

Foul and Surface Water Drainage Report

Land rear of Stumble Ridge, Balcombe

For

Steve Baker

Rev – PL-

Reference **C3415**

Date **25th November 2024**

Revision	Date of Issue	Comments	Prepared By	Checked By
PL-	25/11/2024	Initial Issue	MR	CS

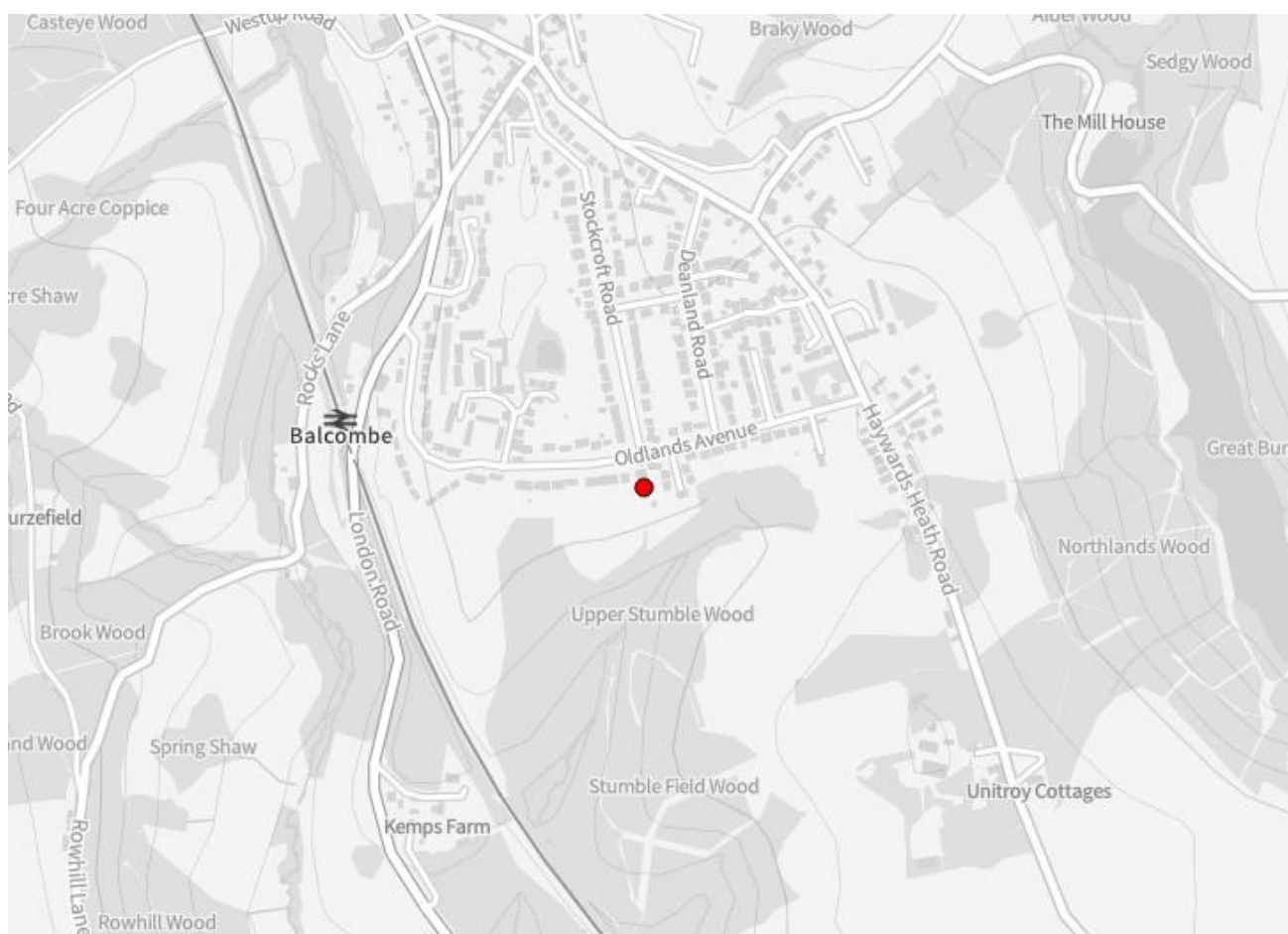
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1 Introduction

- 1.1.1 CGS Civils Ltd has been appointed to undertake a drainage strategy report for a proposed development at Land rear of Stumble Ridge, Balcombe.
- 1.1.2 The purpose of this drainage strategy is to demonstrate how the development area can be satisfactorily drained without increasing flood risk onsite and elsewhere.
- 1.1.3 The existing site comprises a residential building located on Oldlands Avenue. The proposed development will consist of the construction of a new residential building situated at the rear of the site, within the garden of the existing building. The development will also include the provision of a new access road. The proposed development is located as OS Grid Reference **TQ 31115 30036** and has the post code **RH17 6LP**.
- 1.1.4 The proposed site plan can be found in **Appendix A**.

Fig 1. Site Location



2 Executive Summary:

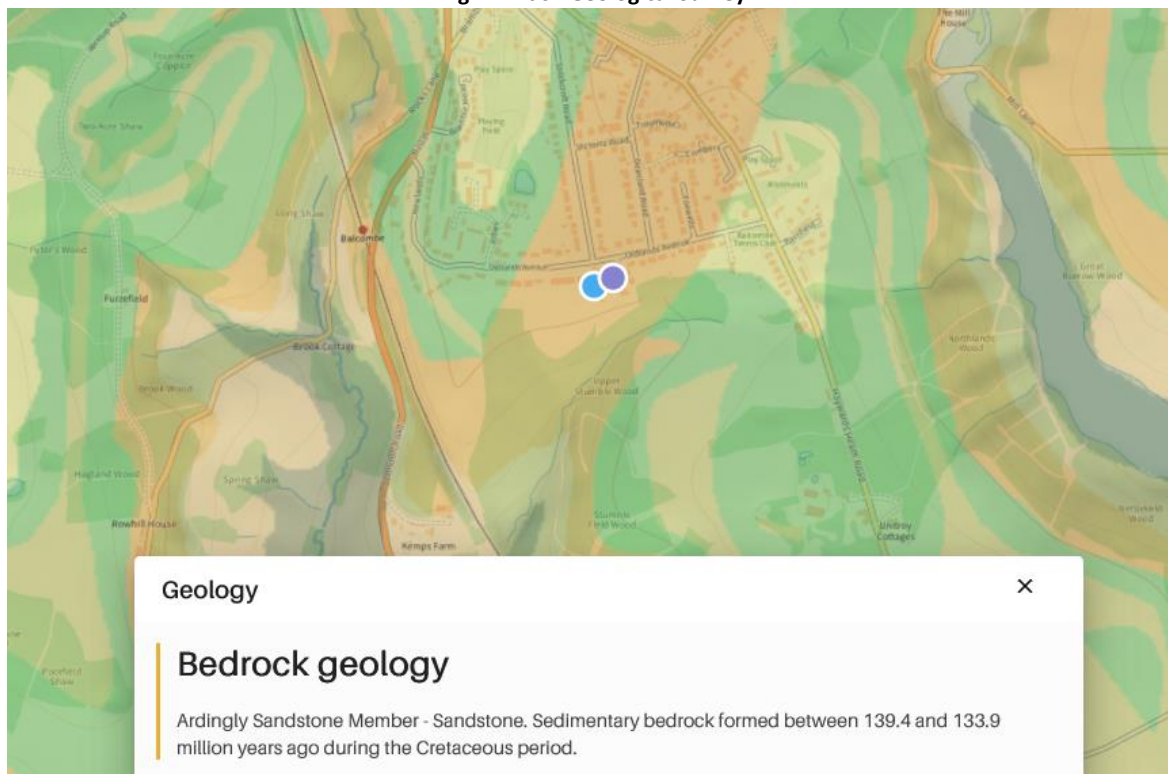
- 2.1.1 Surface water will be discharged into the ground via infiltration. All roof areas is to be collected into a positive drainage network, discharging into the ground via proposed soakaway geocellular crates, with an overflow directed to a proposed infiltration raingarden. Hard-paved areas will consist of permeable surface, enabling storm water runoff to infiltrate freely into the ground. The network will make use of a soakaway and permeable paving in order to cater for the 1 in 100-year +45% storm.
- 2.1.2 Foul water will be discharged into the public foul water sewer via a direct connection to an existing manhole located on the site. The proposed development will require the foul water to be pumped to the existing manhole. This connection is subject to Southern Water approval under a Section 106 agreement.

