steps per flight.
10. Where external ground levels are higher than the DPC tanking will be required even if not shown on the drawing.
11. This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other specialist document provided. Any anomalies or contradictions between any of the above is to be reported to Tumu Consulting before construction begins.
12. Refer to Section 38 & 104 drawings for a full set of construction specification notes.

REV.	DESCRIPTION	Date	BY	CHK
C	SERVICE STRIPS ADDED TO LAYOUT	22/04/26	TS	AB
B	RETAINING WALL ALIGNMENT UPDATED NEAR PLOT 8	13/04/26	TS	AB
A	FIRST ISSUE	02/04/26	TS	BS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: 0 1:200 10 metres

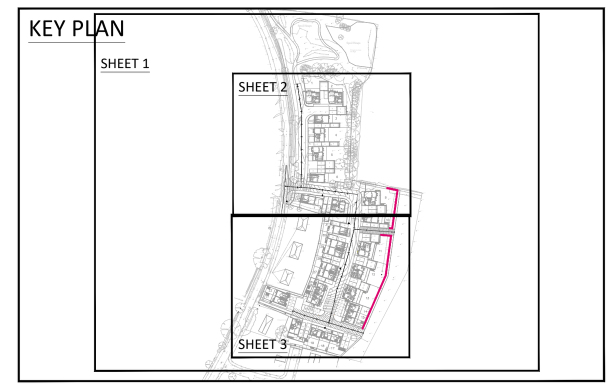
PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

TITLE: ENGINEERING LAYOUT SHEET 2

Project Ref: 19901 Originator: TUM Stage: PL Phase: XXX Number: 0211

REV: C





ENGINEERING LEGEND

100.000	FINISHED FLOOR LEVEL (House/Dwelling)
100.000	FINISHED GARAGE LEVEL
100.00	PROPOSED FINISHED LEVEL
100.00	EXISTING GROUND LEVEL TIE-IN (Exact level to be confirmed by the contractor and any discrepancies reported prior to commencement of any works)
1:100	GRADIENT
XX.XX	HIGHWAY COUNTOUR
UB450	UNDERBUILD (mm) (UB represents maximum height of underbuild beneath normal anticipated outside ground level of 150mm below DPC)
T450	TANKING (mm) (T represents maximum height of tanking from normal DPC level)
RW1500	RETAINING WALL (mm) (RW represents maximum height. Refer to structural engineers drawings for details. Appropriate detail based on height and loading/use)
GB450	GRAVEL BOARD (mm) (GB represents maximum height. Refer to structural engineers drawings for details. Appropriate detail based on height and loading/use)
4S	SLIP PROOF STEPS & LANDING (In accordance with Part M to be used Handrail to be provided where there are 3 or more steps to structural engineers details) (Max 0.15m riser, and 0.28m going min)
@1:2	EARTHWORKS (1:3 slope unless stated otherwise. Max height 0.59m @ 1:3 in rear gardens. Where slopes are steeper than 1:6, a Geotechnical engineer may be required to conform with NHBC Part 10.2.9)
	CORDUROY TACTILE PAVING BLISTER TACTILE PAVING (PCC 400x400mm square)
	INDICATIVE LOCATION OF STREET LIGHTING
GK1650	GABION WALL (mm) (GK represents maximum height. Assumed 6° face angle. Dashed line is approximate extent of the toe of the wall)
	FORWARD VISIBILITY SPLAY - 15mph as per MFS (17m)
	JUNCTION VISIBILITY SPLAY - 15mph as per MFS (2.4X17m)

General Notes:

