

F O L D

MHS

Drainage Report

August 2026 . 0358 MHS DrainageReport [3]

Background

This document has been prepared for the sole benefit, use and information of Jane Mustoe and Rachel Baxter and for the purposes set out in the following pages.

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Issue History

Rev.	Date	Comments
0	11.05.2026	Issued for comment
1	15.05.2026	Issued for planning
2	14.08.2026	Updated to suit comments from planning
3	17.08.2026	Minor update

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1.0 Introduction

1.1 Introduction

This report has been compiled to support the planning application for the proposed dwelling at MHS, Burgess Hill, RH15 0BA. This document contains information relating to the foul and surface water only, with the flood risk assessment to be provided by another party. All other evidence required for the application will be provided by the client, Architect and Landscape Architect

1.2 Development proposals

The development consists of a new property in land to the rear of an existing detach dwelling. The site boundary is typically soft landscaping with extensive foliage and some landscaping paths. A low carbon, sustainable property is proposed with a large extent of timber structure to lower embodied carbon where possible.

Further information regarding the development can be obtained from the Architectural documentation.

1.3 Need for study

This report has been produced to:

- Identify a surface water strategy for the proposed development.
- Identify a foul surface water strategy for the proposed development.

1.4 Planning

No pre-app has currently been undertaken for the current proposed building. A previous scheme for the site had been submitted for the site Ref:DM/16/0392.

1.5 Planning Commentary

Initial responses in relation to revision 1 of this document were received within July 2026 titled "DM-26-1346 Response Letter 01.07.2026". The salient items have been noted here with commentary and the report updated to suit.

To prevent flooding in accordance with National Planning Policy Framework paragraph 170, 173, 174, 176 and 177 by ensuring the satisfactory management of local flood risk, surface water flow paths, storage and disposal of surface water from the site in a range of rainfall events and ensuring the SuDS proposed operates as designed for the lifetime of the development.

An additional section has been added into this report regarding initial flood risk review, see section 2.6.

To overcome our objection, we would require the applicant to fully assess flooding from surface water flood risk and provide further details surrounding the proposed SuDS features. The applicant will need to provide the following:

- *Evidence the drainage discharge hierarchy is being followed. Infiltration testing should be carried out to determine the viability of this method of discharge.*

Section 4.3 has been expanded to give more detailed notation of the hierarchy. It is not possible to undertake infiltration at this time due to the Ecology survey and site condition so information from the previous planning document has been included with a location specific infiltration test to be undertaken to confirm once site clearance has taken place. This has been incorporated into section 4.4 and a review of anticipated infiltration rate based on typical geology is also included within section 4.4

- *Location plans for the proposed SuDS including dimensions and any outfalls.*

Please refer to the appendices for existing and proposed drainage plans. The outfall and existing drainage run will be incorporated onto the plan once sufficient site clearance can be undertaken to provide access for surveys. The required invert levels will then be mapped against this.

- *Drainage calculations to demonstrate the SuDS will function correctly for the 1 in 100 year event plus climate change event.*

Please refer to the appendices for the review of relevant site areas and volume calculation for the proposed rainfall and attenuated flow rate. This includes a climate change factor of 45 % as well as an urban creep allowance.

- *An 'in-principle' agreement for discharge rates and discharge location into the ordinary watercourse.*

We have reached out to the OWC in relation to the connection to the water course and they have noted the following:

""

...

We can now confirm that no formal Ordinary Watercourse Consent is required from us as LLFA for this connection.

We would always caveat to say, as with all works, adherence to OWC legislation does not remove from the applicant the

necessity to obtain other licences, consents, approvals or permissions (including planning permission) which may be

required in law or in order to comply with any duties or responsibilities for conservation or protection of the environment.

Please note that the technical approval of a drainage scheme, including agreed discharge rate is a planning matter and not

covered by OWC.

...

""

For the proposed discharge rate they have noted for this to be agreed with planning rather than themselves. An outflow rate of 1L/S has currently been considered as a practical minimum for the flow control as flows below this can often times lead to long term maintenance issues associated with small orifices.

It is also noted that foul water will be treated by a package treatment works prior to discharging to the water course at the back of the site. The applicant will need to provide evidence that this complies with the Environment Agency's General Binding Rules. As the applicant is planning to discharge into an ordinary watercourse they will need to apply for ordinary watercourse land drainage consent from West Sussex County Council.

We have added in an additional section, refer section 5.3 which reviews the General Binding Rules and provides commentary against these. Refer to the notes above regarding Ordinary Watercourse Consent

1.6 Scope of study

The following documents have been used in this study and a site walkover was undertaken on 29th August 2025 to supplement knowledge from a desk study of the site:

- Building Regulations 2010 – Approved Document H (Drainage and Waste Disposal);
- C753 The SuDS Manual (CIRIA, November 2015);

2.0 Existing Site

2.1 Background

The development consists of a new property in land to the rear of an existing detach dwelling. The site boundary is typically soft landscaping with extensive foliage and some landscaping paths. It is understood that drainage crosses the site to be discharged to the stream at the rear of the property based on conversations with the owner to Parklands who sold the plot of land.



Google maps images for the site with pin

Site Address:
Land to rear of Parklands
Keymer Road
Burgess Hill
West Sussex
RH15 0BA

Approximate Grid Reference : TQ 31902 17765
OS X (Easting) : 531902
OS Y (Northings) : 117765

2.2 Existing topography

The site sits to the south of Burgess Hill and is accessed by a private drive which connects to the main road. The site is to the east of the Parklands property and is a portion of the previous garden which has now been sold as a plot. To the west contains Parklands which is the existing house, the drive and the main garden to the property. The proposed site is abundant in nature, containing large number of trees and shrubs across the footprint, with walkways meandering through the garden. There are also signs of existing ponds and ditches across the site but at the time of the site walkover these were damp but had no standing water. Beyond the east boundary of the site there is a balancing pond of unknown ownership, whilst to the north and south are neighbouring properties set within large gardens.

