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FLOOD RISK ASSESSMENT AND SUDS DRAINAGE

*MAVERN HOUSE CARE HOME,
CORSHAM RD, SHAW, MELKSHAM, SN12 8EH*

PROJECT NO.: 25354



21st July 2026

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1. Introduction

JDL have been appointed by Welford Care to produce a Flood Risk Assessment and Sustainable Drainage Strategy for the proposed extension of the existing Mavern House Care Home and associated hardstanding works.

2. Site Description

2.1. Site location & description

The site is located to the north west of Melksham in Shaw, accessed from the B3353 Corsham Road with approximate OS coordinates of 388723,165793. The existing site is comprised of the existing care home, which is a collection of buildings of various ages, and associated hardstand and externals. The existing layout is shown on the topographical survey included in Appendix A.



Contains © OpenStreetMap contributors, Microsoft, Esri Community Maps contributors, Map layer by Esri Powered by Esri

Figure 1.1 – Site location plan

2.2. Geology & Hydrogeology

Geological mapping indicates that the underlying bedrock comprises Oxford Clay Formation Mudstone, with no superficial deposits, but to the north and east having the same bedrock but with superficial River Terrace Deposits.

The LandIS database categorises the upper soils as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage.

Hydrogeology is characterised as Kellaways Formation and Oxford Clay Formation (Undifferentiated) which are rocks with essentially no groundwater.

3. National Planning Policy Framework

In March 2012, the Department of Communities and Local Government published the National Planning Policy Framework document (NPPF) which provides guidance on how flood risk should be assessed during the planning and development process. The main Framework is supplemented by a technical guidance document ("Planning Practice Guidance" - PPG) which advises specifically with respect to flooding. The most critical aspects are extracted below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 3.1 Flood Zone Classification (Gov.uk)

Essential Infrastructure

- Essential transport infrastructure (including mass evacuation routes) which must cross the area at risk.
- Essential utility infrastructure which must be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly Vulnerable

- Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage

installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as “essential infrastructure”).

More Vulnerable

- Hospitals.
- Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non–residential uses for health services, nurseries and educational establishments.
- Landfill and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Less Vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non–residential institutions not included in “more vulnerable”, and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).

Water Compatible

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Table 3.2 Flood Zone and Flood Risk Vulnerability Compatibility (Gov.uk)

Key:

✓ Development is appropriate

X Development should not be permitted.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.
† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.
* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:
 - remain operational and safe for users in times of flood;
 - result in no net loss of floodplain storage;
 - not impede water flows and not increase flood risk elsewhere.

4. Flood Risk

4.1. Introduction

The NNM (New National Modelling that has been produced as part of the Environment Agency's new National Flood Risk Assessment (NaFRA2)) data available from Gov.uk has been used for the appraisal of flood risk throughout the site.

4.2. Flood Zone

The Flood Zoning data for the present and future cases are shown in the figures below.

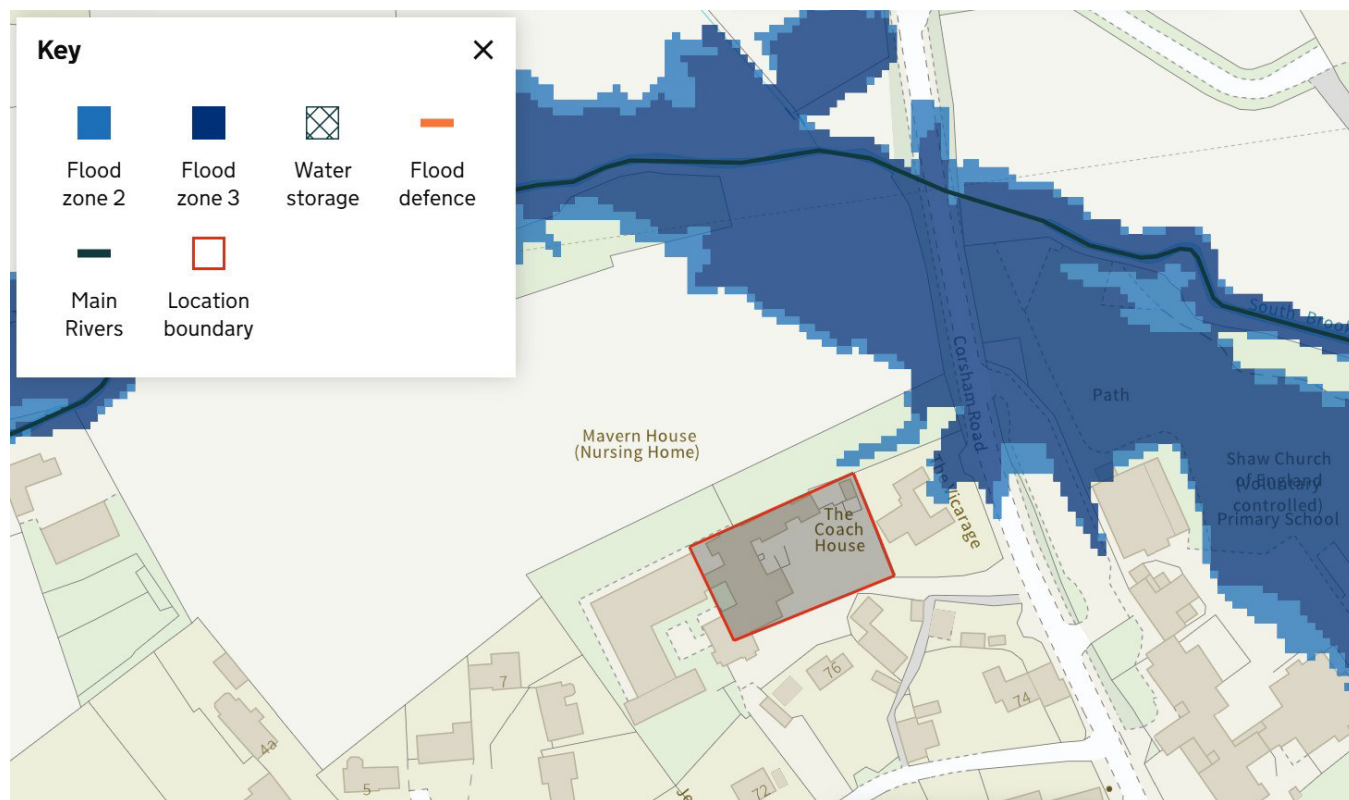


Figure 4.1 – Flood Zone Map (Current)

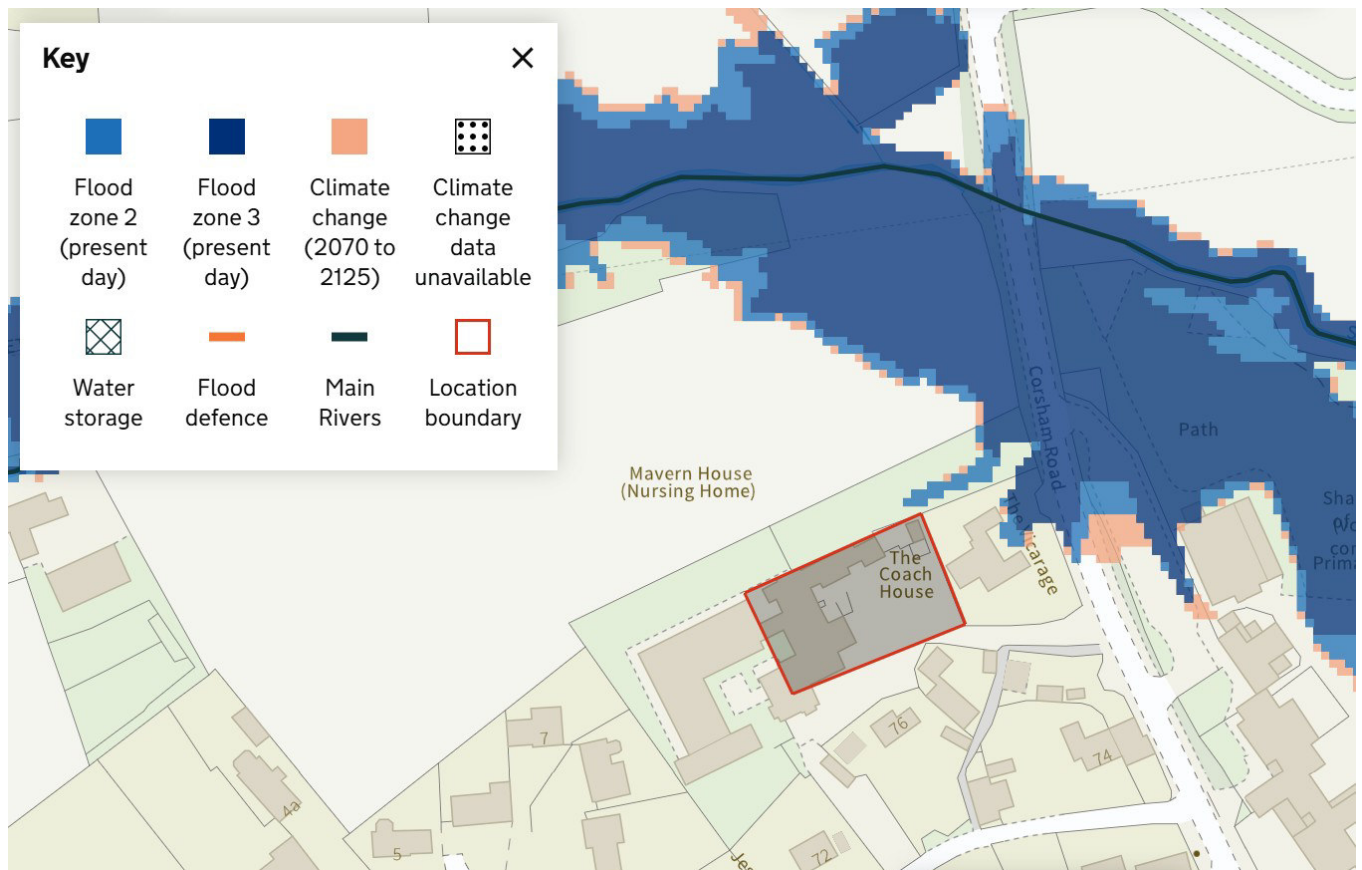


Figure 4.2 – Flood Zone Map (Future)

This shows that the site is entirely within Flood Zone 1, and this is also retained in the future case modelling for the 2070-2125 epoch.