3 Site Geology

3.1 British Geological Survey information

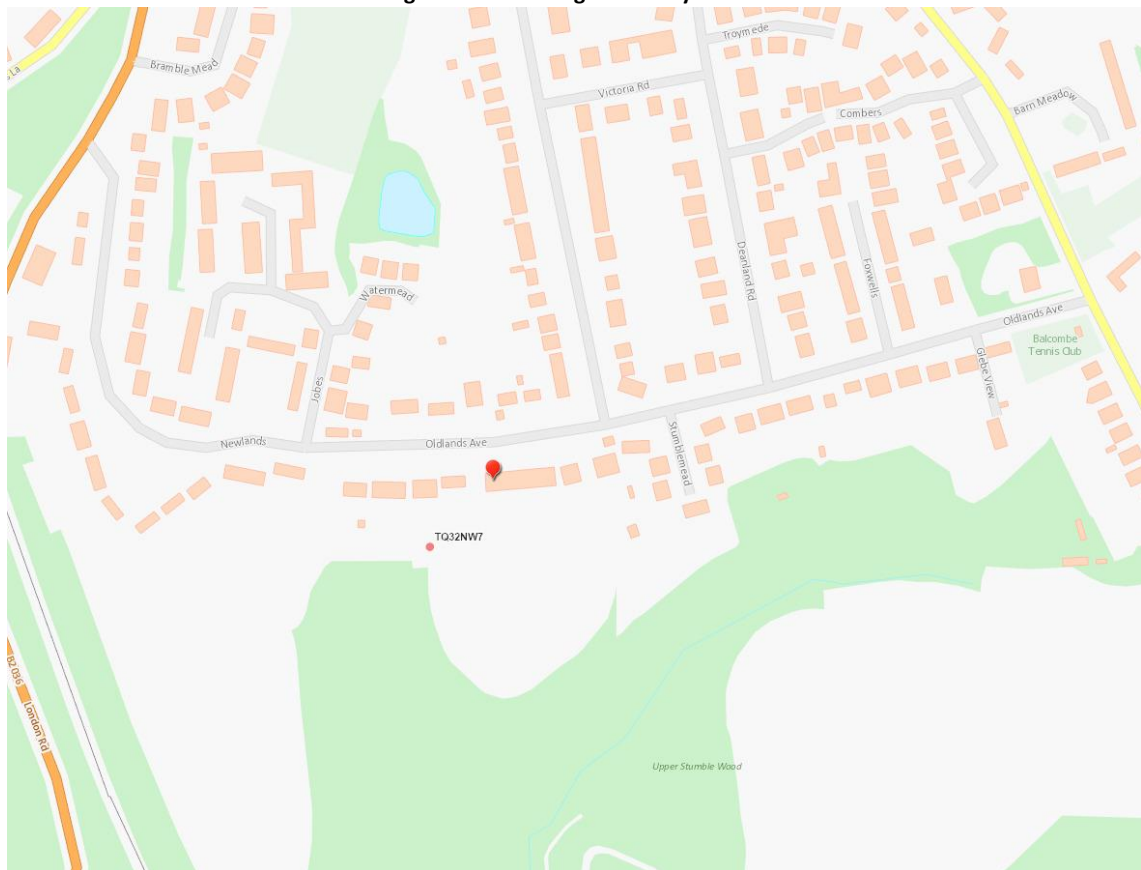
- 3.1.1 The British Geological Survey confirms the bedrock geology to be made up Ardingly Sandstone Member- Sandstone. At the time of writing the British Geological Survey website does not have any recorded information of the Superficial deposits on site.
- 3.1.2 The British Geological survey also holds records of historical boreholes near the site which give some insight into the ground geology.
- Borehole TQ32NW7 (Located approx. 120m South-West of the site) – Ground geology (Sandstone)
- 3.1.3 The British Historical Borehole Log can be found in **Appendix B**.

Fig 2. British Geological Survey



Snippet from BGS Website showing Bedrock geology <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

Fig 3. British Geological Survey



Snippet from BGS Website showing Historical Borehole Logs locations

- 3.1.4 The Magic Environmental Agency confirms the proposed development site underlain by freely draining slightly acid but base-rich soils. The soilscape can be found in **Appendix C**.

3.2 Geological Assessment

- 3.2.1 No intrusive ground investigation has been conducted. Based on available information from the site, the BGS Portal, and Magic Map, the proposed development is identified to be situated in an area underlain by sandstone and sandy clay soils. Considering that the existing site discharged surface water via infiltration, it is therefore presumed that infiltration is a viable method for surface water discharge.
- 3.2.2 Using information from nearby third- party developments, an infiltration rate of 5.0×10^{-6} m/s has been assumed, which complies with the CIRIA SuDS Manual 2015 specifications.
- 3.2.3 An on-site infiltration test is to be conducted at the proposed soakaway location to confirm the infiltration rates specific to the site.

Fig 4. Typical infiltration coefficients based on soil textures (after Bettess, 1996)

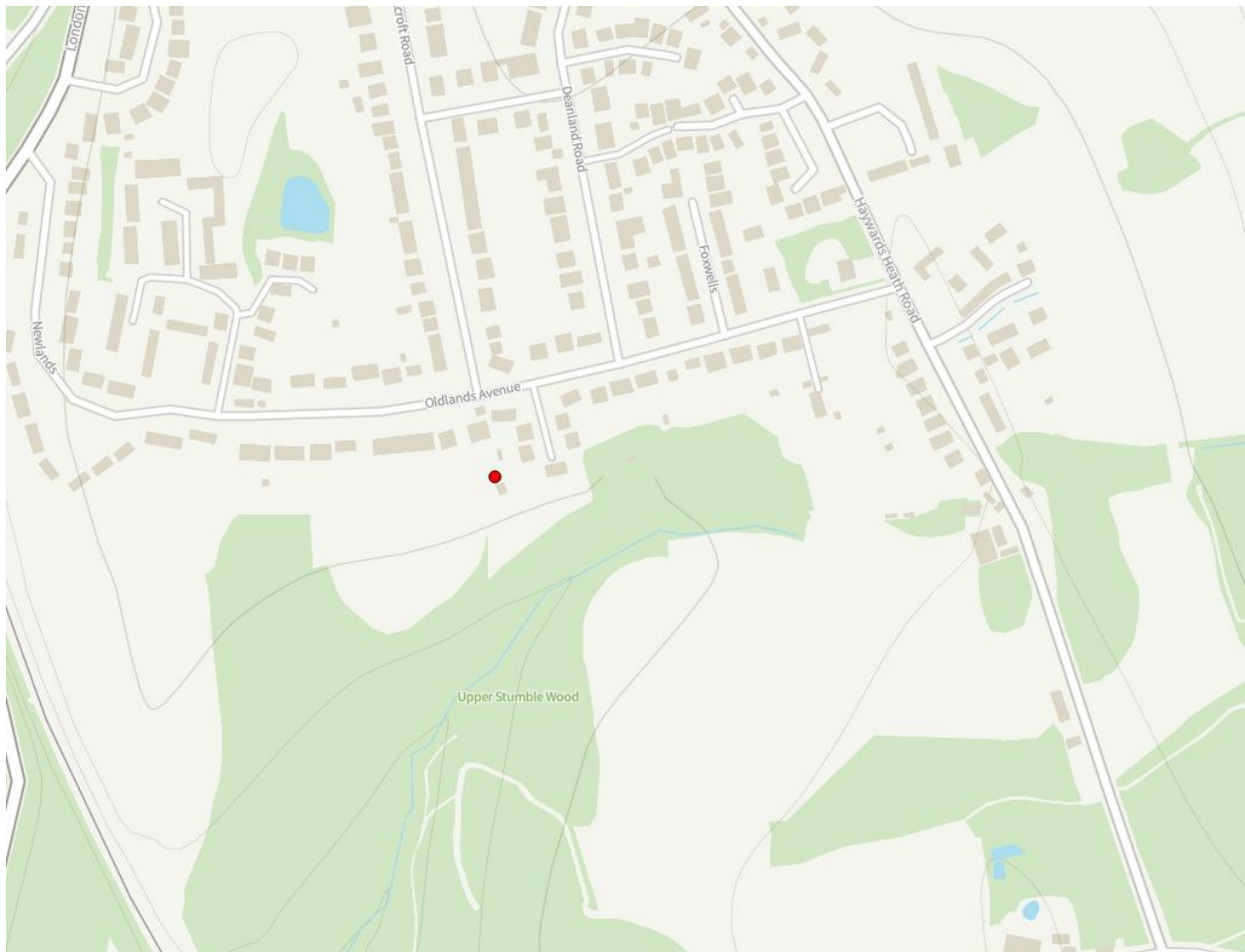
TABLE 25.1 Typical infiltration coefficients based on soil texture (after Bettess, 1996)			
Soil type/texture		ISO 14688-1 description (after Blake, 2010)	Typical infiltration coefficients (m/s)
Good infiltration media ▪ gravel ▪ sand ▪ loamy sand ▪ sandy loam		Sandy GRAVEL Slightly silty slightly clayey SAND Silty slightly clayey SAND Silty clayey SAND	$3 \times 10^{-4} - 3 \times 10^{-2}$ $1 \times 10^{-5} - 5 \times 10^{-5}$ $1 \times 10^{-4} - 3 \times 10^{-5}$ $1 \times 10^{-7} - 1 \times 10^{-5}$
Poor infiltration media ▪ loam ▪ silt loam ▪ chalk (structureless) ▪ sandy clay loam		Very silty clayey SAND Very sandy clayey SILT N/A Very clayey silty SAND	$1 \times 10^{-7} - 5 \times 10^{-6}$ $1 \times 10^{-7} - 1 \times 10^{-5}$ $3 \times 10^{-8} - 3 \times 10^{-6}$ $3 \times 10^{-10} - 3 \times 10^{-7}$
Very poor infiltration media ▪ silty clay loam ▪ clay ▪ till		— — Can be any texture of soil described above	$1 \times 10^{-8} - 1 \times 10^{-6}$ $< 3 \times 10^{-8}$ $3 \times 10^{-9} - 3 \times 10^{-6}$
Other ▪ rock* (note mass infiltration capacity will depend on the type of rock and the extent and nature of discontinuities and any infill)		N/A	$3 \times 10^{-9} - 3 \times 10^{-5}$

Snippet from CIRIA SuDS Manual 2015

4 Existing Drainage

- 4.1.1 Based on the information provided from the site, surface water runoff currently discharges into the ground via infiltration. Considering the site's topography and its close proximity to the existing woodland. Upper Stumble Wood, where an existing watercourse has been identified, it is confirmed that any exceedance runoff from the site is routed towards the existing watercourse located to the south of the site.

Fig 5. Existing Watercourse



Snippet from Magic Map

5 Proposed Drainage Strategy

5.1 SuDS Hierarchy

- 5.1.1 All options for the destination of run-off generated on site have been assessed in line with the SuDS hierarchy as set out in Building Regulations Part H document and DEFRA's Draft National Standards for SuDS.