The site has a gentle slope which is generally high in the West and low in the East but is highest in the south west corner of the site. The entire site has a large number of trees across the footprint which will need to be considered as part of the future works. Utility routes such as water mains, LV and HV cables, BT lines, and streetlight ducts are identified on the site, along with drainage elements like gullies and manholes. From the site walkover it is noted that not all of the drainage elements have been mapped by the topographical survey so there may be other utilities which have also not been fully established, or have been altered since the date of the survey.

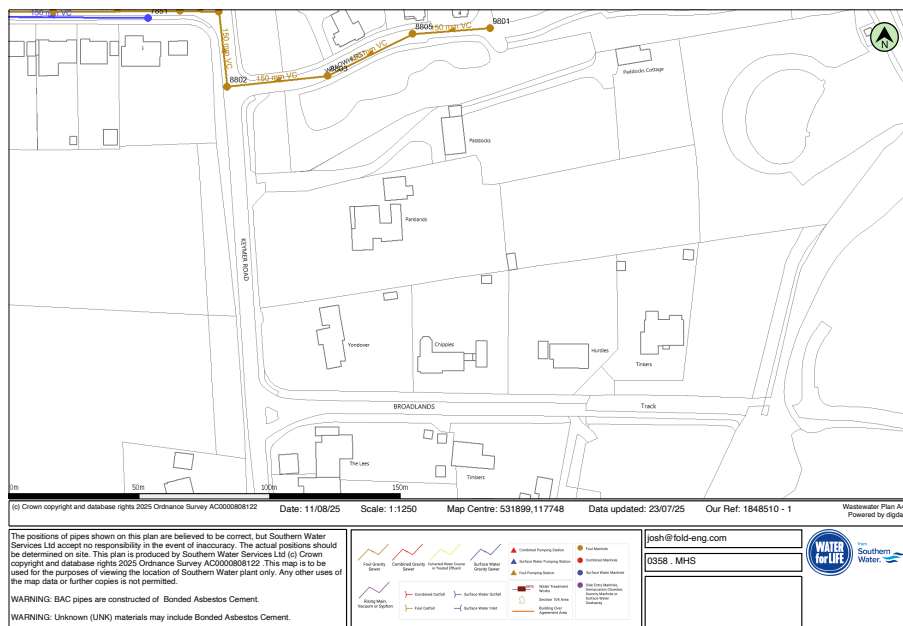
2.3 Nearby watercourses / drainage features

There is a small watercourse at the rear of the site and it is understood that the drainage from the neighbouring house discharges into this.

2.4 Existing drainage

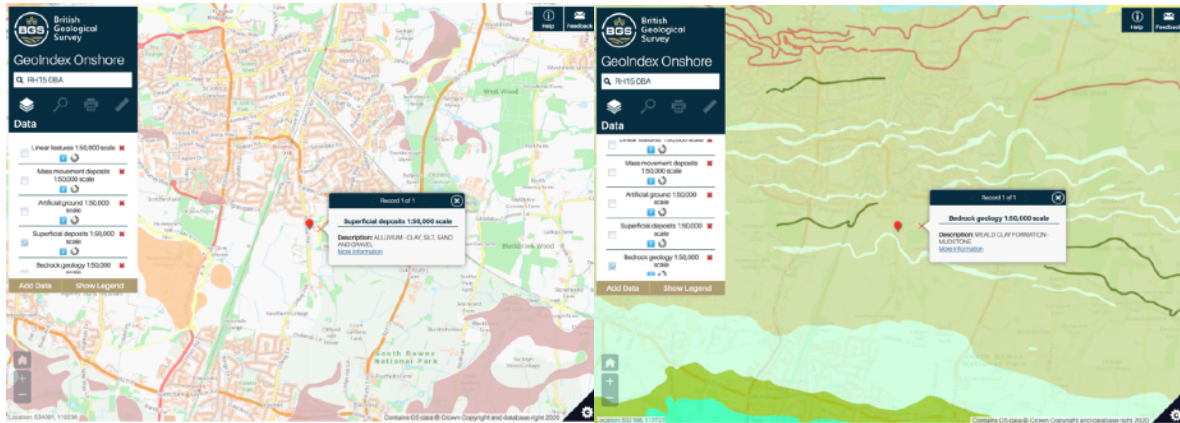
It is understood that drainage crosses the site to be discharged to the stream at the rear of the property based on conversations with the owner of Parklands who sold the plot of land. Otherwise there are no buildings upon the plot which are positively drained. There was once a pond on the site but this had no standing water at the time of the site visit.

There is no public drainage directly next to the site. The Southern Water maps for the local area have been obtained and are shown below.

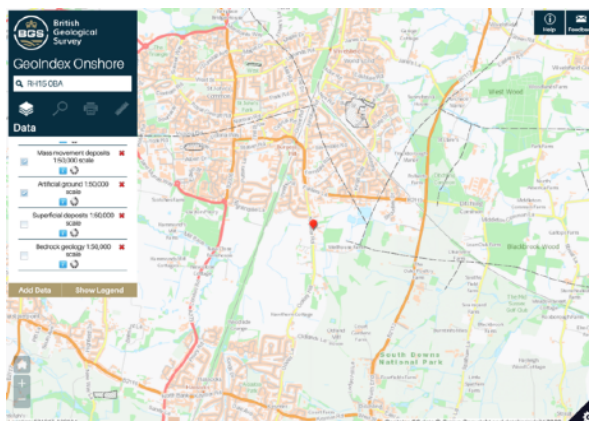


2.5 Existing ground conditions

BGS records of the local area have been reviewed. There are no records of superficial deposits on the site but there are nearby records of alluvium in pockets around the area. The bedrock geology is Weald Clay Formation - Mudstone which primarily consists of thinly bedded mudstone and shale with the potential for additional layers of siltstone, sandstone and limestone. The mudstone is typically blue-grey when unweathered and yellow-orange when weathered.