Flood Zone 2 is close to the site boundary in the north eastern corner, however this is the location of the existing watercourse which from the topographical survey is noted to be at least 1.0m below the existing building FFL.

4.3. Fluvial/Tidal

There are also flood risk maps available through Gov.uk which should be a graphical representation of the New National Model (NNM) which is the most recent modelling data available for the site. The current and future cases are shown in the figures below from combining the Environment Agency's database against aerial mapping for the site in QGIS:



Figure 4.3 – Flood Risk Map (Current)

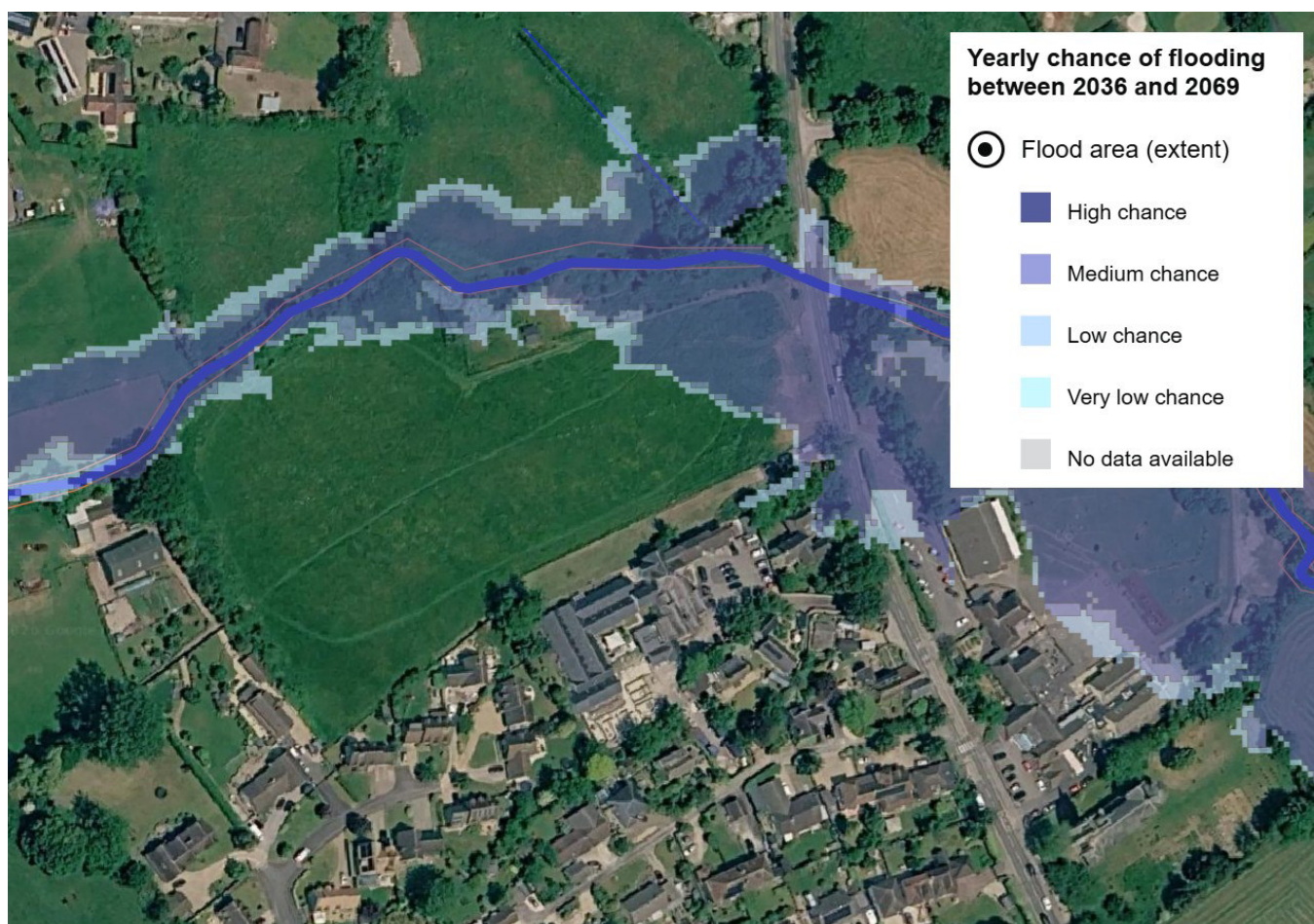


Figure 4.4 – Flood Risk Map (Future)

This shows a very close correlation between the Flood Zoning data and the Risk of Flooding datasets for the site, again with no flooding within the area of the site subject to development, and the nearest extents being within the banks of the existing watercourse shown on the topographical survey.

4.4. Surface Water

Surface water flood risk is noted on the gov.uk website, but it should be noted that this mapping is indicative only and does not include formalised drainage networks including public and private drainage, and culverted sections of watercourses etc. As such this mapping should only be used to identify if there are unmapped watercourses or overland flow route which run through the proposed development. This position is supported by the discussion in 'What is the Risk of Flooding from Surface Water map?' by the Environment Agency noting that this mapping and analysis cannot, and should not, be used to state explicit depths of flooding as the modelling is too inaccurate. The mapping is shown on the figures below for current flood risk and future flood risk for the period 2040-2060:



Figure 4.5 - Surface water flood risk mapping current (Gov.uk)



Figure 4.6 - Surface water flood risk mapping 2040-2060 (Gov.uk)

The mapping shows that in the current situation there is a low risk of flooding to the south and east outside of the extents of the proposed extension, and this rises to high in the future case. This area, however, was subject to a previous extension application and includes SuDs attenuation to manage the flows in this area up to, and including, the 1 in 100 plus climate change event, and therefore there is no actual risk.

The mapping does not include the watercourse, but this is potentially due to the resolution of the underlying LiDAR mapping using a 2.0m DEM grid square. Further details are provided below regarding flow accumulation analysis.

The 2040 – 2060 mapping indicates a slight increase in flood extents in the local area, but no increase across the proposed development area.

A flow accumulation analysis has been undertaken on the existing 1.0m grid Environment Agency LiDAR DEM as shown in the figure below. This is similar to the risk of surface water flooding modelling and shows the general drainage paths across the full site and the wider area, and this demonstrates that the area of the proposed works is upstream of the wider area, being bounded by the existing building to the west and north, with the area flowing to the east.

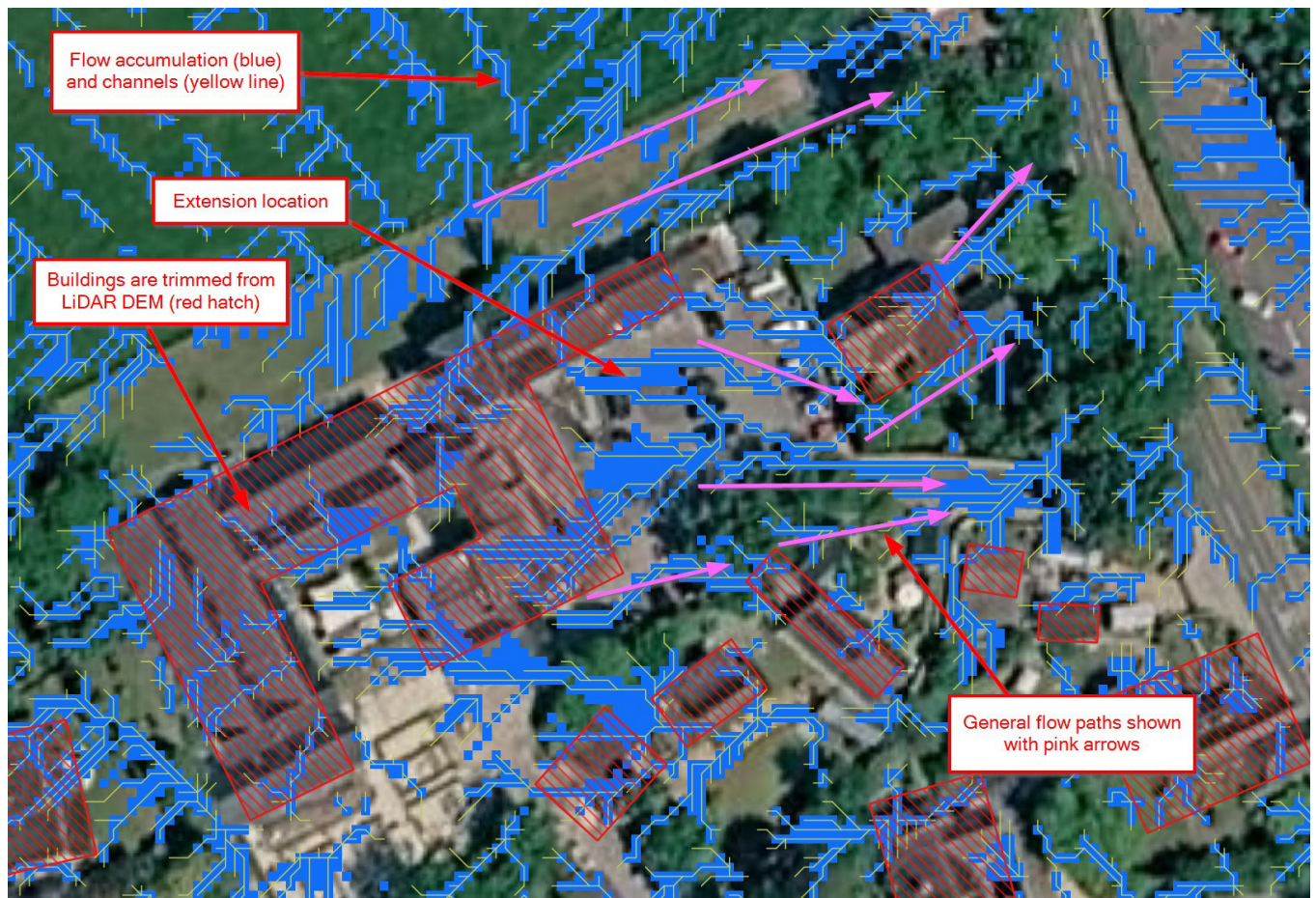


Figure 4.7 - Surface water overland flow paths

The proposed development also includes a new SuDs system to manage the flows for all events up to, and including, the 1 in 100 year climate change event and therefore this reduces the risk to the wider area.