Table 1. SuDS Hierarchy

Discharge Destination	
Rainwater Harvesting	Yes -All proposed surface water from roof area to be collected in rainwater harvesting tank before being discharged into the ground.
Discharge to Ground	Yes - All proposed surface water runoff from the roof and driveway will be discharged into the ground, with an assumed infiltration rate of 5.0×10^{-6} m/s.
Discharge to Watercourse	N/A
Discharge to Surface Water Sewer	N/A
Discharge to Other Sewer	N/A

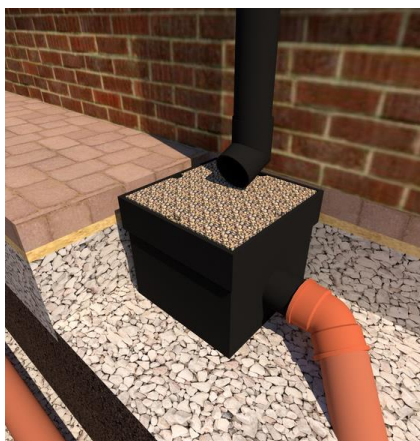
5.2 Proposed Hydraulic Calculation Specifications:

Table 2. SuDS Hierarchy

Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1
CV Winter and Summer	1
Additional Storage (m ³ / ha)	0.0
Maximum Rainfall (mm/hr)	75
Soakaway Design	Base Coefficient (m/hr): 0.01800
	Side Coefficient (m/hr): 0.01800
	Factor of Safety: 2
	Porosity: 95%
	Time to Half Empty (mins): -
Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1
CV Winter and Summer	1
Additional Storage (m ³ / ha)	0.0
Maximum Rainfall (mm/hr)	75
Raingarden Design	Base Coefficient (m/hr): 0.01800
	Side Coefficient (m/hr): 0.01800
	Factor of Safety: 2
	Porosity: 95%
	Time to Half Empty (mins): 1001
Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1
CV Winter and Summer	1
Additional Storage (m ³ / ha)	0.0
Maximum Rainfall (mm/hr)	75
Permeable Paving Design	Base Coefficient (m/hr): 0.01800
	Side Coefficient (m/hr): 0.01800
	Factor of Safety: 2
	Porosity: 30%
	Time to Half Empty (mins): 49

5.3 Surface Water Drainage

- 5.3.1 Based upon the information gathered from the British Geology Survey website, it is proposed that all surface water runoff is to be discharged to ground via infiltration at an assumed rate of 5.00×10^{-6} m/s. All roof area is to be collected into a positive drainage network before being discharged to ground through the use of a geocellular soakaway with an overflow directed to the proposed infiltration raingarden. Due to the assumed permeability and the half-empty time exceeding 24 hours, the proposed raingarden will provide additional storage for consecutive 1:10 year rainfall events. The proposed raingarden will form a shallow depression in the ground and will be constructed with a 250mm gravel trench beneath, allowing surface water to disperse into the ground via infiltration. Any exceedance event runoff will be routed through the proposed drainage system, with an overflow directed towards the south into the existing woodland area, mimicking the existing drainage regime.
- 5.3.2 The proposed infiltration raingarden has been designed to an assumed infiltration rate of 5.0×10^{-6} m/s and has a depth of 600mm. The final size and depth of proposed raingarden to be confirmed at detail design stage subject to onsite infiltration results.
- 5.3.3 The proposed driveway area is to be freely drained into the ground via porous construction.
- 5.3.4 The soakaway, raingarden and permeable paving have been designed to cater for the 1 in 100-year+45% storm.
- 5.3.5 Given the proximity of existing trees and the potential risk of blockages in the drainage system, all proposed downpipes will discharge through a Raintaina filter chamber. This will prevent leaves and other debris from entering the system. The Raintaina filter chamber provides pre-treatment for downpipe runoff. Rainwater is directed onto the top of the chamber, which retains silts, leaves, and other debris on its permeable filter cover. The cover is designed to be easily removable for maintenance purposes.



Extract from Sel Environmental

- 5.3.6 The proposed soakaway calculations have been undertaken with infiltration allowed through both the base and sides. The proposed Raintaina filter chamber is included to reduce the risk of blockages downstream and to prevent the transfer of sediments or leaves into the proposed rainwater harvesting and proposed soakaway.
- 5.3.7 The entire surface water will be initially stored in the proposed rainwater harvesting tank before being discharged into the ground, enabling the reuse of surface water runoff. The exact size and location of the proposed harvesting tank will be determined at the detailed design stage.
- 5.3.8 Proposed Drainage, Contributing Area, Exceedance Flow Routes and Hydraulic Calculations can be found in **Appendix D**.

5.4 Water Quality

- 5.4.1 A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution.
- 5.4.2 Frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals, and various organic and inorganic contaminants) Therefore the first 5-10mm of rainfall should be adequately treated with SuDS.
- 5.4.3 The new SuDS Manual (Ciria C753, November 2015) introduces slightly different approach compared to the previous version for the water quality management of surface water. The Manual describes risks posed by the surface water runoff to the receiving environment as a function of:
- The pollution hazard at a particular site (i.e., the pollution source)
 - The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels
 - The sensitivity of the receiving environment
- 5.4.4 The recommended approaches for water quality risk management are given in the SuDS Manual Table 26.1.

Table 26.1 from SuDS manual. Approaches to Water Quality Risk Management

Table 26.1 Approaches to Water Quality Risk Management			
Design method	Hazard Characterisation	Risk Reduction	
		For Surface Water	For Groundwater
Simple Index Approach	Simple pollution hazard indices based on land use (Table 26.2)	Simple SuDS hazard mitigation indices (Table 26.3)	Simple SuDS hazard mitigation indices (Table 26.4)
Risk Screening	Factors characterising traffic density and extent of infiltration likely to occur (Table 26.5)	N/A	Factors characterising unsaturated soil depth and type, and predominant flow type through the soils (Table 26.5)
Detailed Risk Assessment	Site specific information used to define likely pollutants and their significance	More detailed, component specific performance information used to demonstrate that the proposed SuDS components reduce the hazard to acceptable levels	
Process-based treatment modelling	Time series rainfall used with generic pollution characteristics to determine statistical distributions of likely concentrations and loadings in the runoff	Models that represent the treatment processes in the proposed SuDS components give estimates of reductions in even mean discharge concentrations and total annual load reductions delivered by the system	

- 5.4.5 As per Table 26.1 Simple Index approach will be used as a design method for this site.
- 5.4.6 Table 26.2 will provide hazard classification of different land uses. The land uses for the surface water drainage for this site are.
- Residential Roofs
 - Individual Property driveways and residential car parks
 - Low traffic roads
- 5.4.7 To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index for each contaminant type that equals or exceeds the pollution hazard index for each contaminant type. Therefore, the following must be achieved for the surface running off the site.

Total SuDS mitigation index $\geq$ pollution hazard index

5.4.8 Pollution Hazard Indices are given for different land uses in Table 26.2 of the SuDS manual;

Table 26.2 from SuDS manual. Pollution Hazard Indices for Different Land Use Classifications

Table 26.2 Pollution hazard indices for different land use classifications				
Land Use	Pollution Hazard Level	Total Suspended solids (TSS)	Metals	Hydro-Carbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (Typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (e.g., cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g., schools, offices) i.e., < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g., haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

5.4.9 From Table 26.2 the following information is tabulated in Table 1

Table 3: Pollution hazard index and destination of runoff for the proposed site

Table 3: Pollution Hazard Index and Destination of runoff for the proposed Site					
Land Use	Destination of Runoff	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Residential Roof	Ground Water	Very Low	0.2	0.2	0.05
Individual driveways, residential car parks and low traffic roads	Ground water	Low	0.5	0.4	0.4

5.4.10 The SuDS mitigation index will be obtained from Table 26.4 (for groundwater) of the SuDS manual.

Table 26.4 from SuDS manual. Indicative SuDS Mitigation Indices for discharges to ground waters.

5.4.11 SuDS mitigation index are tabulated in Table 5 as followed.

Table 26.4 Indicative SuDS mitigation indices for discharges to groundwater			
Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates	TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good containment attenuation potential of at least 300mm in depth	0.6	0.5	0.6
A soil with good contaminant attenuation potential of at least 300mm in depth	0.4	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, i.e., graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20mm gravel) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth.	0.4	0.4	0.4
Constructed permeable pavement (where a suitable filtration later is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential of at least 300mm in depth	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area		

Table 4: SuDS mitigation index

Table 4 Mitigation Indices						
Runoff Source	Destination of Runoff	Mitigation Index Source	Type of SuDS Component	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Individual driveways, residential car parks and low traffic roads	Ground water	Table 26.4 (for ground waters)	Permeable Pavement	0.7	0.6	0.7
Roofs	Ground water	Table 26.4 (for ground waters)	300mm soil with good contaminant attenuation potential	0.4	0.3	0.3
Roofs	Ground water	Table 26.4 (for ground waters)	Bioretention-Raingarden	0.5x 0.8	0.5 x 0.8	0.5 x 0.8

5.4.12 The above analysis demonstrates that the SuDS devices within the design will mitigate any pollution present within the surface water system.

5.5 Foul water drainage

- 5.5.1 Due to the site topography and existing onsite drainage shallow depth, foul water is to be discharged into the onsite package pumping station prior being discharged into the existing foul drainage onsite.
- 5.5.2 All SVPs from the upper floor will be directed down to the lower floor level, where the proposed pumping station will be located within the proposed driveway at the rear of proposed development. The rising main will be routed to the existing foul water manhole located onsite at Stumble Ridge House. The exact location, size, and type of the proposed foul water pumping station will be confirmed during the detailed design stage.
- 5.5.3 The maximum discharge rate of the foul water from the proposed residential dwellings will be 900 l/day (6P x 150l/day) There will be sufficient capacity within the 100mm pipe to withstand the foul discharge from the proposed site.
- 5.5.4 A CCTV survey should be undertaken to confirm if a connection onsite is possible and if remedial works are required.
- 5.5.5 The proposed foul water connection to be agreed under S106 Wessex Water application.