There are no noted faults or mass movement deposits on the site



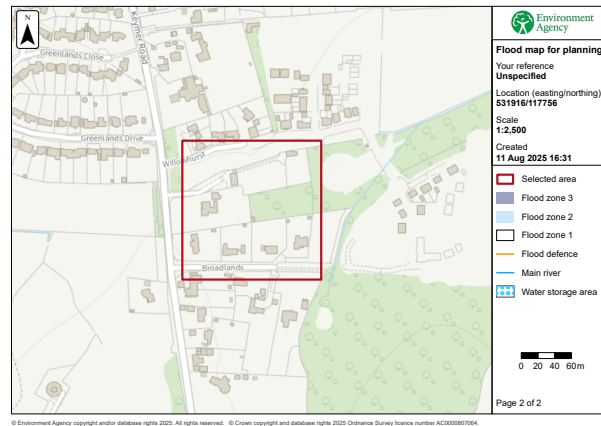
The ground should be suitable for traditional foundations, but consideration may need to be given to the volume change potential of the ground due to the presence of clays, with the influence of nearby trees reviewed in accordance with NHBC section 4.2. If found to be highly swell-able, potential foundation options may be an RC raft, piles and ground beam or deep trench foundations. Foundation options will also depend on the proximity of tree roots.

It would be prudent for a thorough geotechnical investigation to be undertaken so that the ground conditions below the site can be better understood. The investigation would likely consist of 4No. small diameter boreholes across the site so that the underlying strata can be accurately mapped. As part of this investigation a fully compliant BRE 365 infiltration test will also be undertaken.

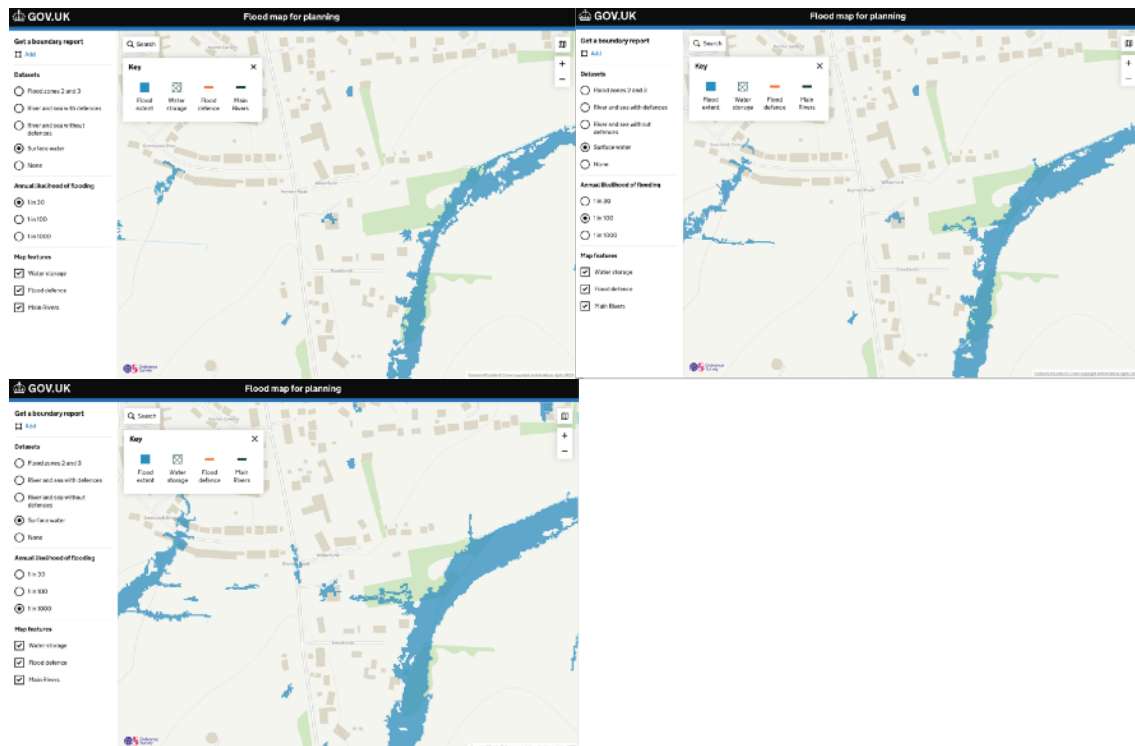
2.6 Initial Flood Risk Review

The flood risk data for the site has been obtained from environment agency records.

The site is considered to be in Flood Zone 1 and is at a very low risk of flooding from surface water or rivers and the sea.



When reviewing more detailed maps it was noted that the site has a higher potential for surface water flooding. The maps for a 1in30, 1in100 and 1in1000 year event have been included below. Levels of thresholds should consider this with falls away from the building. The building itself is not deemed to significantly affect the overland flow routes with any exceedance to pass either side of the building.



4.0 Surface water drainage strategy

4.1 Overview

In order to mitigate flood risk posed by post development runoff from proposed roof and road areas, adequate control measures will be provided within the site, including SuDS. A number of measures have been reviewed for the scheme including, but not limited to:

- Greenroofs
- Infiltration systems
- Swales
- Permeable pavements
- Attenuation
- Pond and wetlands

Of the items considered attenuation will be most suitable for the site and be utilised for the local drainage network before joining the existing discharge into the brook. This methodology reduces the heavy surcharge which can be felt by local infrastructure during period of heavy rainfall

4.2 Proposal

In line with national policy, the aim will be to manage surface water on site using Sustainable Drainage Systems (SuDS) where possible.

Due to the anticipated poor infiltration of the underlying ground the proposal for surface water is to provide attenuation of the flow. Permeable road build ups and soft landscaping will be utilised where possible to minimise the drained areas which will be discharged to the drainage.

The potential for infiltration will be subject to infiltration testing. It is anticipated that this testing comes back as poor based on falling head tests which were previously reported for the local geology. The scheme typically looks to utilise existing networks with attenuation to avoid surcharging the arrangement.

An outflow rate of 1L/S has currently been considered as a practical minimum for the flow control as flows below this can often times lead to long term maintenance issues associated with small orifices.