4.5. Reservoirs

The Gov.uk website notes the location as being unlikely to experience reservoir flooding, in both wet and dry conditions.

4.6. Public and Private Sewers

From the previous development of the care home to the south the existing drainage was surveyed and modified and this provides the current records of the drainage across the site.

The Wessex Water mapping in Appendix D notes that there is an adopted 100mm diameter foul sewer which crosses the existing car park to the east and around the northern edge of the adjacent The Vicarage and into the 225mm diameter combined sewer flowing south under Corsham Road.

There are private drains noted as connecting in from the care home on the Wessex Water plans, and these are shown on the original topographical survey with a series of 100mm diameter foul pipes connecting to the public foul sewer to the east, and spurs of surface water noted as heavily silted.

4.7. Historic Flooding

The Environment Agency OpenData historical flooding database includes recorded flood events on the site or in the local area:



Figure 4.8 – Historic Flood Extents

This shows flooding broadly in line with the modelling of flooding around the South Brook, and therefore no unidentified risk to the proposed development. There is an isolated patch of flooding around The Vicarage but this is highly localised to that property only, and as per the flow accumulation modelling this is downstream from the proposed development and therefore the new SuDs system will reduce the risk.

4.8. Groundwater

The Gov.uk website notes the location as being a location outside of a groundwater flood alert area. The soils information also notes the relatively impermeable materials and lack of appreciable aquifers in the area. Therefore, flood from groundwater is considered to be very low.

4.9. Other Sources

No other sources of potential flooding have been identified.

4.10. Sequential Test

The Sequential Test is a broad initial planning check on the suitability of a site with the aim of driving development preferentially towards the areas of lowest flood risk first, before allowing

development to be undertaken in locations of higher risk. This search is independent of ownership and just considers all sites within the local area (technically area as defined by the Local Authority) which are 'reasonably available'.

As the site is located within Flood Zone 1, and at low risk of flooding from all sources, all developments types are permitted and so a Sequential Test would not be required.

4.11. Exception Test

As the Sequential Test is not required the Exception Test is also not required.

4.12. Flood Risk Conclusions

Based on the above the proposed development is does not appear to be at significant risk of flooding from any source. Portions of the wider site are at risk of surface water flooding but this flood is based upon existing grounds levels, rather than flows coming into the site, and does not take into account the presence of existing drainage systems.

The Flood Map for Planning indicates that the site is situated within Flood Zone 1, which is suitable for all forms of development.

5. SuDs Strategy

5.1. Existing surface water drainage

The site is current discharging at brownfield rates to the local private surface water sewer, and as overland flows to the watercourse. As the existing surface water drainage is a combination of RWPs to ground, surface water and combined networks the surface water runoff has been calculated using the Building Regulations Part H value of 0.014 l/sec over a total area of 385m² giving 5.4l/s.

Greenfield runoff rates have also been determined using FEH22 data for the site, and due to the size of the development these have been reported as unit rates:

- $Q_2 = 6.1 \text{ l/s/ha}$
- $Q_{\text{bar}} = 6.9 \text{ l/s/ha}$
- $Q_{30} = 13.8 \text{ l/s/ha}$
- $Q_{100} = 16.8 \text{ l/s/ha}$

5.2. Proposed surface water drainage

In accordance with best practice, the proposed drainage system will not increase the likelihood of flooding to the site and surrounding area over its pre-development condition.

Infiltration is the first consideration for surface water discharge under the Building Regulations hierarchy. However, due to the urban location of the proposed development, and the soils information noting clays soakaways are not viable for the development.

There is a watercourse to the north east of the developed area and therefore this will be used as the receptor of flows. From the flow accumulation analysis above this is a current receptor of the overland flows in the local area.

The development from a drainage perspective is split into two components. There is the main area to the east with the minor extension and revisions to the external hard landscaping, but also an infill extension to the centre of the main site, but south west of the main area of new development.

The infill development is over an area of existing hardstanding and is over an existing line of combined drainage. The nature of this infill, however, limits the potential options which can be included locally to manage the flows from the new roof area. Therefore, on the basis of this area of new roof being equivalent to the existing drained area in this location there is no increase in the burden on the drainage locally. To provide a holistic solution areas of the existing retained roof have been diverted into the new SuDs system which exceed the new area of infill (154m² of existing roof against 23m² of infill roof).

Based on the existing discharge rate of 5.4l/s a betterment of 50% will be provided giving a proposed discharge rate of 2.7l/s. Climate change has been included for the 1 in 30 and 1 in 100 year events as 40% and 45% respectively in accordance with the Avon Bristol and North Somerset Streams Management Catchment peak rainfall allowances.

Opportunities have been explored for the incorporation of source control features as part of the SuDs design. The proposed access ramp needs to be very compact in design to include in the design without a detrimental impact of the provision of parking. Therefore, there is insufficient space to include local features without impeding access. However, part of the hardstanding is being relaid in fully permeable construction with direct feeds from the local RWP. The pipe running under the hardstanding is also a filter drain providing water quality.

With the limited extents of the works the final pipe has also been included as a filter drain to provide water quality treatment from the new and diverted RWPs to the rear of the new staircase.

The main attenuation storage is provided in subbase replacement geocellular units under the parking areas to the front of the site which provides access to a shared drainage asset.

The flow control will be a proprietary orifice plate in an inspection chamber with a leaf/debris filter due to the small size of the opening. This will then outfall to the watercourse to the north east subject to a Land Drainage Consent application.

The proposed layout and details are contained within Appendix C with the corresponding calculations in Appendix B.

All new surface water drainage connections will be designed and constructed in accordance with Building Regulations Part H.

5.3. Exceedance

The proposed development includes only minor variations on the existing levels, with the new ramps still falling in the general direction of the flow accumulation modelling. The permeable car parking also acts as an intercept of overland flows to reduce the potential generation. Therefore, the exceedance routing will be retained as per the representation in figure 4.7 above.

5.4. Water Quality

Water quality has been assessed in accordance with C753 The SuDs Manual Simple Index Approach with the results included in Appendix B. This is for the infrequent change over car park where the permeable hardstanding is sufficient as a single feature, and for the roofs the minimum treatment route are the RWPs to the rear of the new stairs and these pass through a filter drain prior to the new outfall, which is again sufficient as a single feature.

5.5. Maintenance

All proposed new drainage within the site boundaries will be the responsibility of the landowner, who may vest it with a suitable management company. The existing Wessex Water drainage is not being altered in the proposed and therefore this continues to reside with them for maintenance.

The SuDs attenuation features will be designed to store water and attenuate it over a long period of time, however if the attenuation is still full, or partly full, 48 hours after the end of a rainfall event this should be investigated immediately as it may indicate a failure, or partial failure, within the network.

Action	Frequency	Responsibility
As Built. Once construction of drainage network has been completed a CCTV survey should be undertaken to detect and defects which should be rectified to the original design.	Once	Main contractor
Pipe and chambers. Visual inspection of chambers, and clearance of any deleterious materials. Inspection of inlet and outlet. If any blockages are detected an inspection of the connecting pipework should be undertaken to determine potential causes.	Annually (or directly following an extreme storm event) Remedial action	Homeowner on plot, public house where not shared, otherwise management company unless adopted
Attenuation Tanks. Visual inspection of upstream silt trap\catchpit chamber, cleansing of sump and removal or silt to be undertaken as required. Where the tank is not functioning correctly this may indicate an issue with the connecting rainwater diffuser units which should then be replaced.	Quarterly (or directly following an extreme storm event) Remedial action	Management company

Flow Control (orifice). Visual inspection of the chamber. Check operation and condition of filter\bypass. Cleansing of sump and removal of silt to be undertaken as required.	Quarterly (or directly following an extreme storm event)	Management company
Permeable subbase. Visual inspection of connecting chamber (only need to inspect one per extent of permeable subbase), cleansing of sump and removal of silt to be undertaken as required. Inspection of inlets\outlets to ensure no debris build-up and removal of any deleterious materials. Where the subbase is not functioning correctly this may indicate an issue with the connecting filter drain which should then be replaced. Ponding on surface without high water in chambers may indicate upper geotextile is clogged and needs to be replaced.	Biannually (or directly following an extreme storm event) Remedial action Remedial action	Management company

6. Foul

Foul flows from the site will be very low with only a negligible change in the flow from the formation of the new rooms.

The existing drainage flows to the public foul sewer to the east, and as part of accommodating the new works minor diversions of the existing foul system will be included around the new ramped access.

7. Conclusions

The site is noted as being wholly within Flood Zone 1 with this being mirrored by the risk mapping. Surface water flood risk does indicate some areas of flood risk associated with the wider site, but these are generally in locations where previous development has provided a full SuDs solution.

Overland flow routes are to the north east and these are retained in the proposals due to there being very minor level changes. The new SuDs system will intercept some of these flows diverting them to the watercourse which will reduce the flood risk to the neighbouring The Vicarage.

A proposed SuDs scheme has been included which reduces the discharge rate to a minimum maintainable flow of 2.7 l/s. This flow restriction applies to all events including the 1 in 100 year plus 45% climate change event for the Avon Bristol and North Somerset Streams Management Catchment peak rainfall allowances. This provides a significant betterment over the existing discharge rates and maintain the existing outfall.