5.6 Construction Phase Drainage

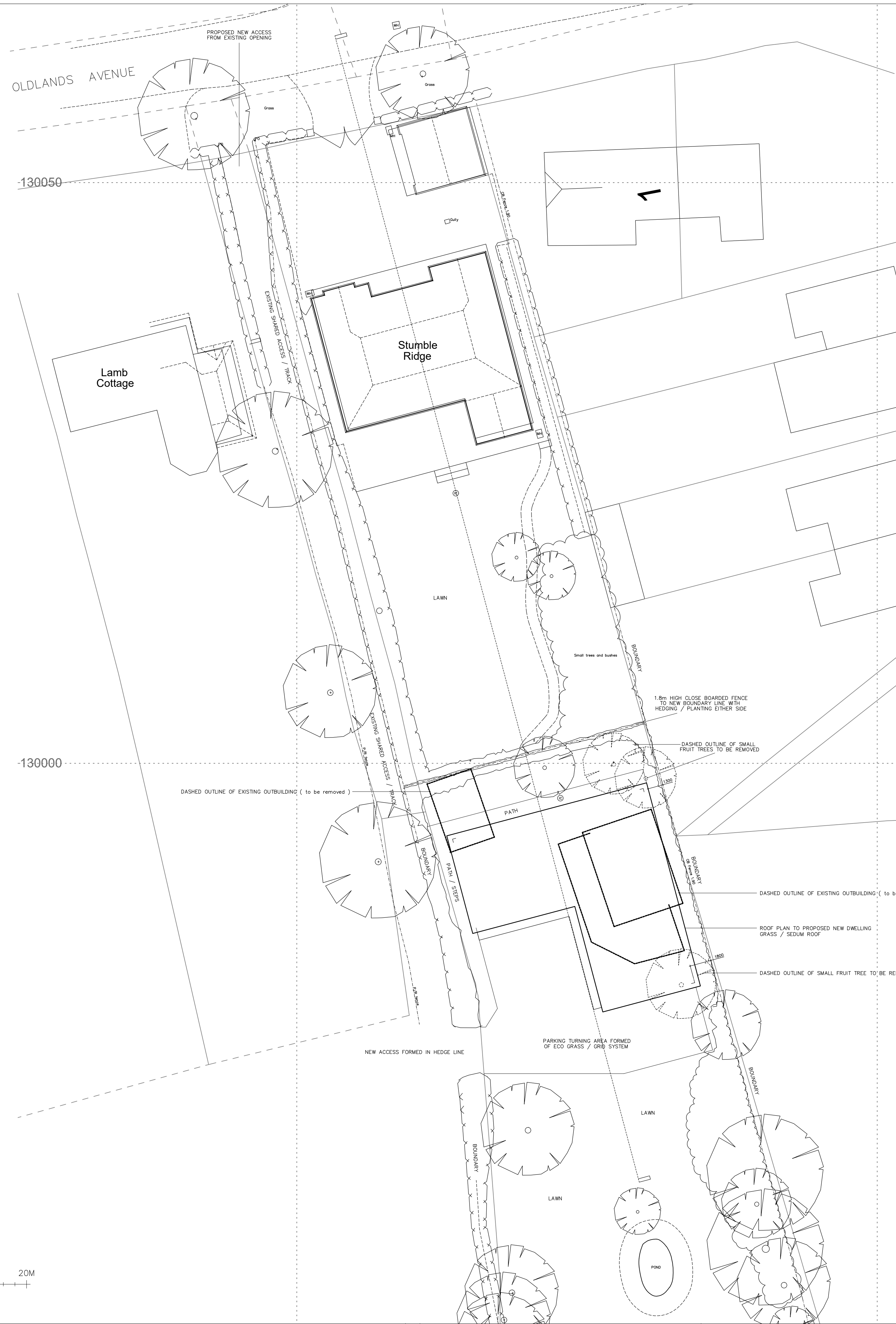
- 5.6.1 It is an offence to cause or knowingly permit the entry of any polluting, poisonous or noxious material in the water environment. If the pollution is serious enough to lower the ecological status of the water body as set out in terms by the Water Framework Directive (2000/60/EC) than prosecution may occur.
- 5.6.2 Remediation of any damage caused will not require the polluter to be prosecuted first. If the water pollution is serious enough to be classed an environmental damage, the damage will require to be remediated such that the area is returned to the condition it would have been in if the damage had not occurred.
- 5.6.3 If any pollution has not been reported or the polluter has not taken actions to prevent any further damage; they would then be causing an offence. Third parties (e.g., Private water supply users, landowners, recreation users and the public) who may be affected by possible damage may also report the risk of any environmental damage to the enforcing authority.
- 5.6.4 The principles of SuDS (Sustainable Drainage Systems) shall be applied to all components of design and construction regarding surface water management. Any design or site works that may impact on the site drainage or the water quality shall:
- Soakaway where soils allow
 - Consider and manage erosion
 - Remove pollutants in surface water
 - Retain any silts on site and prevent silts from discharging to watercourses or drains
 - Keep runoff rates at existing greenfield runoff
 - Prevent accidental spillages reaching watercourse
- 5.6.5 As infiltration on site is viable, the temporary drainage for the development will be in the form of land drains which will discharge into the ground.
- 5.6.6 Pollution will be controlled via the use of catchpit manholes and geotextiles.
- 5.6.7 Any potential hazardous substances will be within a controlled compound with a separate drainage system that will contain a penstock valve / containment kit in the event of a spillage.

6 Summary and Conclusions

- 6.1.1 CGS Civils has been instructed to produce a Drainage statement under National Planning Policy Framework (NPPF) to support the Planning Application for new residential dwelling.
- 6.1.2 The Surface Water will discharge into the ground with the assumed infiltration rate of 5.0×10^{-6} m/s. Due to the assumed permeability and the half-empty time exceeding 24 hours, the proposed raingarden will provide additional storage for consecutive 1:10 year rainfall events.
- 6.1.3 The Foul water will discharge into the proposed pumping station located within the proposed driveway at the rear, and then the proposed foul water to be directed into the existing foul water manhole located onsite. This connection is subject to a S106 application.
- 6.1.4 The report has demonstrated that the proposed drainage measures ensure that suitable means of surface water and foul drainage can be achieved for the proposed development.
- 6.1.5 A maintenance schedule has been written up for the drainage network including the SuDS features and can be found within **Appendix E**.

7 Appendices

7.1 Appendix A – Site Plan



THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ANY OTHER
RELEVANT DRAWINGS AND THE CONSTRUCTION MANUAL
THE BUILDER SHOULD CHECK ALL LEVELS AND SITE DIMENSIONS
BEFORE WORK STARTS AND NOTIFY SCANDIA OF ANY DISCREPANCY
IF IN DOUBT PLEASE ASK

[illegible]