4.3 Drainage hierarchy

The drainage strategy for the site has been prepared according to the drainage discharge hierarchy from CIRIA C753 *The SuDS Manual*, as follows:

- Infiltration to the maximum extent that is practical.
- Discharge to surface waters.
- Discharge to surface water sewer.
- Discharge to combined sewer.

From reviewing the hierarchy for the land to the rear of Parklands the infiltration potential has been considered as low due to the anticipated permeability of the underlying ground, please refer to section 4.4 for further information. If favourable infiltration rates are found then consideration will instead be given to the use of a soakaway for the surface water discharge and a drainage field for the foul water. As there is a surface water body to the rear of the site we would therefore propose to discharge to this via the already established piped route from Parklands.

4.4 Infiltration potential

The infiltration potential of the underlying ground is anticipated to be low due to the underlying Weald clay formation.

The site is currently overgrown with ecological trapping and zoning in affect which minimises the potential for site specific testing at this time. On site testing will be undertaken in due course to confirm the infiltration rate of the underlying ground so that this can be utilised where possible in combination with attenuated storage before a discharge to the drainage system which runs from the site. The previous planning application undertook infiltration testing on the site but the exact location is not known so there is a desire to undertake location specific testing for this new proposed development. The infiltration rates were noted as extracted below:

"Soil soakage testing was undertaken on site in 2019. 3 boreholes were sunk. Minimal seepage was observed; the infiltration rates that were calculated following the tests at each position ranged between 3.3 E-07 m/s and 1.7 E-07 m/s. Rates below 10⁻⁶m/s are considered to be too low for infiltration structures, due in the main to half drainage times exceeding 24 hours."

The table below is extracted from the 2015 SuDS manual C753 and shows anticipated infiltration rates for different ground descriptions; clay has particularly poor infiltration characteristics although the previous infiltration rates were slightly better than those noted within the table.

Soil type/texture	ISO 14688-1 description (after Blake, 2010)	Typical infiltration coefficients (m/s)
Good infiltration media		
• gravel	Sandy GRAVEL	$3 \times 10^{-4} - 3 \times 10^{-3}$
• sand	Slightly silty slightly clayey SAND	$1 \times 10^{-4} - 5 \times 10^{-4}$
• loamy sand	Silty slightly clayey SAND	$1 \times 10^{-4} - 3 \times 10^{-4}$
• sandy loam	Silty clayey SAND	$1 \times 10^{-5} - 1 \times 10^{-4}$
Poor infiltration media		
• loam	Very silty clayey SAND	$1 \times 10^{-5} - 5 \times 10^{-5}$
• silt loam	Very sandy clayey SILT	$1 \times 10^{-5} - 1 \times 10^{-4}$
• chalk (structureless)	N/A	$3 \times 10^{-6} - 3 \times 10^{-4}$
• sandy clay loam	Very clayey silty SAND	$3 \times 10^{-10} - 3 \times 10^{-7}$
Very poor infiltration media		
• silty clay loam	—	$1 \times 10^{-6} - 1 \times 10^{-4}$
• clay	Can be any texture of soil described above	$< 3 \times 10^{-6}$
• fill		$3 \times 10^{-6} - 3 \times 10^{-4}$
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	$3 \times 10^{-6} - 3 \times 10^{-3}$

4.5 Proposed SUDs

A number of different SUDs components have been considered as part of the scheme at MHS

- Pond
 - A pond could be used to both attenuate and infiltrate surface water run off from the site subject to the final landscaping proposals.
 - Space is limited on the site with a large extent of root protection zones so it may not be viable to use a pond in the final arrangement.
- Attenuation tank
 - An attenuation tank will be used to attenuate flow prior to a controlled discharge from the site.
 - These can be positioned below areas with vehicular access and therefore are an efficient use of space which work well with the proposed levels.
- Permeable Sub Base
 - Subject to infiltration rate testing, permeable sub base system can be installed in new parking or drive areas where hydrocarbon contamination from fuel and oil leaks/spills may occur. This system is proposed in order to provide water quality treatment and natural infiltration into the ground.

All SuDS components will be sized to accommodate runoff from the critical 1:100 year + 45% climate change storm event.

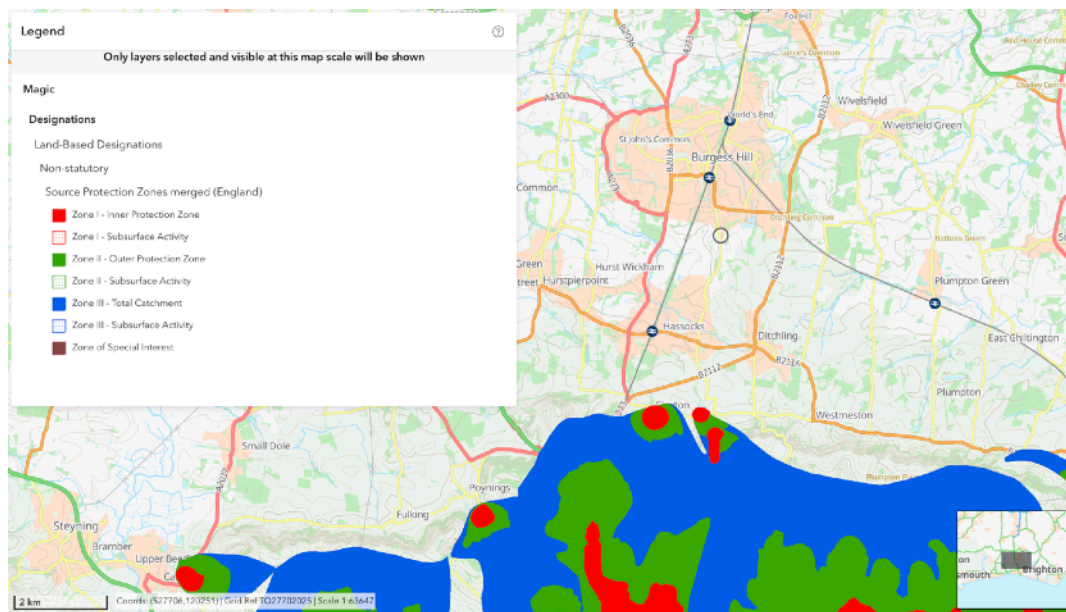
4.6 Design exceedance

In a design exceedance events the water from the site will be directed to flow down and around the building, following the natural shedding location for surface water off the existing site.