1. All Works are to be constructed in accordance with Wiltshire Council and the Highways Agency's Specification for Highway Works (SHW) March 1998 as amended published by The Stationary Office
2. All levels relate to the survey which is to Ordnance datum. Dimensions not to be scaled.
3. Street lighting, illuminated traffic signs, bollards and associated works shall comply with Wiltshire Council 'Specification for Street Lighting'.
4. Use of this drawing does not absolve the client from his responsibilities under the Health and Safety: The Construction Design and Management Regulations 2015. The Principal Designer is required to contact Tumu Consulting prior to permitting this drawing to be used in connection with any construction works. For site specific CDM 2015 Designers Residual Risks, see drawing series 1140 and should be read in conjunction with Designer Risk Register.
5. Street name plate positions to be agreed with the Highways inspector on site.
6. The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site.
7. Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed excavations are to be checked by the contractor prior to starting work.
8. All underbuild, and retaining wall heights shown are the anticipated maximum finished height required.
9. All step shown are to have a min of 150mm rising and 280mm going dimensions up to a maximum of 12 steps per flight.
10. Where external ground levels are higher than the DPC tanking will be required even if not shown on the drawing.
11. This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other specialist document provided. Any anomalies or contradictions between any of the above is to be reported to Tumu Consulting before construction begins.
12. Refer to Section 38 & 104 drawings for a full set of construction specification notes.

REV.	DESCRIPTION	Date	BY	CHK
C	SERVICE STRIPS ADDED TO LAYOUT	24/04/26	TS	AB
B	LEVELS AND RETAINING WALLS UPDATED FOLLOWING ARCHITECTS COMMENTS	13/04/26	TS	AB
A	FIRST ISSUE	02/04/26	TS	BS

DESIGN BY: tumu

CLIENT: ASHFORD HOMES (SOUTH WESTERN) LIMITED

DRAWING STATUS: PLANNING APPLICATION

SCALE @ A1: 0 1:200 10 metres

PROJECT: LAND AT LOTTAGE FARM, ALDBOURNE

TITLE: ENGINEERING LAYOUT SHEET 3

Project Ref: Originator: Stage: Phase: Number: 19901-TUM-PL-XXX-0212

REV: C

Appendix G – Causeway Flow Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PP A	0.193	5.00	133.420	426741.488	176542.469	0.770	132.650

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Node PP A Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.23328	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	158	Depth (m)	0.410
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	98.000		

Node PP A Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	133.060
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	480.0	480.0	0.150	480.0	491.6	0.151	0.0	491.6

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PP A	88	132.782	0.132	9.8	13.4470	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
120 minute winter	PP A	Infiltration	3.5

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PP A	116	133.030	0.380	25.8	53.5805	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
120 minute winter	PP A	Infiltration	3.5

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	PP A	176	133.179	0.529	34.0	113.1505	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
180 minute winter	PP A	Infiltration	3.5

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PP A1	0.017	5.00	132.900	426737.364	176497.653	0.750	132.150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Node PP A1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00893	Invert Level (m)	132.150	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	4535	Depth (m)	0.540
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	22.900		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	PP A1	555	132.257	0.107	0.3	3.5965	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
600 minute winter	PP A1	Infiltration	0.0

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	PP A1	1380	132.433	0.283	0.3	10.2590	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
1440 minute winter	PP A1	Infiltration	0.0

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	PP A1	1440	132.651	0.501	0.6	18.4957	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
1440 minute winter	PP A1	Infiltration	0.0

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PP B	0.071	5.00	133.900	426765.126	176493.452	1.250	132.650

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Node PP B Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00893	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	5561	Depth (m)	0.550
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	50.300		

Node PP B Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	133.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	222.0	222.0	0.300	222.0	237.8	0.301	0.0	237.8

Node PP B Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	133.500	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.190
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	50.300		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	PP B	945	132.878	0.228	0.9	16.7643	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
960 minute winter	PP B	Infiltration	0.1

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	PP B	1410	133.202	0.552	1.4	43.9282	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
1440 minute winter	PP B	Infiltration	0.1

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	PP B	1440	133.376	0.726	2.5	80.6244	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
1440 minute winter	PP B	Infiltration	0.1

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PP C	0.307	5.00	134.790	426781.174	176450.526	1.720	133.070

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Node PP C Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.16812	Invert Level (m)	133.070	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	407	Depth (m)	0.760
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	91.500		

Node PP C Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	133.830
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	420.0	420.0	0.400	420.0	449.1	0.401	0.0	449.1

Node PP C Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	134.230	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	1.00	Length (m)	91.500		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	PP C	148	133.329	0.259	12.0	32.1389	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
180 minute winter	PP C	Infiltration	2.3

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	PP C	236	133.831	0.761	24.3	108.5101	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
240 minute winter	PP C	Infiltration	2.3