Appendix A:
Topographical Survey

Appendix B:
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	x
Maximum Rainfall (mm/hr)	50.0		

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular Link Type

Shape Circular | Barrels 1 | Auto Increment (mm) 75 | Follow Ground x

Available Diameters (mm)

100 | 150

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.006	5.00	46.325	450		388724.146	165805.359	0.700
ExMh20	0.005	5.00	46.350	675	450	388722.506	165797.721	1.100
S2	0.003	5.00	45.850	450		388727.984	165799.477	0.750
S3	0.002	5.00	45.810	450		388730.425	165801.436	0.810
S4			45.800	450		388729.873	165803.768	0.900
Jct	0.011	5.00	45.500			388736.463	165811.588	0.875
S5			45.450	450		388737.807	165813.183	0.850
RE20	0.006	5.00	45.700	150		388725.714	165817.172	0.700
S6 Control	0.006	5.00	45.400	600		388734.510	165822.163	0.900
S7			45.350	450		388734.685	165827.088	0.900
Hw1			45.200			388740.749	165826.874	0.900

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	S1	S2	7.023	0.600	45.625	45.150	0.475	14.8	100	5.06	49.8
2.000	ExMh20	S2	5.753	0.600	45.250	45.100	0.150	38.4	150	5.06	49.8
1.001	S2	S3	3.130	0.600	45.100	45.000	0.100	31.3	150	5.09	49.7
1.002	S3	S4	2.396	0.600	45.000	44.900	0.100	24.0	150	5.11	49.6
1.003	S4	Jct	10.226	0.600	44.900	44.625	0.275	37.2	150	5.21	49.2

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	2.019	15.9	0.8	0.600	0.600	0.006	0.0	15	1.045
2.000	1.630	28.8	0.7	0.950	0.600	0.005	0.0	16	0.681
1.001	1.806	31.9	1.9	0.600	0.660	0.014	0.0	25	0.996
1.002	2.065	36.5	2.2	0.660	0.750	0.016	0.0	25	1.140
1.003	1.655	29.3	2.1	0.750	0.725	0.016	0.0	27	0.964



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)
1.004	Jct	S5	2.086	0.600	44.625	44.600	0.025	83.4	150	5.24	49.1
1.005	S5	S6 Control	9.566	0.600	44.600	44.500	0.100	95.7	150	5.40	48.5
4.000	RE20	S6 Control	10.113	0.600	45.000	44.500	0.500	20.2	150	5.07	49.7
1.006	S6 Control	S7	4.928	0.600	44.500	44.450	0.050	98.6	100	5.50	48.1
1.007	S7	Hw1	6.068	0.600	44.450	44.300	0.150	40.5	100	5.59	47.8

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)
1.004	1.101	19.5	3.6	0.725	0.700	0.027	0.0	44	0.843
1.005	1.027	18.2	3.6	0.700	0.750	0.027	0.0	45	0.798
4.000	2.249	39.7	0.8	0.550	0.750	0.006	0.0	15	0.896
1.006	0.774	6.1	5.1	0.800	0.800	0.039	0.0	70	0.866
1.007	1.216	9.5	5.1	0.800	0.800	0.039	0.0	52	1.235

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	7.023	14.8	100	Circular	46.325	45.625	0.600	45.850	45.150	0.600
2.000	5.753	38.4	150	Circular	46.350	45.250	0.950	45.850	45.100	0.600
1.001	3.130	31.3	150	Circular	45.850	45.100	0.600	45.810	45.000	0.660
1.002	2.396	24.0	150	Circular	45.810	45.000	0.660	45.800	44.900	0.750
1.003	10.226	37.2	150	Circular	45.800	44.900	0.750	45.500	44.625	0.725
1.004	2.086	83.4	150	Circular	45.500	44.625	0.725	45.450	44.600	0.700
1.005	9.566	95.7	150	Circular	45.450	44.600	0.700	45.400	44.500	0.750
4.000	10.113	20.2	150	Circular	45.700	45.000	0.550	45.400	44.500	0.750
1.006	4.928	98.6	100	Circular	45.400	44.500	0.800	45.350	44.450	0.800
1.007	6.068	40.5	100	Circular	45.350	44.450	0.800	45.200	44.300	0.800

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	450		Manhole	Adoptable	S2	450	Manhole	Adoptable
2.000	ExMh20	675	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.001	S2	450		Manhole	Adoptable	S3	450	Manhole	Adoptable
1.002	S3	450		Manhole	Adoptable	S4	450	Manhole	Adoptable
1.003	S4	450		Manhole	Adoptable	Jct		Junction	
1.004	Jct			Junction		S5	450	Manhole	Adoptable
1.005	S5	450		Manhole	Adoptable	S6 Control	600	Manhole	Adoptable
4.000	RE20	150		Manhole	Adoptable	S6 Control	600	Manhole	Adoptable
1.006	S6 Control	600		Manhole	Adoptable	S7	450	Manhole	Adoptable
1.007	S7	450		Manhole	Adoptable	Hw1		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
S1	388724.146	165805.359	46.325	0.700	450			0	1.000	45.625	100
ExMh20	388722.506	165797.721	46.350	1.100	675	450		0	2.000	45.250	150
S2	388727.984	165799.477	45.850	0.750	450		1	2.000	45.100	150	
							2	1.000	45.150	100	
							0	1.001	45.100	150	

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
S3	388730.425	165801.436	45.810	0.810	450			1	1.001	45.000	150
								0	1.002	45.000	150
S4	388729.873	165803.768	45.800	0.900	450			1	1.002	44.900	150
								0	1.003	44.900	150
Jct	388736.463	165811.588	45.500	0.875				1	1.003	44.625	150
								0	1.004	44.625	150
S5	388737.807	165813.183	45.450	0.850	450			1	1.004	44.600	150
								0	1.005	44.600	150
RE20	388725.714	165817.172	45.700	0.700	150			0	4.000	45.000	150
								1	4.000	44.500	150
S6 Control	388734.510	165822.163	45.400	0.900	600			2	1.005	44.500	150
								0	1.006	44.500	100
S7	388734.685	165827.088	45.350	0.900	450			1	1.006	44.450	100
								0	1.007	44.450	100
Hw1	388740.749	165826.874	45.200	0.900				1	1.007	44.300	100

Simulation Settings

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

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	0	0	0
30	45	0	0	100	45	0	0

Node S6 Control Online Orifice Control

Flap Valve	x	Design Depth (m)	0.800	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	2.7		
Invert Level (m)	44.500	Diameter (m)	0.038		



Node Jct Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	45.200	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.150
Safety Factor	2.0	Width (m)	6.100	Inf Depth (m)	
Porosity	0.20	Length (m)	10.000		

Node Jct Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	41

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	31.8	0.0	0.300	31.8	0.0	0.301	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	98.475	27.865	30 year +45% CC 15 minute summer	388.583	109.956
2 year 15 minute winter	69.105	27.865	30 year +45% CC 15 minute winter	272.690	109.956
2 year 30 minute summer	62.766	17.761	30 year +45% CC 30 minute summer	251.253	71.096
2 year 30 minute winter	44.046	17.761	30 year +45% CC 30 minute winter	176.318	71.096
2 year 60 minute summer	41.624	11.000	30 year +45% CC 60 minute summer	166.664	44.045
2 year 60 minute winter	27.654	11.000	30 year +45% CC 60 minute winter	110.728	44.045
2 year 120 minute summer	29.515	7.800	30 year +45% CC 120 minute summer	102.537	27.098
2 year 120 minute winter	19.609	7.800	30 year +45% CC 120 minute winter	68.123	27.098
2 year 180 minute summer	24.202	6.228	30 year +45% CC 180 minute summer	79.258	20.396
2 year 180 minute winter	15.732	6.228	30 year +45% CC 180 minute winter	51.519	20.396
2 year 240 minute summer	19.885	5.255	30 year +45% CC 240 minute summer	63.127	16.683
2 year 240 minute winter	13.211	5.255	30 year +45% CC 240 minute winter	41.940	16.683
2 year 360 minute summer	15.825	4.072	30 year +45% CC 360 minute summer	48.917	12.588
2 year 360 minute winter	10.287	4.072	30 year +45% CC 360 minute winter	31.797	12.588
2 year 480 minute summer	12.723	3.362	30 year +45% CC 480 minute summer	38.998	10.306
2 year 480 minute winter	8.453	3.362	30 year +45% CC 480 minute winter	25.909	10.306
2 year 600 minute summer	10.542	2.883	30 year +45% CC 600 minute summer	32.196	8.806
2 year 600 minute winter	7.203	2.883	30 year +45% CC 600 minute winter	21.998	8.806
2 year 720 minute summer	9.463	2.536	30 year +45% CC 720 minute summer	28.843	7.730
2 year 720 minute winter	6.360	2.536	30 year +45% CC 720 minute winter	19.384	7.730
2 year 960 minute summer	7.831	2.062	30 year +45% CC 960 minute summer	23.767	6.259
2 year 960 minute winter	5.188	2.062	30 year +45% CC 960 minute winter	15.744	6.259
2 year 1440 minute summer	5.702	1.528	30 year +45% CC 1440 minute summer	17.186	4.606
2 year 1440 minute winter	3.832	1.528	30 year +45% CC 1440 minute winter	11.550	4.606
2 year 2160 minute summer	4.108	1.135	30 year +45% CC 2160 minute summer	12.109	3.346
2 year 2160 minute winter	2.831	1.135	30 year +45% CC 2160 minute winter	8.343	3.346
2 year 2880 minute summer	3.452	0.925	30 year +45% CC 2880 minute summer	9.899	2.653
2 year 2880 minute winter	2.320	0.925	30 year +45% CC 2880 minute winter	6.653	2.653
2 year 4320 minute summer	2.693	0.704	30 year +45% CC 4320 minute summer	7.252	1.896
2 year 4320 minute winter	1.773	0.704	30 year +45% CC 4320 minute winter	4.776	1.896
2 year 5760 minute summer	2.293	0.587	30 year +45% CC 5760 minute summer	5.851	1.498
2 year 5760 minute winter	1.484	0.587	30 year +45% CC 5760 minute winter	3.787	1.498
2 year 7200 minute summer	2.019	0.515	30 year +45% CC 7200 minute summer	4.934	1.259
2 year 7200 minute winter	1.303	0.515	30 year +45% CC 7200 minute winter	3.184	1.259
2 year 8640 minute summer	1.826	0.466	30 year +45% CC 8640 minute summer	4.302	1.097
2 year 8640 minute winter	1.178	0.466	30 year +45% CC 8640 minute winter	2.776	1.097
2 year 10080 minute summer	1.685	0.430	30 year +45% CC 10080 minute summer	3.847	0.981
2 year 10080 minute winter	1.088	0.430	30 year +45% CC 10080 minute winter	2.483	0.981



Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year 15 minute summer	344.007	97.342	100 year +45% CC 15 minute summer	498.811	141.146
100 year 15 minute winter	241.409	97.342	100 year +45% CC 15 minute winter	350.043	141.146
100 year 30 minute summer	224.974	63.660	100 year +45% CC 30 minute summer	326.212	92.307
100 year 30 minute winter	157.876	63.660	100 year +45% CC 30 minute winter	228.920	92.307
100 year 60 minute summer	149.581	39.530	100 year +45% CC 60 minute summer	216.892	57.318
100 year 60 minute winter	99.378	39.530	100 year +45% CC 60 minute winter	144.098	57.318
100 year 120 minute summer	90.550	23.930	100 year +45% CC 120 minute summer	131.297	34.698
100 year 120 minute winter	60.159	23.930	100 year +45% CC 120 minute winter	87.231	34.698
100 year 180 minute summer	69.973	18.007	100 year +45% CC 180 minute summer	101.461	26.109
100 year 180 minute winter	45.485	18.007	100 year +45% CC 180 minute winter	65.953	26.109
100 year 240 minute summer	55.921	14.778	100 year +45% CC 240 minute summer	81.085	21.428
100 year 240 minute winter	37.152	14.778	100 year +45% CC 240 minute winter	53.871	21.428
100 year 360 minute summer	43.705	11.247	100 year +45% CC 360 minute summer	63.372	16.308
100 year 360 minute winter	28.409	11.247	100 year +45% CC 360 minute winter	41.193	16.308
100 year 480 minute summer	35.086	9.272	100 year +45% CC 480 minute summer	50.875	13.445
100 year 480 minute winter	23.310	9.272	100 year +45% CC 480 minute winter	33.800	13.445
100 year 600 minute summer	29.123	7.966	100 year +45% CC 600 minute summer	42.228	11.550
100 year 600 minute winter	19.899	7.966	100 year +45% CC 600 minute winter	28.853	11.550
100 year 720 minute summer	26.202	7.022	100 year +45% CC 720 minute summer	37.992	10.182
100 year 720 minute winter	17.609	7.022	100 year +45% CC 720 minute winter	25.533	10.182
100 year 960 minute summer	21.732	5.723	100 year +45% CC 960 minute summer	31.512	8.298
100 year 960 minute winter	14.396	5.723	100 year +45% CC 960 minute winter	20.874	8.298
100 year 1440 minute summer	15.727	4.215	100 year +45% CC 1440 minute summer	22.805	6.112
100 year 1440 minute winter	10.570	4.215	100 year +45% CC 1440 minute winter	15.326	6.112
100 year 2160 minute summer	11.006	3.042	100 year +45% CC 2160 minute summer	15.958	4.410
100 year 2160 minute winter	7.583	3.042	100 year +45% CC 2160 minute winter	10.996	4.410
100 year 2880 minute summer	8.907	2.387	100 year +45% CC 2880 minute summer	12.916	3.462
100 year 2880 minute winter	5.986	2.387	100 year +45% CC 2880 minute winter	8.680	3.462
100 year 4320 minute summer	6.390	1.671	100 year +45% CC 4320 minute summer	9.265	2.422
100 year 4320 minute winter	4.208	1.671	100 year +45% CC 4320 minute winter	6.102	2.422
100 year 5760 minute summer	5.060	1.295	100 year +45% CC 5760 minute summer	7.337	1.878
100 year 5760 minute winter	3.275	1.295	100 year +45% CC 5760 minute winter	4.749	1.878
100 year 7200 minute summer	4.179	1.066	100 year +45% CC 7200 minute summer	6.060	1.546
100 year 7200 minute winter	2.697	1.066	100 year +45% CC 7200 minute winter	3.911	1.546
100 year 8640 minute summer	3.574	0.912	100 year +45% CC 8640 minute summer	5.182	1.322
100 year 8640 minute winter	2.306	0.912	100 year +45% CC 8640 minute winter	3.344	1.322
100 year 10080 minute summer	3.139	0.801	100 year +45% CC 10080 minute summer	4.551	1.161
100 year 10080 minute winter	2.026	0.801	100 year +45% CC 10080 minute winter	2.937	1.161



Results for 2 year Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	45.642	0.017	1.0	0.0027	0.0000	OK
15 minute summer	ExMh20	11	45.267	0.017	0.8	0.0053	0.0000	OK
15 minute summer	S2	10	45.129	0.029	2.3	0.0046	0.0000	OK
15 minute summer	S3	10	45.029	0.029	2.6	0.0046	0.0000	OK
15 minute summer	S4	11	44.930	0.030	2.6	0.0048	0.0000	OK
15 minute summer	Jct	15	44.906	0.281	4.3	0.1857	0.0000	SURCHARGED
15 minute summer	S5	15	44.905	0.305	3.2	0.0485	0.0000	SURCHARGED
15 minute summer	RE20	10	45.016	0.016	1.0	0.0003	0.0000	OK
15 minute winter	S6 Control	14	44.906	0.406	3.4	0.1148	0.0000	SURCHARGED
15 minute summer	S7	15	44.480	0.030	1.8	0.0048	0.0000	OK
15 minute summer	Hw1	15	44.330	0.030	1.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	1.0	1.101	0.062	0.0062	
15 minute summer	ExMh20	2.000	S2	0.8	0.471	0.028	0.0100	
15 minute summer	S2	1.001	S3	2.3	0.948	0.071	0.0075	
15 minute summer	S3	1.002	S4	2.6	1.044	0.070	0.0059	
15 minute summer	S4	1.003	Jct	2.6	0.563	0.088	0.1028	
15 minute summer	Jct	1.004	S5	3.2	0.744	0.164	0.0367	
15 minute summer	S5	1.005	S6 Control	2.3	0.270	0.125	0.1684	
15 minute summer	RE20	4.000	S6 Control	1.0	0.299	0.025	0.0942	
15 minute winter	S6 Control	1.006	S7	1.8	0.745	0.299	0.0121	
15 minute summer	S7	1.007	Hw1	1.8	0.924	0.191	0.0120	2.8



Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	45.660	0.035	3.8	0.0055	0.0000	OK
15 minute summer	ExMh20	10	45.284	0.034	3.2	0.0102	0.0000	OK
60 minute summer	S2	45	45.167	0.067	5.8	0.0106	0.0000	OK
120 minute summer	S3	80	45.169	0.169	4.4	0.0269	0.0000	SURCHARGED
120 minute summer	S4	78	45.167	0.267	6.1	0.0425	0.0000	SURCHARGED
60 minute summer	Jct	49	45.162	0.537	12.4	7.9446	0.0000	SURCHARGED
60 minute summer	S5	49	45.162	0.562	3.9	0.0894	0.0000	FLOOD RISK
60 minute summer	RE20	49	45.161	0.161	2.5	0.0029	0.0000	SURCHARGED
60 minute summer	S6 Control	49	45.161	0.661	5.0	0.1871	0.0000	FLOOD RISK
60 minute summer	S7	49	44.485	0.035	2.4	0.0055	0.0000	OK
60 minute summer	Hw1	49	44.334	0.034	2.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	3.8	1.602	0.238	0.0165	
15 minute summer	ExMh20	2.000	S2	3.2	0.655	0.110	0.0284	
60 minute summer	S2	1.001	S3	5.8	1.259	0.182	0.0394	
120 minute summer	S3	1.002	S4	6.1	1.032	0.167	0.0422	
120 minute summer	S4	1.003	Jct	3.8	0.463	0.130	0.1800	
60 minute summer	Jct	1.004	S5	3.9	0.585	0.198	0.0367	
60 minute summer	S5	1.005	S6 Control	-2.3	0.253	-0.128	0.1684	
60 minute summer	RE20	4.000	S6 Control	2.5	0.287	0.063	0.1780	
60 minute summer	S6 Control	1.006	S7	2.4	0.797	0.389	0.0147	
60 minute summer	S7	1.007	Hw1	2.4	0.992	0.248	0.0145	17.2



Results for 100 year Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	45.658	0.033	3.4	0.0052	0.0000	OK
15 minute summer	ExMh20	10	45.282	0.032	2.8	0.0096	0.0000	OK
15 minute summer	S2	10	45.158	0.058	7.9	0.0092	0.0000	OK
60 minute summer	S3	48	45.126	0.126	5.9	0.0200	0.0000	OK
60 minute summer	S4	48	45.126	0.226	6.0	0.0359	0.0000	SURCHARGED
60 minute summer	Jct	48	45.123	0.498	10.8	6.7492	0.0000	SURCHARGED
60 minute summer	S5	47	45.123	0.523	3.8	0.0831	0.0000	SURCHARGED
60 minute summer	RE20	47	45.122	0.122	2.2	0.0022	0.0000	OK
60 minute summer	S6 Control	47	45.122	0.622	4.4	0.1759	0.0000	FLOOD RISK
60 minute summer	S7	48	44.484	0.034	2.3	0.0054	0.0000	OK
60 minute summer	Hw1	48	44.333	0.033	2.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	3.4	1.555	0.213	0.0152	
15 minute summer	ExMh20	2.000	S2	2.8	0.635	0.097	0.0258	
15 minute summer	S2	1.001	S3	7.8	1.290	0.245	0.0206	
60 minute summer	S3	1.002	S4	6.0	1.144	0.165	0.0400	
60 minute summer	S4	1.003	Jct	5.4	0.472	0.184	0.1800	
60 minute summer	Jct	1.004	S5	3.8	0.569	0.195	0.0367	
60 minute summer	S5	1.005	S6 Control	2.1	0.264	0.116	0.1684	
60 minute summer	RE20	4.000	S6 Control	2.2	0.289	0.055	0.1665	
60 minute summer	S6 Control	1.006	S7	2.3	0.790	0.376	0.0143	
60 minute summer	S7	1.007	Hw1	2.3	0.983	0.240	0.0141	15.3



Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	45.665	0.040	4.9	0.0064	0.0000	OK
60 minute winter	ExMh20	55	45.348	0.098	2.0	0.0298	0.0000	OK
60 minute winter	S2	55	45.348	0.248	5.5	0.0394	0.0000	SURCHARGED
60 minute winter	S3	55	45.348	0.348	6.5	0.0553	0.0000	SURCHARGED
60 minute winter	S4	55	45.348	0.448	6.3	0.0712	0.0000	SURCHARGED
60 minute winter	Jct	55	45.347	0.722	10.7	10.8266	0.0000	FLOOD RISK
60 minute winter	S5	55	45.347	0.747	3.1	0.1187	0.0000	FLOOD RISK
60 minute winter	RE20	54	45.345	0.345	2.3	0.0062	0.0000	SURCHARGED
60 minute winter	S6 Control	54	45.345	0.845	4.2	0.2392	0.0000	FLOOD RISK
60 minute winter	S7	56	44.487	0.037	2.7	0.0059	0.0000	OK
60 minute winter	Hw1	56	44.336	0.036	2.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	4.9	1.711	0.307	0.0200	
60 minute winter	ExMh20	2.000	S2	2.0	0.655	0.069	0.0857	
60 minute winter	S2	1.001	S3	5.7	1.221	0.177	0.0551	
60 minute winter	S3	1.002	S4	6.3	1.097	0.172	0.0422	
60 minute winter	S4	1.003	Jct	5.5	0.509	0.187	0.1800	
60 minute winter	Jct	1.004	S5	3.1	0.640	0.158	0.0367	
60 minute winter	S5	1.005	S6 Control	2.4	0.283	0.134	0.1684	
60 minute winter	RE20	4.000	S6 Control	2.1	0.301	0.052	0.1780	
60 minute winter	S6 Control	1.006	S7	2.7	0.823	0.442	0.0161	
60 minute winter	S7	1.007	Hw1	2.7	1.027	0.282	0.0159	22.3

SIMPLE INDEX APPROACH: SUMMARY TABLE



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SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type Pollution Hazard Level Pollution Hazard Indices TSS Metals Hydrocarbons	Non-residential parking with infrequent change (e.g. schools, offices, < 300 traffic movements a day) Low 0.5 0.4 0.4				
SuDS components proposed		SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B			
Component 1	Pervious pavement (where the pavement is not designed as an infiltration component)				
Component 2	None				
Component 3	None				
SuDS Pollution Mitigation Indices TSS Metals Hydrocarbons	 	 			
Groundwater protection type Groundwater protection Pollution Mitigation Indices TSS Metals Hydrocarbons	None 0 0 0				
Combined Pollution Mitigation Indices TSS Metals Hydrocarbons Acceptability of Pollution Mitigation TSS Metals Hydrocarbons	 Sufficient Sufficient Sufficient	0.7 0.6 0.7 Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England			

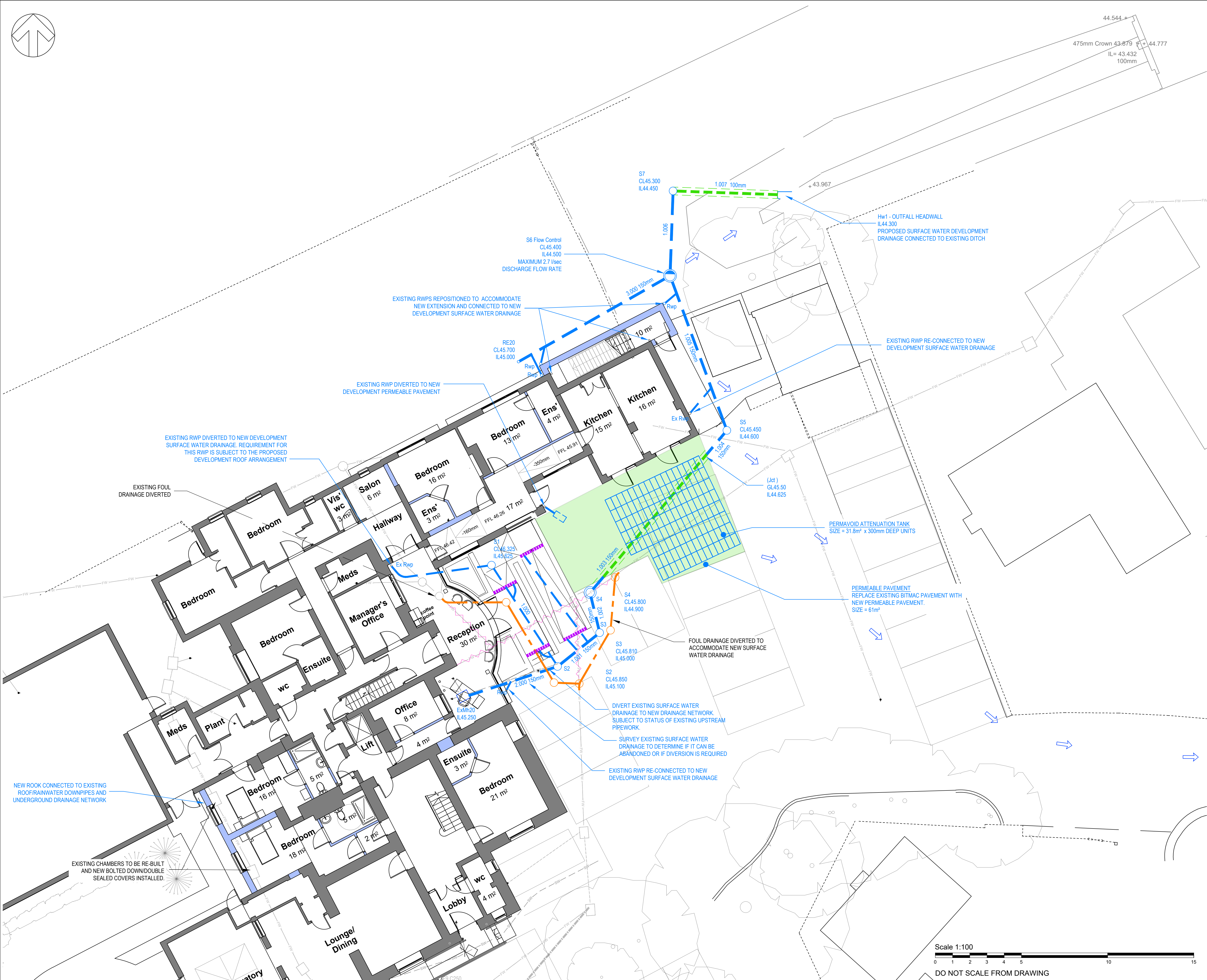
SIMPLE INDEX APPROACH: SUMMARY TABLE

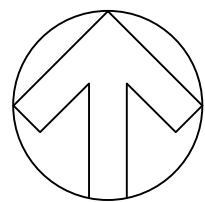


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SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type Pollution Hazard Level Pollution Hazard Indices TSS Metals Hydrocarbons	Commercial/Industrial roofing: Inert materials Very low 0.3 0.2 0.05				
SuDS components proposed		SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B			
Component 1	Swale				
Component 2	None				
Component 3	None				
SuDS Pollution Mitigation Indices TSS Metals Hydrocarbons	 	 			
Groundwater protection type Groundwater protection Pollution Mitigation Indices TSS Metals Hydrocarbons	None 0 0 0				
Combined Pollution Mitigation Indices TSS Metals Hydrocarbons Acceptability of Pollution Mitigation TSS Metals Hydrocarbons	 Sufficient Sufficient Sufficient	0.5 0.6 0.6 Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England			

Appendix C:
Drawings





General Notes

- EXISTING ROOF CATCHMENT
Diverted to new development drainage
- EXISTING ROOF CATCHMENT
Discharging to new development drainage
- NEW ROOF
Connected to existing roof guttering/rainwater pipework
- DEVELOPMENT CATCHMENT AREA
-New extension
-New Reception area
-New access ramp
-Existing car parking converted to permeable pavement

Rev	Date	Revision Description	By	Chk
P1	JUL 26	PLANNING ISSUE	TN	TN

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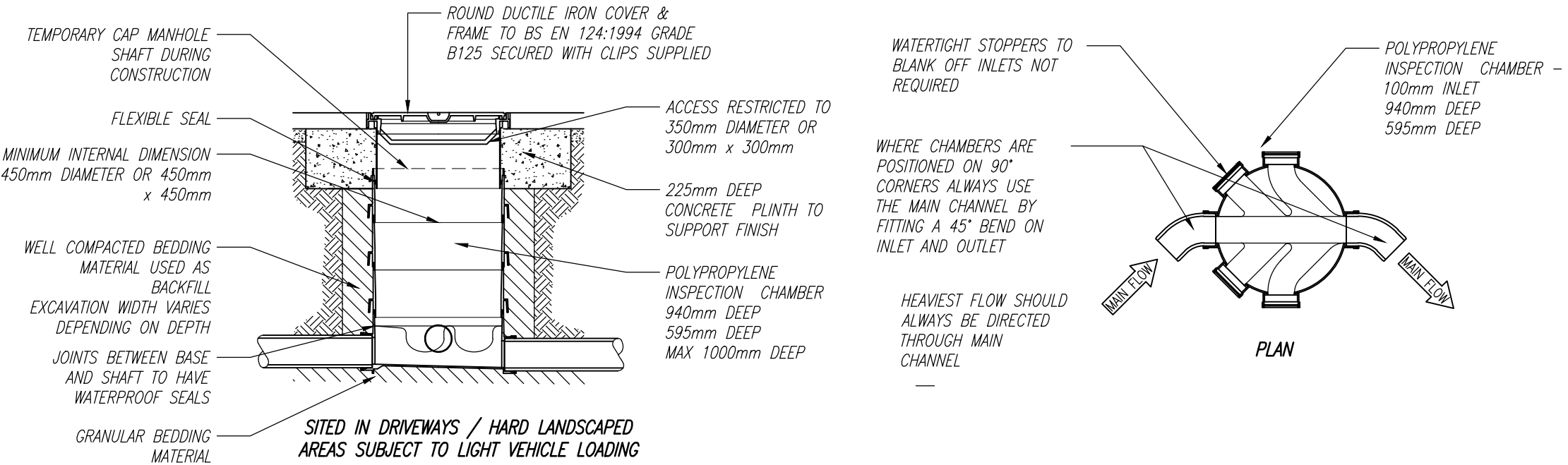
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Architect