Thresholds of the property should be considered to mitigate any chance of water entering the building.

4.6 Water quality

The site is not within a Source Protection Zone



Foul water will be treated by a package treatment works prior to discharging to the water course at the back of the site. A second degree of treatment will be provided by running the discharge through a drainage field prior to it joining the drainage run which leaves the site; this will also comply with EA guidance for when the water course is potentially dry for months of the year which is currently unknown.

With reference to table 26.2 of Ciria SuDS Manual 2015 C753, the worst case pollution area arises from the carpark, which is considered to have a 'Low' pollution hazard level, see extract below.

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
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 (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas,				

Treatment will be via permeable paving where it can be seen from table 26.3 of Ciria SuDS Manual 2015 C753, that this will help mitigate discharge of TSS, Metals and Hydrocarbons.

Type of SuDS component	Mitigation indices ¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6

4.7 Maintenance

The maintenance requirements for the difference SUDs systems have been outlined below. As part of the environmentally conscious development the infrastructure will be installed and maintained to a high level

- Maintenance requirements for the pond/wetland are as follows:

Maintenance Schedule (Pond)	Required Actions	Typical Frequency
Regular Maintenance	Inspections for signs of deterioration in performance, clogging and other blockages. In particular review of mesh grills to inlet and outlet features. In particular monitoring to see if water is ever breaching the pond bank on the brook side - this is a key indication of a blockage. Access and inspect of orifice plate to review for debris buildup. Vegetation management	Annually at the end of Autumn and after major storm events. Regularly during rain events Annually at the end of Autumn and if any indication of blocking As required to maintain good performance
Occasional Maintenance	Sediment and debris removal to pond area	As required based upon inspections and in particular after flood events. Levels of the pond should be typically checked to ensure that they match with the agreed strategy. In particular post flooding events.
Remedial Actions	Jet wash of surface water pipes and cleaning of inlet/outlet if performance deteriorates. Ultimately replace if required.	As required based upon inspections
Monitoring	Note rate of sediment accumulation Monitor water levels within the pond basin	Monthly in the first year and then annually After storm events

- Maintenance requirements for the driveway are as follows:

Maintenance Schedule (Driveway and French drainage)	Required Actions	Typical Frequency
Regular Maintenance	Inspections for signs of deterioration in performance, clogging and other blockages. In particular debris buildup.	Monthly. Removal of vegetation buildup through regular sweeping etc.
Occasional Maintenance	Sediment removal following significant buildups.	Should top gravel layers become saturated / clogged with sediment following either periods of in frequent maintenance or following a significant flood event which deposits sediment onto the gravel driveway, the upper finish service may need to be removed down to the first layer of geotextile to allow for inspection and possible replacement. The gravel can be either washed and reinstated or replaced.
Remedial Actions	Jet wash of land drainage via access points.	As required based upon inspections
Monitoring	Note any ponding on the top surface of the driveways which could be indicative of clogging of the pourous surface.	Regularly during typical usage.

- Maintenance requirements for the Attenuation tank are as follows:

Maintenance Schedule (Soakaway / Attenuation)	Required Actions	Typical Frequency
Regular Maintenance	Inspect and identify areas not operating correctly	Monthly for 3 month then annually
	Remove debris from catchment surface	Monthly
Occasional Maintenance	Remove sediment from pre-treatment structure and/or internal forbears	As required
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required based upon inspections
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in a. Good condition and operating as designed.	Annually
	Survey inside of tank for sediment build up and remove as necessary	Every 5 years or as required

- Maintenance requirements for the Flow Control are as follows:

Maintenance Schedule (Flow Control)	Required Actions	Typical Frequency
Regular Maintenance	Inspect for accumulation of silt or debris	Every six months
	Inspect outlets, inlets and overflows for blockages	
Occasional Maintenance	Remove silt, debris and litter	As required

5.0 Foul water drainage strategy

5.1 Overview

The foul drainage on site will need to consider the lack of public drainage infrastructure close to the site.

5.2 Proposal

The proposal for the foul water discharge is for treatment via a package treatment works. This will then be run through a drainage field for secondary treatment prior to connecting to the drainage network which discharges to the water course at the end of the property. The main consideration for the site are that underlying clays will have poor or negligible infiltration and so a simple drainage field is unlikely to work successfully. Discharge to a dry water course would require EA approval as it will not comply with the general binding rules so this should be monitored throughout the drier months of the year.

For the 4 bedroom property there is a population equivalent of 6 people so a Klargestor Bio-Disc BA may be an appropriate system. A manhole will be utilised beyond the package treatment plant to allow testing to take place or an inbuilt sampling chamber.

Technical Specification

Unit Reference	BA	BAx	BB	BC
Population Equivalent (Std Flow)	6	9	12	18
Maximum Daily BOD (kg)	0.36	0.54	0.72	1.08
Maximum Daily Flow (m ³)	1.2	1.8	2.4	3.6
Ø/Width (mm)	1995	1996	1995	2450
Length (mm)	-	-	-	-
Inlet Invert depth (mm)	450/750/1250	450/750/1251	450/750/1250	600/1100
Depth Below Inlet Invert (mm)	1400	1400	1400	1820
Outlet Invert Depth (mm)	1315	1315	1315	1735
Overall Height (mm)	2160/2460/2960	2160/2460/2960	2160/2460/2960	2825/3325
Height to Rim of Cover (mm)	1945/2245/2745	1945/2245/2745	1945/2245/2745	2485/2985
Empty Weight (kg)	310/325/380	310/325/380	335/350/405	650/750
Standard Power Supply	1 phase	1 phase	1 phase	1 phase
Motor Rating - 1 Phase (Watts)	50	50	50	75
Full Load Current 1 Phase (amps)	0.51	0.51	0.51	1,1
Optional Power Supply	3 phase	3 phase	3 phase	3 phase
Motor Rating - 3 Phase (Watts)	N/A	N/A	N/A	90
Full Load Current 3 Phase (amps)	N/A	N/A	N/A	0.38
Sludge Return Pump Rating (watts)	250	250	250	250

5.3 General Binding Rules

Compliance against the Environment Agency General Binding Rules has been included below.