SCANDIA-HUS BUSINESS PARK,
FELCOURT ROAD, FELCOURT, EAST GRINSTEAD,
WEST SUSSEX, RH19 2LP : TEL 01342 838060

FOR
MR & MRS BAKER

SITE
land rear of STUMBLE RIDGE
OLDLANDS AVENUE,
BALCOMBE, WEST SUSSEX

TITLE

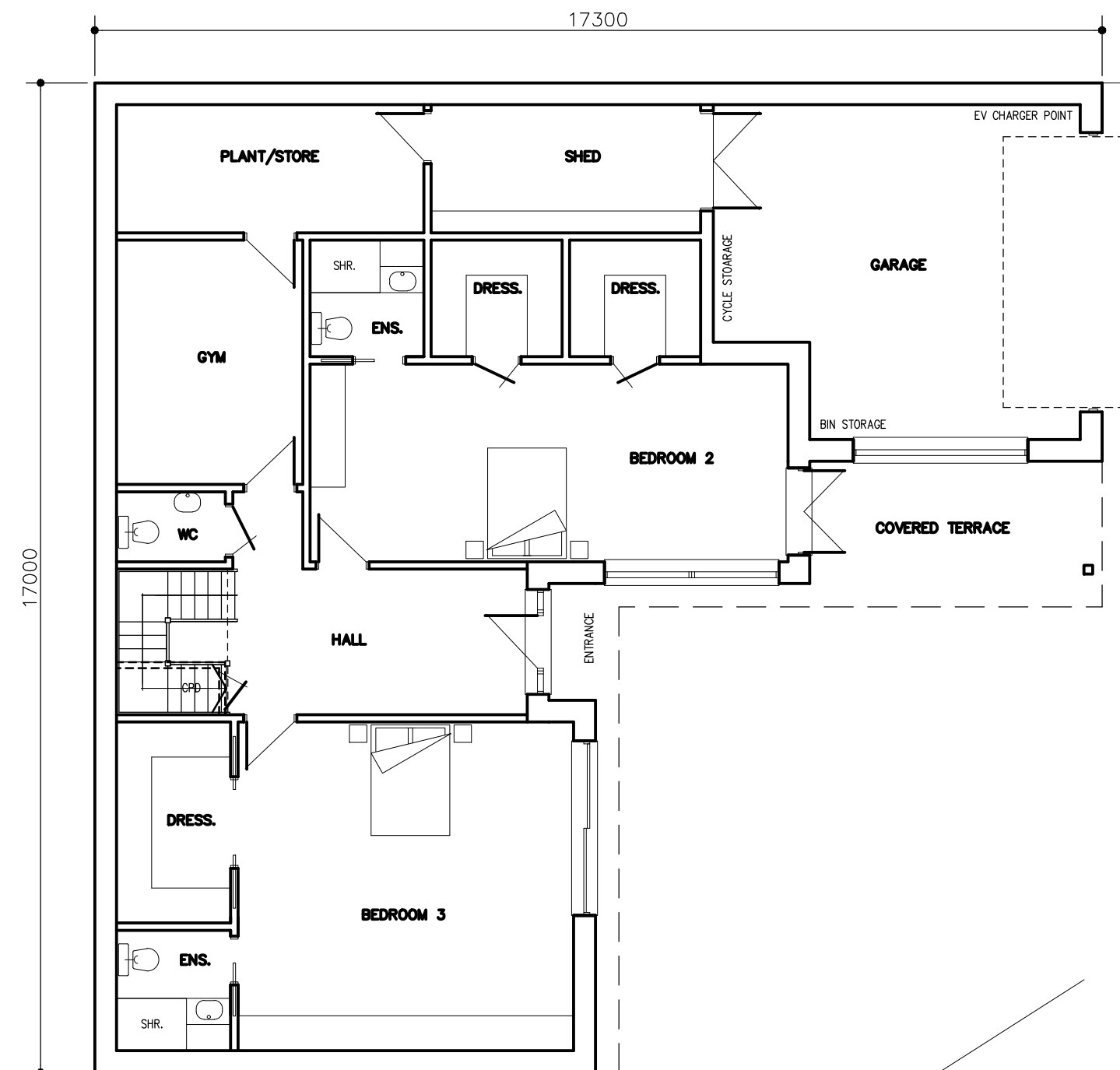
PROPOSED SITE PLAN

C/No. 238872	O/No.	SCALE 1/200 @ A1 SCALE
DRAWN JW		DRAWING NUMBER X05 REV
DATE 3.10.24		

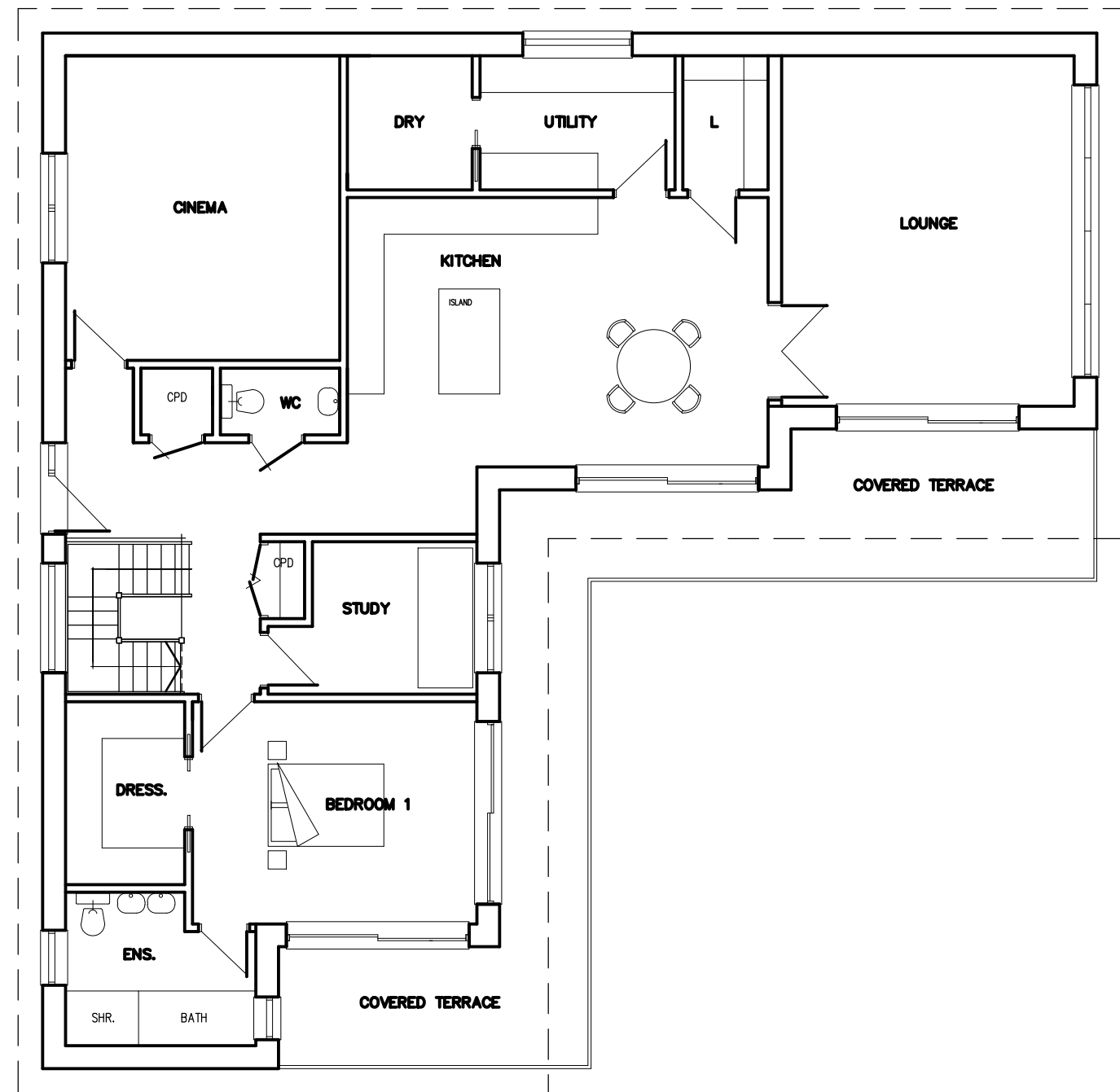
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EASTERN SITE BOUNDARY LINE



OVERALL EXTERNAL AREA TO LOWER LEVEL = 208.9 sq.m



OVERALL EXTERNAL AREA TO UPPER LEVEL = 188.7 sq.m



		
SCANDIA-HUS BUSINESS PARK, FELCOURT ROAD, FELCOURT, EAST GRINSTEAD, WEST SUSSEX, RH19 2LP : TEL 01342 838060		
MR & MRS BAKER		
and rear of STUMBLE RIDGE OLDLANDS AVENUE, ALCOMBE, WEST SUSSEX		
PROPOSED FLOOR PLANS		
No. 38872	O/No.	SCALE 1/100 @ A2 SCALE
DRAWN W DATE 10.24		DRAWING NUMBER X01
		REV

7.2 **Appendix B – Borehole Log**



RECORD OF BORING TQ 32 NW 7

at (house or farm) Oldland Nurseries T.N. 1032132
Town, Village, &c. Balcombe County Sussex I.O.S. 9
Six-inch map TQ 32

Exact site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps) [] Popular Edition Sheet of one-inch square

Surface level of ground 172 ft. above Ordnance Datum. Well or Bore commenced at 20 ft. below surface level of ground.
Sunk 184 ft., diameter 6 in. Bored 184 ft.; diameter of boring: at top 6 in., bottom 6 in.
Details of lining tubes (internal diameters preferred) 1 1/2 ft. of 6 in. I.D. GR 3099 2998

Water struck at depths of (feet) 152
Rest-level of water below top of well or bore 129 ft. Pumping level 150 ft. Time of recovery 700 hours.
Suction at 160 ft. depth. Yield: (i) on test 400 galls. per hour, (ii) normal 700 galls. per hour

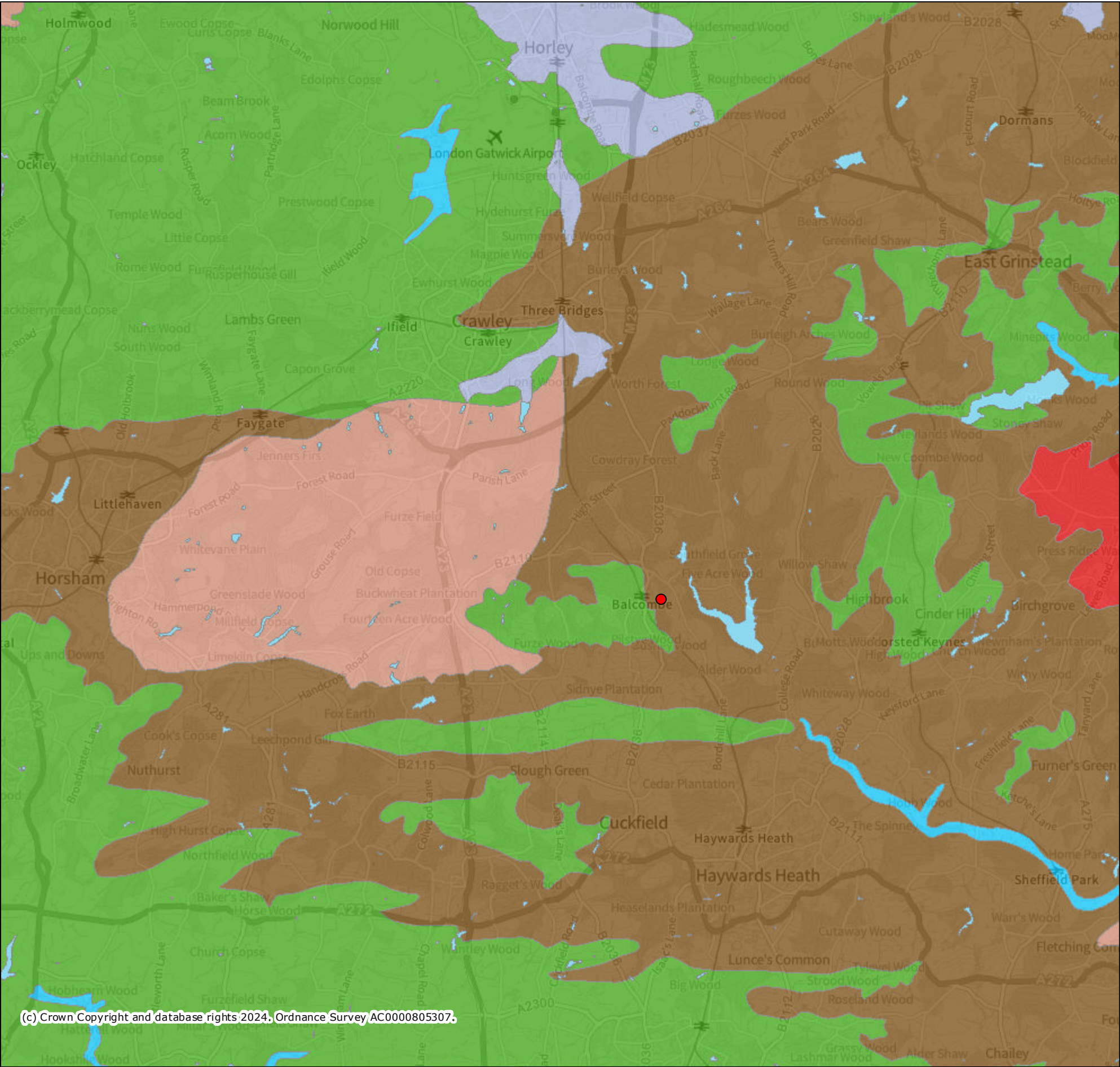
Quality (attach copy of analysis if available)
Made by R. Richards & Co. for Mr. A.G. Vinten Date of boring April, 1933
Information from do do

(For Survey use only). GEOLOGICAL CLASSIFICATION	NATURE OF STRATA. (and any additional remarks)	THICKNESS.		DEPTH.	
		Feet.	Inches.	Feet.	Inches.
<u>Tusbridge Wells Road</u> <u>Wadhurst clay</u>	Sandstone	54	.	54	.
	Sandy clay	5	.	59	.
	Sandstone	16	6	75	6
	Clay	5	.	80	6
	Clay with layers of sandstone	20	6	101	.
	Light blue clay	6	6	107	6
	Dark blue clay	18	6	125	.
	Light brown clay	8	.	130	.
	Blue clay & sandstone in layers (signs of water)	22	.	152	.
	Dark sandy clay	32	.	184	.

6° 15' SW. E. O.D. 350
Boring in pit 20 feet below that level
visited P. Buden
21.2.40.