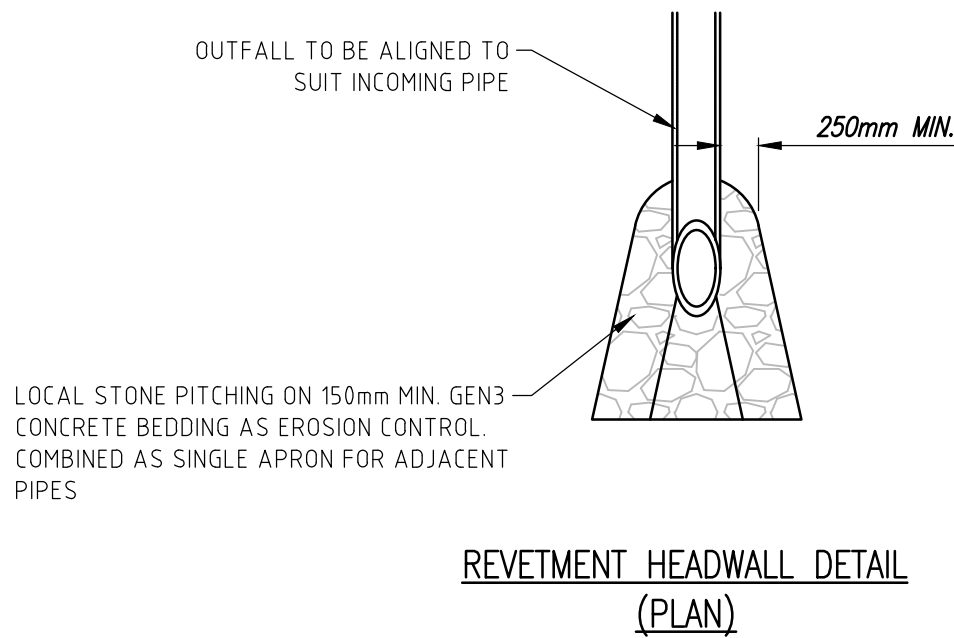
Project

MAVERN HOUSE

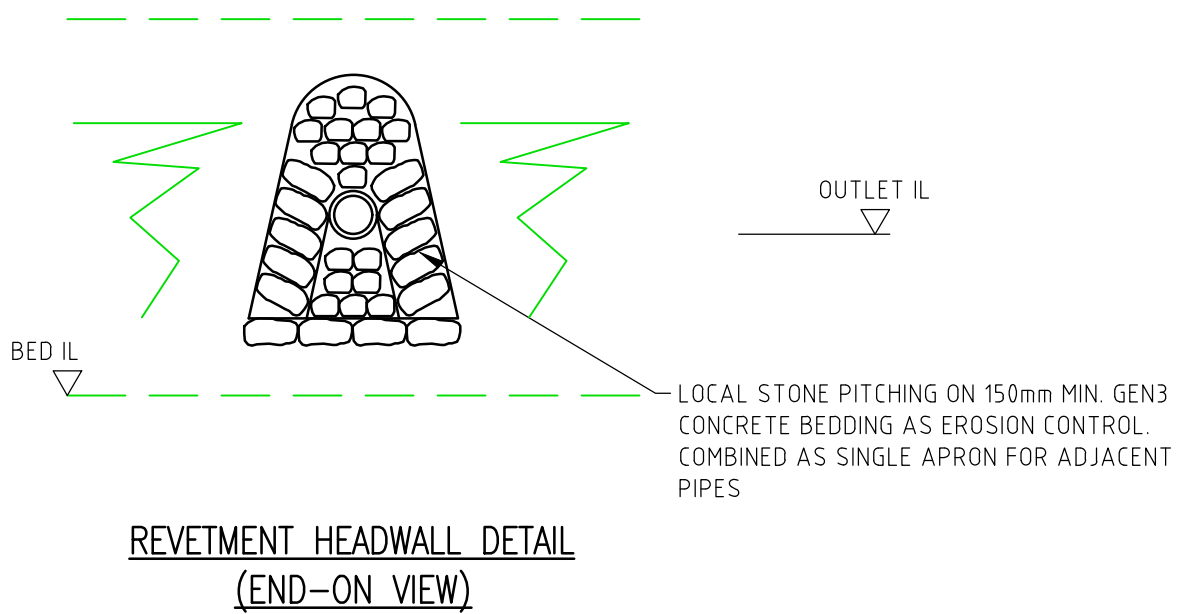
Drawn By	Checked By	Approved By	Date Drawn		Project No	Scale
PRM	PRM	DAL	MAY 26		25354	1:200
Project	Originator	Volume	Level	Type	Role	Number
25354	JDL	XX	XX	DR	D	E02
Rev						PI



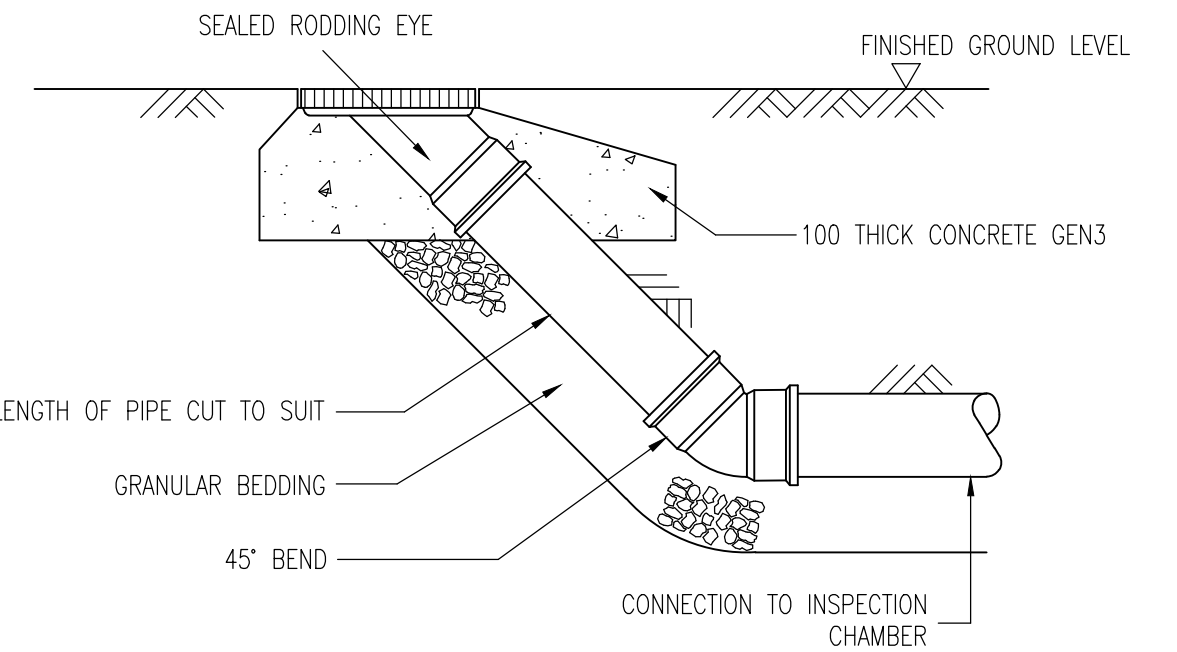
PLASTIC ACCESS CHAMBER 450mm Dia.
MAX 2.0m DEEP (NON ENTRY)



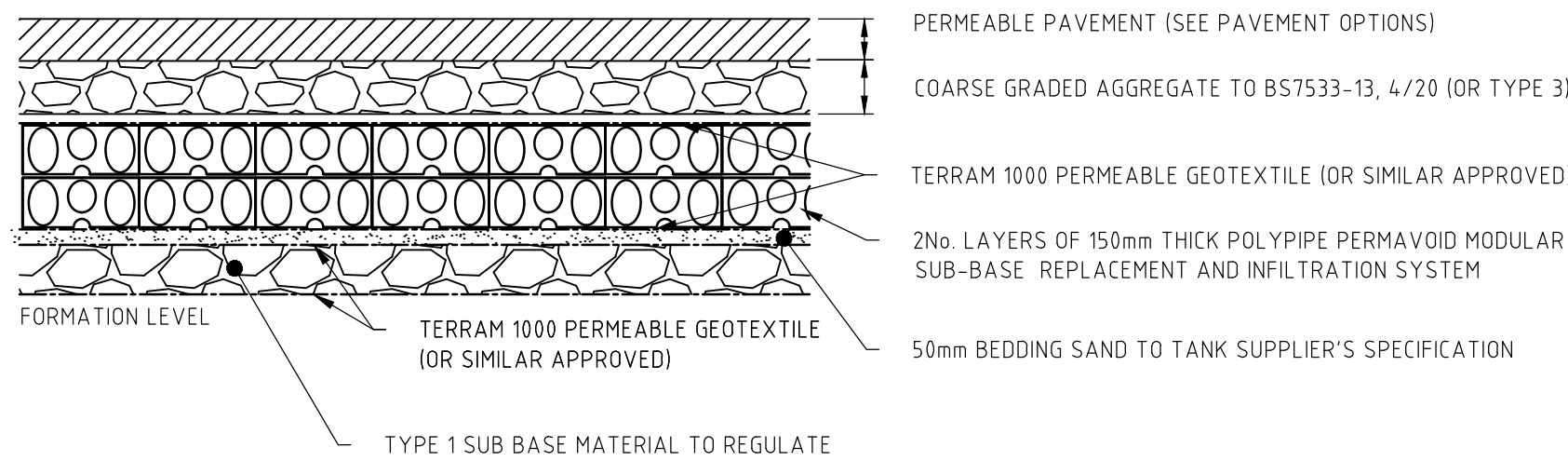
REVETMENT HEADWALL DETAIL
(PLAN)



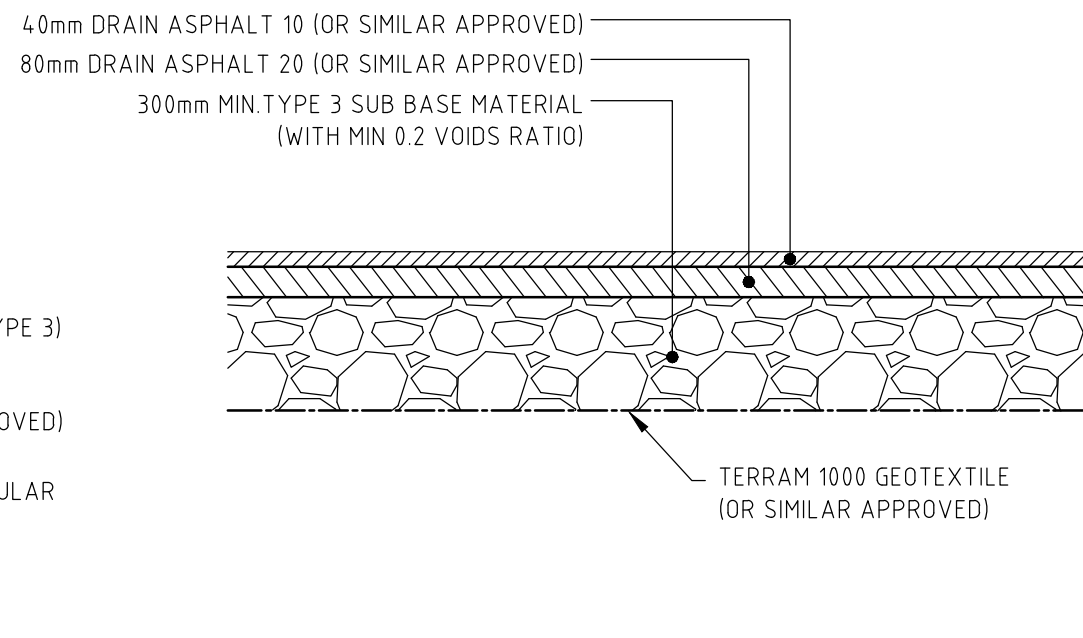
REVETMENT HEADWALL DETAIL
(END-ON VIEW)