Environment Agency Binding Rules				
Discharging to?	Surface Water		ENGLAND RULES (Wales and Scotland have additional rules)	
Rule Number	Discharges to surface water	Discharges to ground	General binding rule	Pass for site?
1	No	Yes	The discharge must be 2 cubic metres or less per day in volume.	N/A
2	Yes	No	The discharge must be 5 cubic metres or less per day in volume.	Yes, only one property with 4 bedrooms. This gives 0.9 cubic metres
3	Yes	Yes	The sewage must only be domestic.	Yes, domestic only
4	Yes	Yes	The discharge must not cause pollution of surface water or groundwater.	Foul will be treated by package treatment plant
5	No	Yes	The sewage must receive treatment from a septic tank and infiltration system (drainage field) or sewage treatment plant and infiltration system.	N/A
6	Yes	No	The sewage must receive treatment from a sewage treatment plant.	Foul will be treated by package treatment plant
7	No	Yes	The discharge must not be within a groundwater source protection zone 1 or within 50 metres from any well, spring or borehole that is used to supply water for domestic or food production purposes.	N/A
8	Yes	No	For discharges in tidal waters, the discharge outlet must be below the mean spring low water mark.	N/A
9	Yes	Yes	All works and equipment used for the treatment of sewage effluent and its discharge must comply with the relevant design and manufacturing standards, meaning the British Standard that was in force at the time of the installation, and guidance issued by the appropriate authority on the capacity and installation of the equipment.	British standards to be complied with
10	Yes	Yes	The system must be installed and operated in accordance with the manufacturer's specification.	This will be undertaken
11	Yes	Yes	Maintenance must be undertaken by someone who is competent.	This will be undertaken
12	Yes	Yes	Waste sludge from the system must be safely disposed of by an authorised person.	This will be undertaken
13	Yes	Yes	If a property is sold, the operator must give the new operator a written notice stating that a small sewage discharge is being carried out, and giving a description of the waste water system and its maintenance requirements.	This will be undertaken
14	Yes	Yes	The operator must ensure the system is appropriately decommissioned where it ceases to be in operation so that there is no risk of pollutants or polluting matter entering groundwater, inland fresh waters or coastal waters.	This will be undertaken
15	Yes	Yes	Discharges must not be within 30 metres of a public foul sewer.	Foul sewer not within 30m from mapping
16	Yes	Yes	For discharges, the operator must ensure that the necessary planning and building control approvals for the treatment system are in place.	On-going but will be in place by time of discharge
17	Yes	No	Discharges must not be in or within: 500 metres of a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site, biological Site of Special Scientific Interest (SSSI), freshwater pearl mussel population, designated bathing water, or protected shellfish water; 200 metres of an aquatic local nature reserve; 50 metres of a chalk river or aquatic local wildlife site.	NONE within 500m None None None Not within 50m None
18	No	Yes	Discharges must not be in, or within 50 metres of, a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site, or biological Site of Special Scientific Interest (SSSI), and must not be in an Ancient Woodland.	N/A
19	Yes	No	Discharges must be made to a watercourse that normally has flow throughout the year.	Unknown due to site access constraints. To be reviewed on site
20	Yes	No	For discharges, any partial drainage field must be installed within 10 metres of the bank side of the watercourse.	To be reviewed with Environment Agency
21	Yes	No	Discharges must not be made to an enclosed lake or pond.	To an existing watercourse not a lake or pond
22	Yes	Yes	A new discharge shall not use the same outlet as any other discharge if the combined volume of those discharges would exceed the volumetric general binding rules thresholds for groundwater or surface water.	Two properties only for discharge so will be less than 5 cubic metres per day
23	Yes	Yes	A new discharge shall not be made to a discharge point within 50 metres of any other exempt groundwater activity or water discharge activity.	Not to the best of our knowledge. Connecting to existing discharge point.

The rules highlighted in red require further commentary / review and have been noted below

Rule 16 - Permissions with planning and building control are on-going

Rule 19 - Site access constraints have not allowed it be verified whether there is flow throughout the year. After site clearance if it is established that flow is not continuous, a permit with the EA will be applied for. If the watercourse has no flow, the typical arrangement with the EA is to provide 10m of perforated pipe prior to the discharge position. We would be looking to provide this prior to connection to the existing discharge pipe to avoid having to excavate within an ecologically sensitive area at the end of the garden subject to agreement.

Rule 20 - We would be looking to provide this prior to connection to the existing discharge pipe to avoid having to excavate within an ecologically sensitive area at the end of the garden subject to agreement.

6.0 Commentary

6.1 Notes

An outline drainage scheme has been included within the attached documentation. The surface water will be attenuated and discharged to the local water course after a flow control. The foul water will be treated by a packet treatment plant prior to discharge to the water course

6.2 Next steps

For the next phases of the drainage design the following items will need to be considered:

- A formal site investigation including BRE 365 compliant infiltration tests to determine the possible infiltration rate of the ground.
- A formal drainage survey to confirm the routes of the existing foul and surface water runs on the site.
- Sizing of the surface water attenuation/infiltration on the site for a given discharge rate based on the site investigation.
- Discussions with the Environment Agency in relation to the general binding rules and any further requirements for the site.