For Survey use only.
GEOLOGICAL SURVEY AND MUSEUM, [] M of U [] Site marked

7.3 **Appendix C – Soilscape**



Legend

Soilscape (England)

- 1 - Saltmarsh soils
- 2 - Shallow very acid peaty soils over rock
- 3 - Shallow lime-rich soils over chalk or limestone
- 4 - Sand dune soils
- 5 - Freely draining lime-rich loamy soils
- 6 - Freely draining slightly acid loamy soils
- 7 - Freely draining slightly acid but base-rich soils
- 8 - Slightly acid loamy and clayey soils with impeded drainage
- 9 - Lime-rich loamy and clayey soils with impeded drainage
- 10 - Freely draining slightly acid sandy soils
- 11 - Freely draining sandy breckland soils
- 12 - Freely draining floodplain soils
- 13 - Freely draining acid loamy soils over rock
- 14 - Freely draining very acid sandy and loamy soils
- 15 - Naturally wet very acid sandy and loamy soils
- 16 - Very acid loamy upland soils with a wet peaty surface
- 17 - Slowly permeable seasonally wet acid loamy and clayey soils
- 18 - Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
- 19 - Slowly permeable wet very acid upland soils with a peaty surface
- 20 - Loamy and clayey floodplain soils with naturally high groundwater
- 21 - Loamy and clayey soils of coastal flats with naturally high groundwater
- 22 - Loamy soils with naturally high groundwater
- 23 - Loamy and sandy soils with naturally high groundwater and a peaty surface
- 24 - Restored soils mostly from quarry and opencast spoil
- 25 - Blanket bog peat soils
- 26 - Raised bog peat soils
- 27 - Fen peat soils
- 28 - Sea
- 30 - UC
- 31 - Water

Projection = OSGB36
xmin = 503300
ymin = 118200
xmax = 554100
ymax = 144900

Map produced by MAGIC on 21 November, 2024.
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7.4 Appendix D – Proposed Drainage Strategy, Contributing Area, Exceedance Flow Routes and Hydraulic Calculations

FOR CONTINUATION SEE DRAWING NO:102

- STANDARD DRAINAGE NOTES
- DO NOT SCALE FROM THIS DRAWING. REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
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DESIGN SUBJECT TO THE APPROVAL OF:
PLANNING AUTHORITY
BUILDING CONTROL
WATER AUTHORITY

DESIGN SUBJECT TO THE CONFIRMATION OF:
EXTERNAL LEVELS DESIGN
LOCATION AND DEPTH OF EXISTING UTILITIES
ROOT PROTECTION AREAS

DRAINAGE LEGEND

EXISTING FEATURES

Ex FWD Existing foul water sewer/drain and manhole (as taken from Southern Water Asset Plan and information provided from site)

PROPOSED FEATURES

FWD Foul Drainage

Pipe crossing (thickening denotes pipe above)

SWD Surface Water Drainage

ACO/Threshold/Slot drain channel

Rainwater pipe (as taken from Scandia-hus 'Proposed Drainage Information' ref no:238872, drawing no:DH1, dated: 8.11.2024)

Storm water access chamber (3000)

Storm water inspection chamber (4500)

Storm water catchpit chamber (4500)

Storm water rodding eye

Extent of permeable surface with porous sub-base lined with permeable geotextile



Proposed Rainwater Filter Chamber



Soil stack (as taken from Scandia-hus 'Proposed Drainage Information' ref no:238872, drawing no:DH1, dated: 8.11.2024)



Foul water inspection chamber (4500)



Trapped foul gully



Foul water access chamber (3000)



Impermeable private footway construction surface to Client's specifications



Finished floor level (assumed and tbc by the Architect)



Proposed surface level (indicative only for drainage purposes-tbc at detail design stage)



Proposed surface level and formation level (indicative only for drainage purposes-tbc at detail design stage)



Pipe info - diameter, length, gradient, bedding type



Fall in surface

ABBREVIATIONS

MH - MANHOLE
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Site Specific Notes

- Proposed SW and FW drainage designed based on desktop study, BGS Map viewer website.
- Proposed soakaway and permeable surface construction designed to assumed infiltration rate $5.0 \times 10^{-5} \text{ m/s}$.
- The infiltration system has been designed to cater the Critical 1 in 100 year + 45% climate change event.
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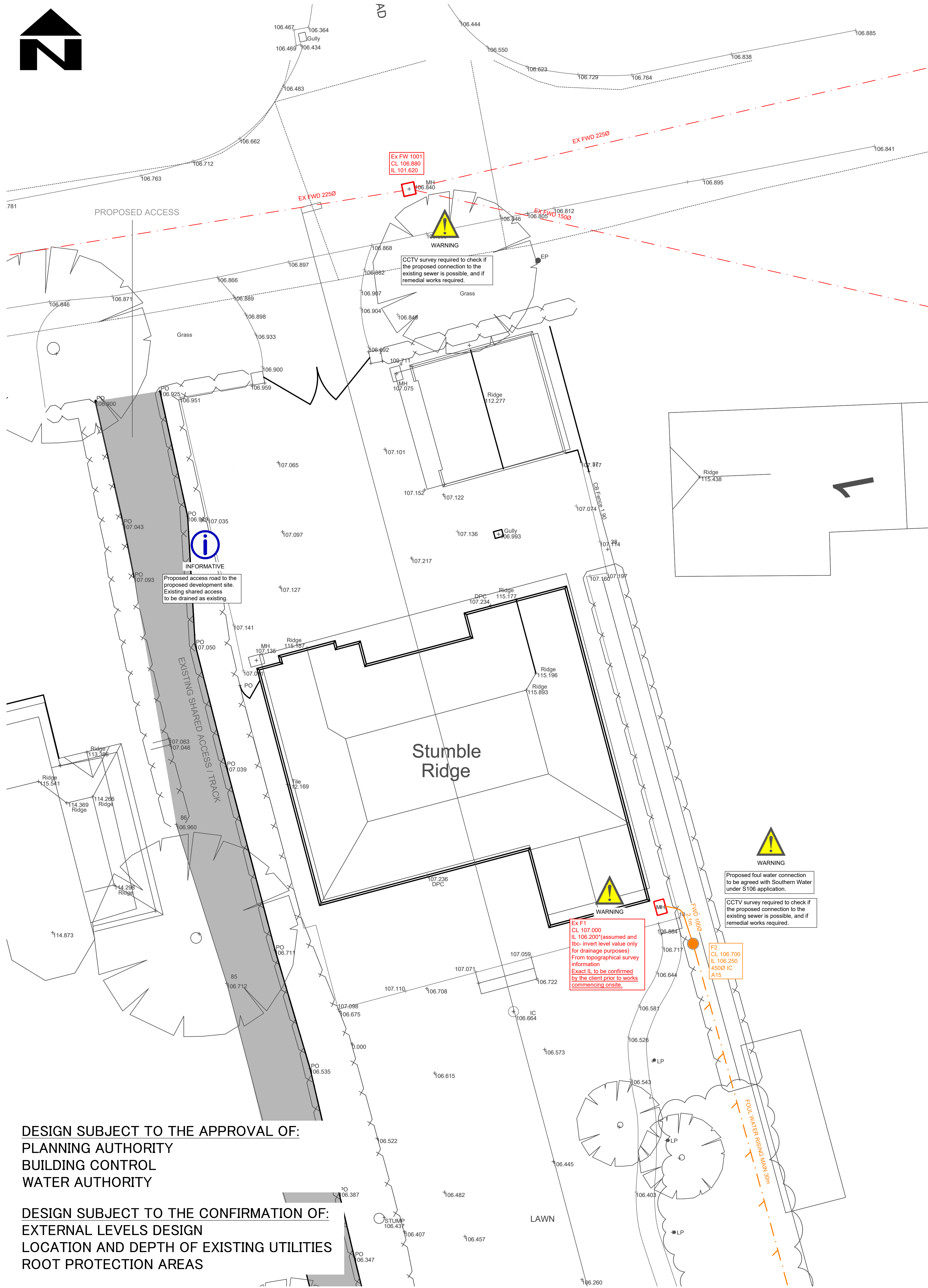
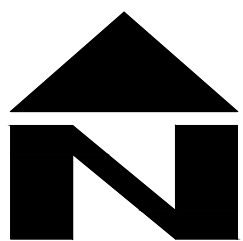
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REV	DATE	DESCRIPTION	BY	CHK	APP

CLIENT	STEVE BAKER						
ARCHITECT	SCANDIA-HUS						
JOB TITLE	LAND REAR OF STUMBLE RIDGE, BALCOMBE, RH17 6LR						
DRAWING TITLE	PROPOSED DRAINAGE STRATEGY SHEET 1 OF 2						
DRAWN	MR	ENGINEER	TZ	CHECKED	TZ	APPROVED	CS
DATE	NOVEMBER 2024		SCALE @ A1	1:100			
JOB No.	C3415	STATUS	PL	DRAWING No.	101	REV.	PL-

FOR PLANNING



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EXISTING FEATURES

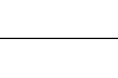
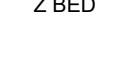
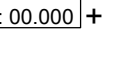
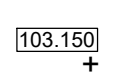
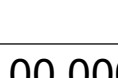
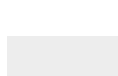
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Storm water access chamber (3000)
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Extent of permeable surface with porous sub-base lined with permeable geotextile



Proposed Raintains Filter Chamber
Soil stack (as taken from Scandia-hus 'Proposed Drainage Information' ref no:238872, drawing no:DH1, dated: 8.11.2024)
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Trapped foul gully
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Finished floor level (assumed and tbc by the Architect)

Proposed surface level (indicative only for drainage purposes-tbc at detail design stage)

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Pipe info - diameter, length, gradient, bedding type