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	PP C	585	134.135	1.065	21.4	229.8545	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
600 minute winter	PP C	Infiltration	2.3

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PP C1	0.094	5.00	134.900	426739.785	176396.557	2.250	132.650

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Node PP C1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.16812	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	401	Depth (m)	0.750
Safety Factor	10.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	50.000		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PP C1	92	132.752	0.102	4.8	6.9687	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
120 minute winter	PP C1	Infiltration	1.4

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PP C1	118	132.979	0.329	12.6	27.3849	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
120 minute winter	PP C1	Infiltration	1.4

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	PP C1	236	133.317	0.667	13.3	57.7890	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
240 minute winter	PP C1	Infiltration	1.4

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PP D	0.030	5.00	134.120	426747.998	176408.918	1.470	132.650

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Node PP D Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	133.550	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	10.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	14.500		

Node PP D Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	10.0	Invert Level (m)	133.250
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	28.0	0.0	0.300	28.0	0.0	0.301	0.0	0.0

Node PP D Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02880	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.600
Safety Factor	10.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	14.500		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Appendix H – Half Drain Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PP A	0.193	5.00	0.0	133.420	426741.488	176542.469	0.770	132.650
PP A1	0.017	5.00		132.900	426737.364	176497.653	0.750	132.150
PP B	0.071	5.00		133.900	426765.126	176493.452	1.250	132.650
PP C	0.307	5.00		134.790	426781.174	176450.526	1.720	133.070
PP D	0.030	5.00		134.120	426747.998	176408.918	1.470	132.650
PP C1	0.094	5.00		134.900	426739.785	176396.557	2.250	132.650

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	10080	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	0	0

Node PP A Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.23328	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	158	Depth (m)	0.410
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	98.000		

Node PP A1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00893	Invert Level (m)	132.150	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	4535	Depth (m)	0.540
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	22.900		

Node PP B Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00893	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	5561	Depth (m)	0.550
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	50.300		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Node PP C Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.16812	Invert Level (m)	133.070	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	407	Depth (m)	0.760
Safety Factor	10.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	91.500		

Node PP D Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02880	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	1875	Depth (m)	0.600
Safety Factor	10.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	14.500		

Node PP C1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.16812	Invert Level (m)	132.650	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	401	Depth (m)	0.750
Safety Factor	10.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	50.000		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PP A	116	133.030	0.380	25.8	53.5805	0.0000	OK
1440 minute winter	PP A1	1380	132.433	0.283	0.3	10.2590	0.0000	OK
1440 minute winter	PP B	1410	133.649	0.999	1.4	43.4805	0.0000	OK
240 minute winter	PP C	236	134.464	1.394	24.3	107.8762	0.0000	OK
1440 minute winter	PP D	1410	133.578	0.928	0.6	15.2220	0.0000	OK
120 minute winter	PP C1	118	132.979	0.329	12.6	27.3849	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
120 minute winter	PP A	Infiltration	3.5
1440 minute winter	PP A1	Infiltration	0.0
1440 minute winter	PP B	Infiltration	0.1
240 minute winter	PP C	Infiltration	2.3
1440 minute winter	PP D	Infiltration	0.1
120 minute winter	PP C1	Infiltration	1.4

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd

Appendix I – Thames Watter Asset Map

CommercialDW Drainage and Water Enquiry Sewer Map- CDWS/CDWS Standard/2015_3111919



The width of the displayed area is 500m

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no survey information is available.

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7302	133.09	130.99
6303	131.44	129.07
6304	131.59	129.96
6302	131.85	129.2
7301	132.53	129.62
7401	132.65	131.16

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Sewer Key - Commercial Drainage and Water Enquiry

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Control Valve

Drop Pipe

Ancillary

Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Outfall

Undefined End

Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plans are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole level indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0118 925 1504.

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4W, DX 151280 Slough 13
T 0845 070 9148 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

CommercialDW Drainage and Water Enquiry Water Map-CDWS/CDWS Standard/2015_3111919



The width of the displayed area is 500m

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

Waterworks Key - Commercial Drainage and Water Enquiry

Water Pipes (Operated & Maintained by Thames Water)

4" — **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16" — **Trunk Main:** A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY — **Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE — **Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED — **Metered Pipe:** A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.