7.0 Appendices

Attenuation Calculations

Areas for surface water run off calculation

For the House

Red zone - Likely impermeable construction

Green zone - Impermeable construction

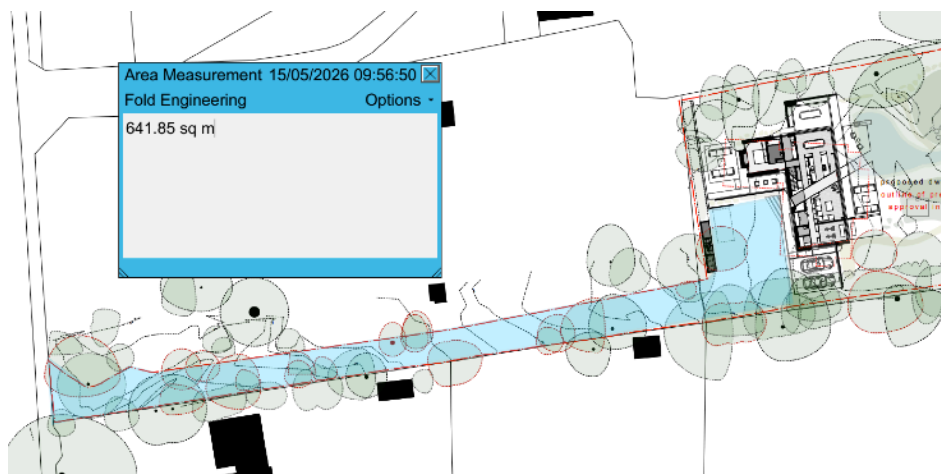
Blue zone - Permeable construction

For the house a combined area of 300m² has been considered (includes 1.1 urban creep factor)



For the drive

Blue zone - Drive to be of permeable construction



Calculations based on 1L/s discharge

Attenuation volume calculation To be used in conjunction with TEDDS soakaway calc

Project	358
Location	MHS - House and Canopy
Impermeable area	300 m ²
Return period	100 years
Climate change	45 %

Areas	
Driveway	500 m2
House	170 m2
Canopy areas	100 m2

x1.1 on house/Canopy

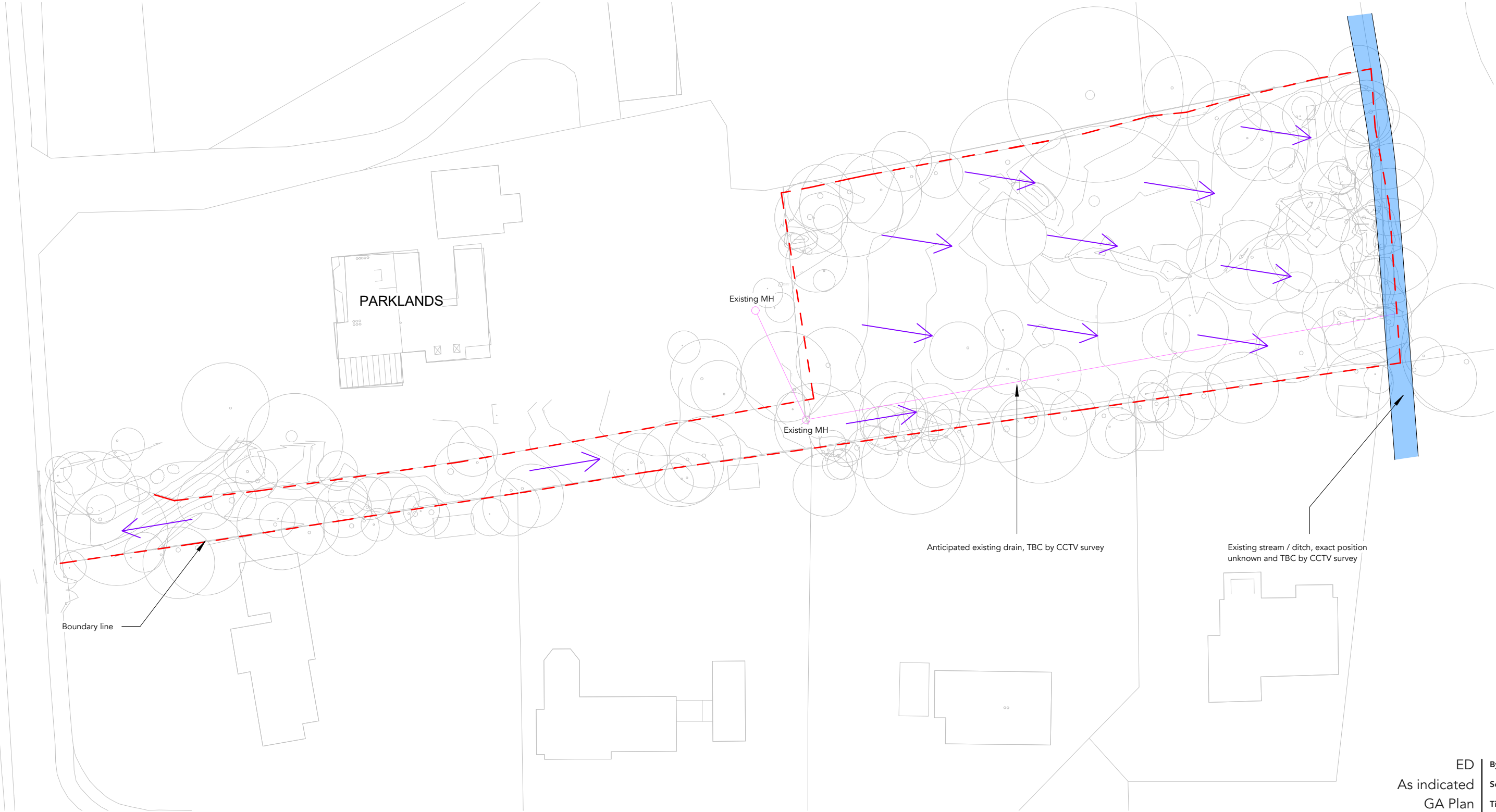
Duration (min)	Duration (s)	Rainfall Mm/hour	Peak rainfall l/s	Outflow rate l/s	Volume required (l)	Volume required (m ³)
5	300	237.8	19.82	1.00	5645	5.6
10	600	175	14.58	1.00	8150	8.1
15	900	144	12.00	1.00	9900	9.9
30	1800	92.1	7.68	1.00	12015	12.0
60	3600	57.4	4.78	1.00	13620	13.6
120	7200	34.2	2.85	1.00	13320	13.3
240	14400	20.2	1.68	1.00	9840	9.8
360	21600	14.8	1.23	1.00	5040	5.0
600	36000	10.0	0.83	1.00	-6000	-6.0
1440	86400	5.0	0.42	1.00	-50400	-50.4

If tank 95% free volume storage	14.3 m ³
Time to empty max volume	3.78333333333333 Hours
Time to half empty	1.89166666666667 Must be less than 24 hours

Existing drainage drawing

Notes:
Existing drainage network has not been surveyed.
This drawing shows a diagrammatic representation of our understanding of the drainage network based upon a site walkover and a description of the sewer network.
A full CCTV survey of the existing network will be required to confirm the layout and discharge points.