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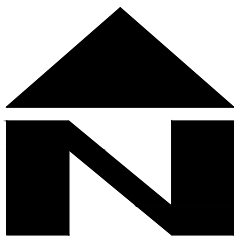
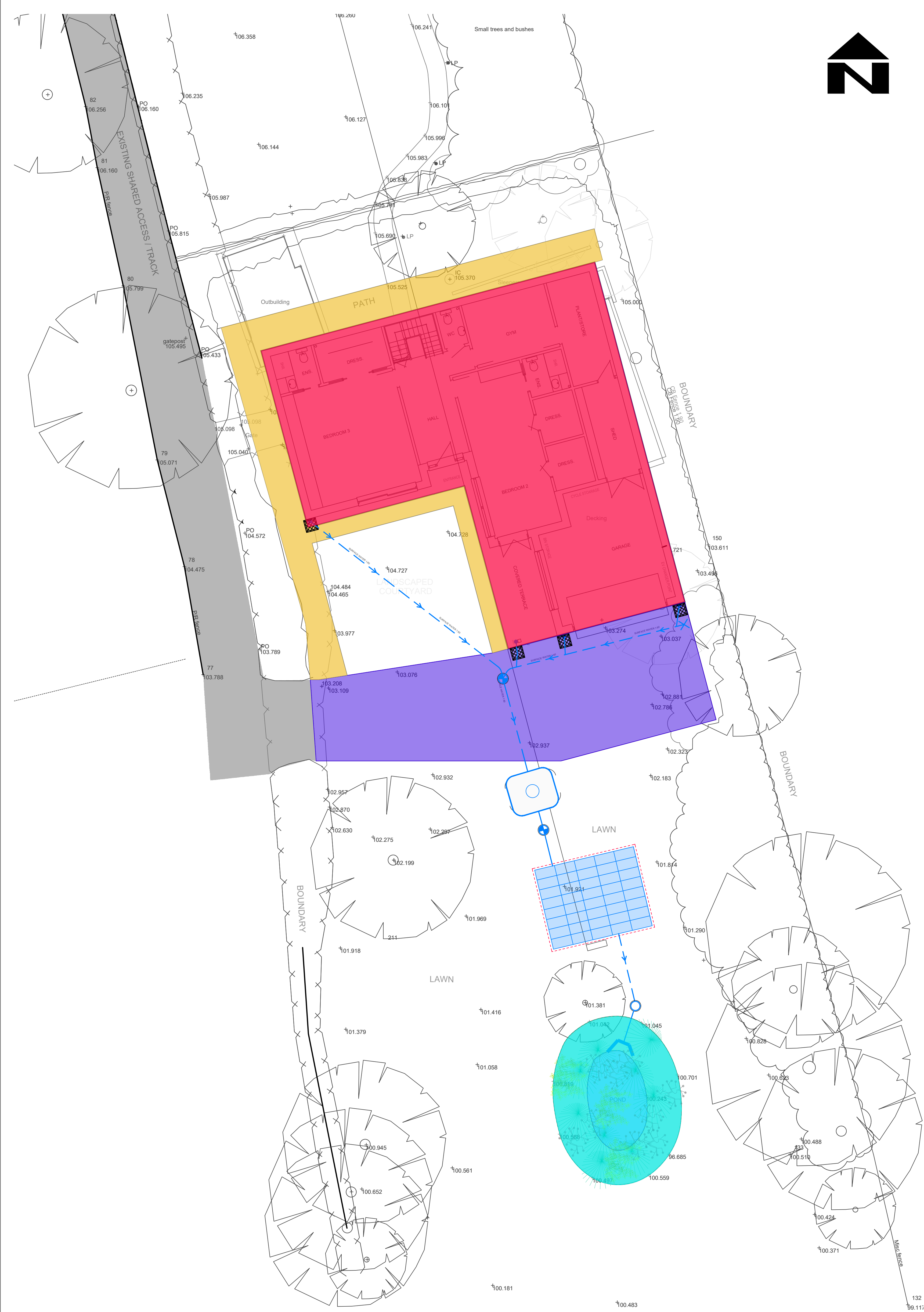
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REV	DATE	DESCRIPTION	BY	CHK	APP

CLIENT STEVE BAKER					
ARCHITECT SCANDIA-HUS					
JOB TITLE LAND REAR OF STUMBLE RIDGE, BALCOMBE, RH17 6LR					
DRAWING TITLE PROPOSED DRAINAGE STRATEGY SHEET 2 OF 2					
DRAWN MR		ENGINEER TZ		CHECKED TZ	APPROVED CS
DATE NOVEMBER 2024		SCALE @ A1 1:100			
JOB NO. C3415		STATUS PL		DRAWING No. 102	REV. PL-

FOR PLANNING



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Consulting Civil Engineers

CLIENT

STEVE BAKER

ARCHITECT

SCANDIA-HUS

JOB TITLE

LAND REAR OF STUMBLE RIDGE,
BALCOMBE, RH17 6LR

DRAWING TITLE

CONTRIBUTING AREA PLAN

DRAWN	ENGINEER	CHECKED	APPROVED
MR	TZ	TZ	CS

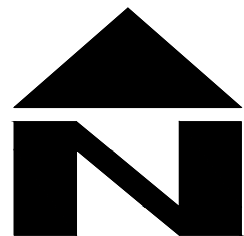
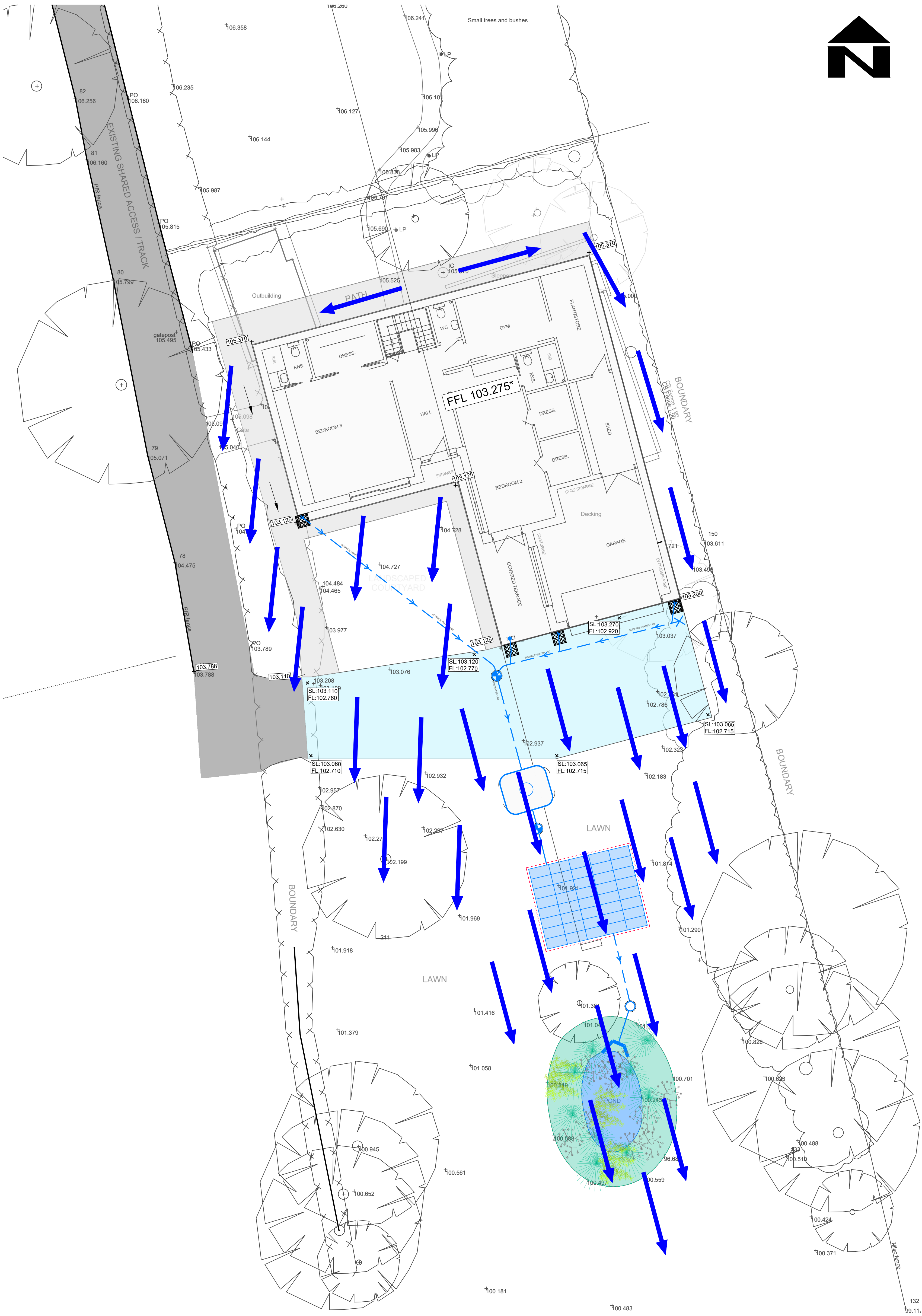
DATE: NOVEMBER 2024

SCALE @ A1: 1:100

JOB No.	STATUS	DRAWING No.	REV.
C3415	PL	201	PL-

Proposed Catchment Area (ha)	Area (ha)
Proposed Roof Area (included in proposed soakaway calculations)	0.0227 ha
Proposed Permeable Driveway PP1 (acting as self draining area- please see 'Storm Water Calculations')	0.0103 ha
Proposed Private Footpath (excluded from calculations- this area to be graded towards landscape area)	0.0066 ha
Proposed Infiltration Rain Garden Area	0.0042 ha
Catchment area included in proposed calculations to assumed infiltration rate of 5.00 x 10 ⁻⁶ m/s	0.0372 ha

FOR PLANNING



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 - MANHOLE AND CHAMBER COVER GRADES:

- 'A15' IN ALL LANDSCAPED AREAS AND ON FOOTPATHS
- 'B125' IN ALL DRIVEWAYS
- 'C250' IN PRIVATE PARKING AREAS
- 'D400' IN CARRIAGEWAY/ACCESS ROAD

Prefixed to drawing numbers shall signify the following:-

PL = PLANNING	Shall not be used for contract or construction purposes
P = PRELIMINARY	Shall not be used for contract or construction purposes
T = TENDER	Shall not be used for construction purposes
C = CONSTRUCTION	These are the only drawings that shall be used for construction purposes
R = RECORD	Record of actual completed work

P-	25.11.24	PRELIMINARY ISSUE	MR	TZ	CS
REV	DATE	DESCRIPTION	BY	CHK	APP

 Consulting Civil Engineers					
CLIENT STEVE BAKER					
ARCHITECT SCANDIA-HUS					
JOB TITLE LAND REAR OF STUMBLE RIDGE, BALCOMBE, RH17 6LR					
DRAWING TITLE EXCEEDANCE FLOW ROUTES					
DRAWN MR		ENGINEER TZ		CHECKED TZ	APPROVED CS
DATE NOVEMBER 2024			SCALE @ A1 1:100		
JOB No. C3415		STATUS PL	DRAWING No. 301		REV. PL-



BLUE ARROWS SHOW ROUTE OF EXCEEDANCE FLOWS FROM PROJECTED POINTS OF EMERGENCE TOWARDS DIRECTION OF FALL.