- Drainage Key**
- 450mm diameter inspection chamber with recessed cover
 - - - 100mm diameter foul drainage pipe, laid at min. 1:40
 - - - 100mm diameter surface water drainage pipe, laid at min. 1:80
 - Drainage channel connects into new SW system
 - Drainage channel and land drain
 - - - Existing drainage to be removed
 - - - Existing foul drainage pipe
 - - - Existing surface water drainage pipe
 - - - Existing combined water drainage pipe
 - RWP Rainwater pipe
 - FP Foul drainage point
 - Exceedance routes
 - Note that above ground access required for all branched runs



Drainage Plan - Existing

1 : 500

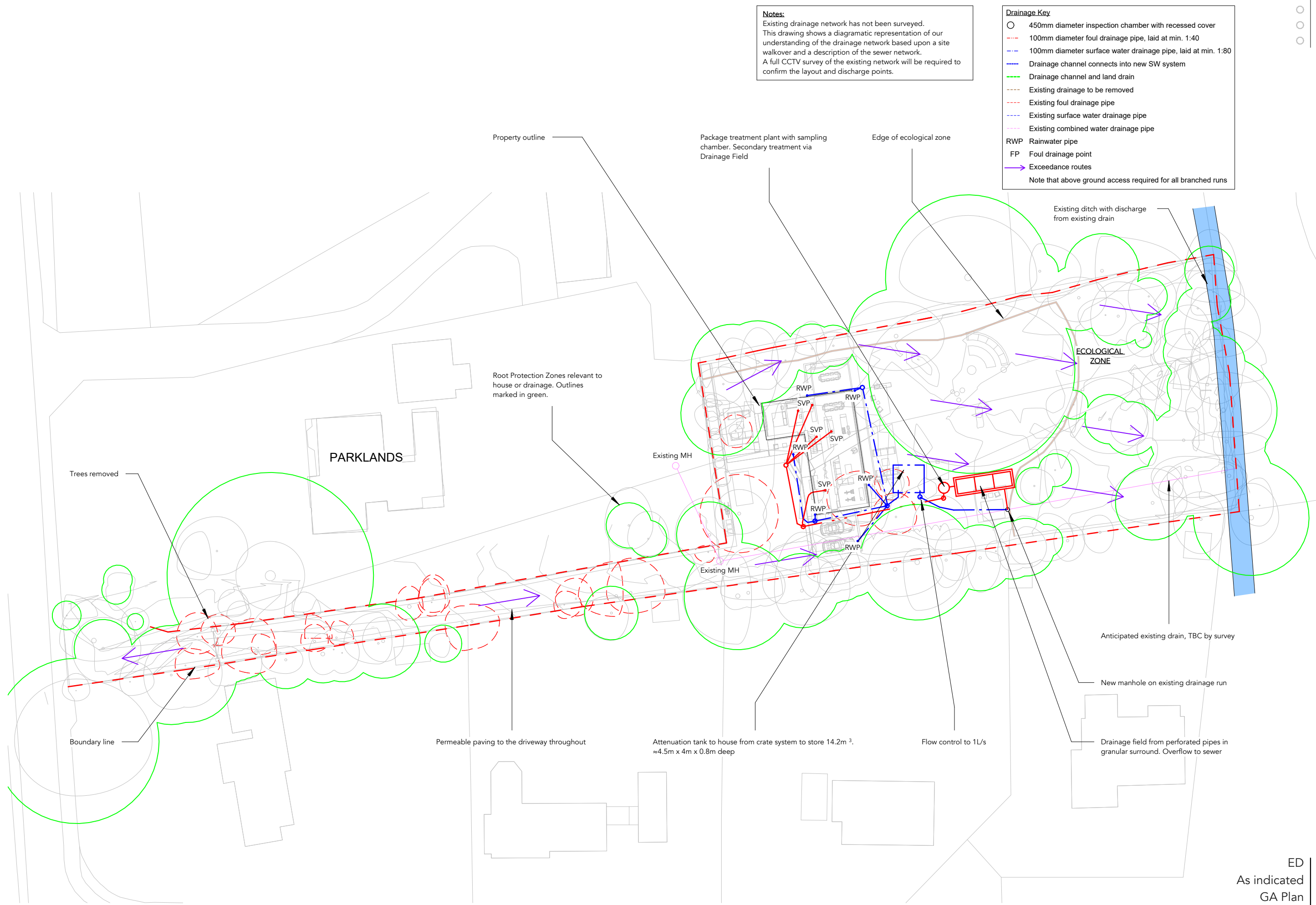
ED
As indicated
GA Plan
Drainage Plan - Existing
0358 400 [1]

By
Scale
Title
Sub. Title
Drg. No.

FOLD

Project	Project Lead	Architect	Client
Mustoe House	Josh Yarrien	Hyde + Hyde	Jane Mustoe and Rachel Baxter

Proposed drainage drawing



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Drainage Plan - Proposed

1 : 500

ED
As indicated
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Drainage Plan - Proposed
0358 401 [1]

By
Scale
Title
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Client	Jane Mustoe and Rachel Baxter
Architect	Hyde + Hyde
Project Lead	Josh Yarrien
Project	Mustoe House