ALL STRUCTURES DESIGNED TO ACCOMMODATE BELOW GROUND THE CRITICAL 1 IN 100 YEAR STORM EVENT PLUS 45%. EXCEEDANCE WOULD ONLY OCCUR IN STORMS OF GREATER INTENSITY THAN THIS.

FOR PLANNING



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	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	75.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Soakaway	0.023	4.00	101.900	450	531128.258	129967.769	0.550
Raingarden	0.004		100.500	450	531130.774	129957.624	0.600
Permeable Paving	0.010		103.060	450	531125.327	129977.326	0.350

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Soakaway	Raingarden	10.452	0.600	101.350	99.900	1.450	7.2	150	4.05	54.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	3.776	66.7	4.5	0.400	0.450	0.023	0.0	26	2.148

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.452	7.2	150	Circular	101.900	101.350	0.400	100.500	99.900	0.450

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	Soakaway	450	Manhole	Adoptable	Raingarden	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
Soakaway	531128.258	129967.769	101.900	0.550	450		0	1.000	101.350	150
Raingarden	531130.774	129957.624	100.500	0.600	450		1	1.000	99.900	150
Permeable Paving	531125.327	129977.326	103.060	0.350	450					



Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
30	45	0	0
100	0	0	0
100	45	0	0

Node Soakaway Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.01800	Invert Level (m)	100.600	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.01800	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	5.000	Number Required	1
Porosity	0.95	Pit Length (m)	4.000		

Node Raingarden Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.01800	Safety Factor	2.0	Invert Level (m)	99.900
Side Inf Coefficient (m/hr)	0.01800	Porosity	1.00	Time to half empty (mins)	1001

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	10.0	10.0	0.200	17.9	17.9	0.400	28.0	28.0	0.600	40.4	40.4
0.100	13.6	13.6	0.300	22.6	22.6	0.500	33.9	33.9			

Node Permeable Paving Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01800	Invert Level (m)	102.710	Slope (1:X)	28.0
Side Inf Coefficient (m/hr)	0.01800	Time to half empty (mins)	49	Depth (m)	0.300
Safety Factor	2.0	Width (m)	19.000	Inf Depth (m)	1.000
Porosity	0.30	Length (m)	5.600		



Results for 10 year Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	Soakaway	1380	101.130	-0.220	0.4	10.0733	0.0000	OK
960 minute winter	Raingarden	645	100.007	0.106	0.1	1.2856	0.0000	OK
360 minute summer	Permeable Paving	232	102.877	0.167	0.8	2.2665	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
1440 minute winter	Soakaway	1.000	Raingarden	0.0	0.000	0.000	0.0691
1440 minute winter	Soakaway	Infiltration		0.1			
960 minute winter	Raingarden	Infiltration		0.0			
360 minute summer	Permeable Paving	Infiltration		0.2			



Results for 30 year Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	Soakaway	1440	101.278	-0.072	0.8	12.8808	0.0000	OK
1440 minute winter	Raingarden	960	100.035	0.135	0.1	1.7044	0.0000	OK
180 minute summer	Permeable Paving	132	102.903	0.193	1.7	3.0253	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
1440 minute summer	Soakaway	1.000	Raingarden	0.0	0.000	0.000	0.0691
1440 minute summer	Soakaway	Infiltration		0.1			
1440 minute winter	Raingarden	Infiltration		0.0			
180 minute summer	Permeable Paving	Infiltration		0.3			



Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	Soakaway	435	101.362	0.012	1.9	14.4780	0.0000	OK
960 minute winter	Raingarden	915	100.268	0.368	0.7	6.4925	0.0000	OK
120 minute winter	Permeable Paving	116	102.956	0.246	2.1	4.6966	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	
720 minute summer	Soakaway	1.000	Raingarden	0.8	0.078	0.013	0.0954	
720 minute summer	Soakaway	Infiltration		0.1				
960 minute winter	Raingarden	Infiltration		0.1				
120 minute winter	Permeable Paving	Infiltration		0.3				



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	Soakaway	870	101.359	0.009	1.0	14.4159	0.0000	OK
1440 minute summer	Raingarden	1080	100.172	0.272	0.5	4.1985	0.0000	OK
180 minute summer	Permeable Paving	140	102.931	0.221	2.1	3.8962	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	
1440 minute summer	Soakaway	1.000	Raingarden	0.4	0.041	0.006	0.0941	
1440 minute summer	Soakaway	Infiltration		0.1				
1440 minute summer	Raingarden	Infiltration		0.1				
180 minute summer	Permeable Paving	Infiltration		0.3				



Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Soakaway	208	101.369	0.019	4.1	14.6202	0.0000	OK
1440 minute winter	Raingarden	1350	100.500	0.600	1.1	14.2020	0.0000	OK
180 minute summer	Permeable Paving	176	102.999	0.289	3.0	6.1017	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	
360 minute summer	Soakaway	1.000	Raingarden	2.4	0.207	0.035	0.0989	
360 minute summer	Soakaway	Infiltration		0.1				
1440 minute winter	Raingarden	Infiltration		0.1				
180 minute summer	Permeable Paving	Infiltration		0.3				

7.5 **Appendix E – Maintenance Schedule**

Maintenance Schedule

Land rear of Stumble Ridge, Balcombe

For

Steve Baker

Rev – PL-

Reference **C3415**

Date **25th November 2024**

Revision	Date of Issue	Comments	Prepared By	Checked By
PL-	25/11/2024	Initial Issue	MR	CS

1 Maintenance

1.1 Introduction

- 1.1.1 During construction, the Contractor will be responsible for maintaining the drainage and SuDS (Sustainable Drainage Systems). Upon handover, the occupier will take on the responsibility of these duties as laid out in this report.
- 1.1.2 The maintenance schedule for the proposed development will be split down into two separate categories; SuDS features and regular private drainage.

1.2 SuDS at Land rear of Stumble Ridge, Balcombe

- 1.2.1 As listed above, in section 5.1.2, the SuDS features used on site will be **Rainwater Harvesting Tank, Soakaway, Raingarden and Permeable Paving**
- 1.2.2 The SuDS features have been designed for easy maintenance and comprise:
- Regular Day-to-Day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDS features
 - Occasional tasks – checking the SuDS features and removing any silt that builds up in the SuDS feature
 - Remedial work – repairing damage where necessary

1.3 SuDS Drainage Maintenance Specification

1.3.1 Rainwater Harvesting Tank

In order to maintain the functioning of the rainwater harvesting tanks, the following maintenance requirements should be adhered to:

Operation and maintenance requirements for rainwater harvesting tanks		
Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Ensure that all inlets and outlets are clear of debris and blockage	Weekly
	Remove debris inlets and outlets	Weekly
	Inspect first flush diverter to ensure it is working correctly and not clogged	Weekly – Clean if necessary
	Clean Filter screens	Monthly – Replace if damaged
	Inspect the tank for sediment build-up and any signs of algae	Monthly
	Inspect roof and gutters and clear of all debris	Every 3 months
	Inspect pump for any signs of wear or damage and test to ensure it is functioning correctly	Every 3 months
	Check bottom of the tank for sediment build-up and clear if necessary	Every 6 months
	Ensure all downpipes are clear and functioning correctly and clear if necessary	Every 6 months
	Test water	Every 6 months
	Thorough tank cleaning – drain tank, scrub interior and rinse	Annually or as required
	Service the pump and filtration system and replace any worn parts	Annually
	Inspect overflow to ensure it is working correctly and clear any obstructions	Annually
Monitoring	Monitor Water levels	Annually
	Inspect for pests e.g mosquitoes and take measures to prevent	As required

1.3.2 Soakaway

In order to maintain the functioning of the soakaway, the following maintenance requirements should be adhered to:

Operation and maintenance requirements for soakaway		
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 per-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

1.3.3 Raingarden

In order to maintain the functioning of the Raingarden, the following maintenance requirements should be adhered to:

Table 21.3 Operation and maintenance requirements for Infiltration Basins		
Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter, debris, and trash	Monthly
	Cut the grass – for landscaped areas	Monthly (during growing season) or as required
	Cut the meadow grass in and around basin	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetations and remove nuisance plants (for the first 3 years)	Monthly (at start, then as required)
Occasional maintenance	Reseed areas of poor vegetation growth	Annually, or as required
	Prune and trim trees and remove cuttings	As required
	Remove sediment from pre-treatment system when 50% full	As required
Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realign the rip-rap	As required
	Repair / rehabilitate inlets, outlets and overflows	As required
	Rehabilitate infiltration surface using scarifying and spiking techniques if performance deteriorates	As required
	Relevel uneven surface and reinstate design levels	As required
Monitoring	Inspect inlets, outlets and overflows for blockages and clean if required	Monthly
	Inspect banksides, structure, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and pre-treatment systems for silt accumulation; establish appropriate silt removal frequencies	Half Yearly
	Inspect infiltration surface for compaction and ponding	Monthly

1.1.1 Permeable Paving

In order to maintain the functioning of the permeable paving, the following maintenance requirements should be adhered to:

Table 21.3 Operation and maintenance requirements for permeable paving		
Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	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 manufacturer's 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	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of level of the paving	As required
	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 rate and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

1.2 General Drainage Maintenance Specification

1.2.1 Inlet Structures and Inspection Chambers

- Inlet structures such as rainwater downpipes, road gullies and channel drains should be free from obstruction at all times to allow free flow through the SuDS
- Inspection Chambers and Rodding Eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

Inlet Structures and Inspection Chambers	
Regular Maintenance	Frequency
Inlet Structures Inspect rainwater downpipes, channel drains and road gullies, removing obstructions and silt as necessary. Check that there is no physical damage. Strim vegetation 1m min surround to structures and keep area free from silt and debris	Monthly
Inspection Chambers and below ground control chambers. Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in Autumn	Annually
Occasional Maintenance Check topsoil levels are 20mm above edges of chambers to avoid mower damage.	As necessary
Remedial Work Repair physical damage if necessary	As required

1.2.2 Below ground drainage pipes

- Below ground drainage pipes convey water to the SuDS system. They should always be free from obstruction to allow free flow.

Below Ground Drainage Pipes	
Regular Maintenance	Frequency
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
Remove sediment from pre-treatment inlet structures and inspection chambers.	Annually or as required
Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks.	Monthly or as required
Remedial Work	
Repair physical damage if necessary	As required
Monitoring	
Inspect all inlets, outlets and vents to ensure that they are in good conditions and operating as designed.	Annually
Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years or as required