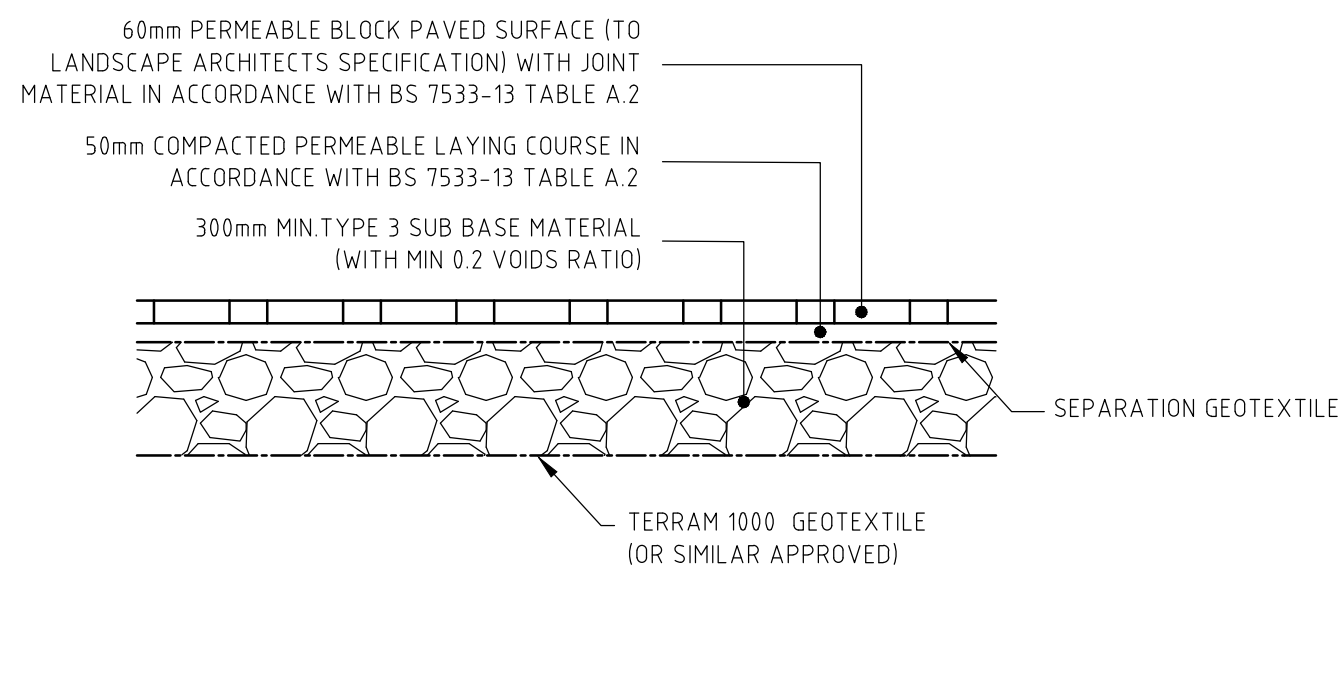
SEALED RODDING EYE



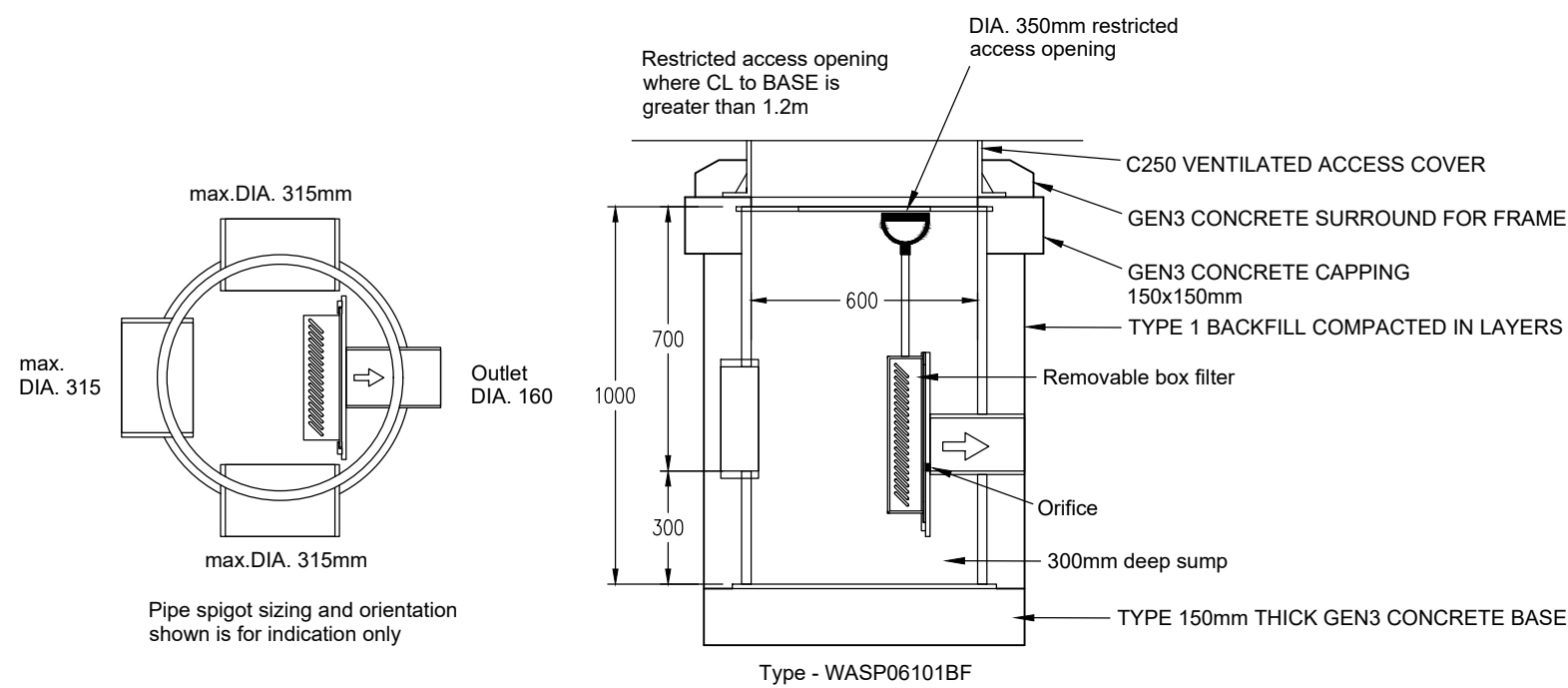
HARDSTANDING WITH PERMAVOID TANK
VEHICLE LOADING SUBJECT TO HARDSTANDING SPECIFICATION



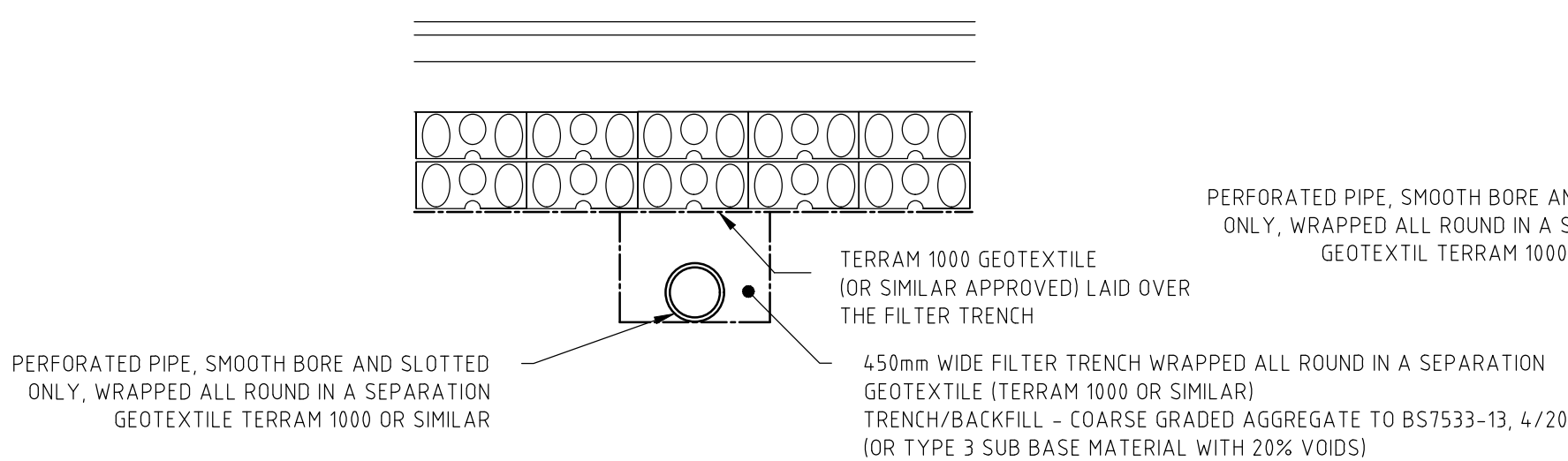
PERMEABLE ASPHALT SURFACING - OPTION 1
(PERMEABLE CONSTRUCTION SYSTEM 2.0% CBR)
LIGHT VEHICLES ONLY



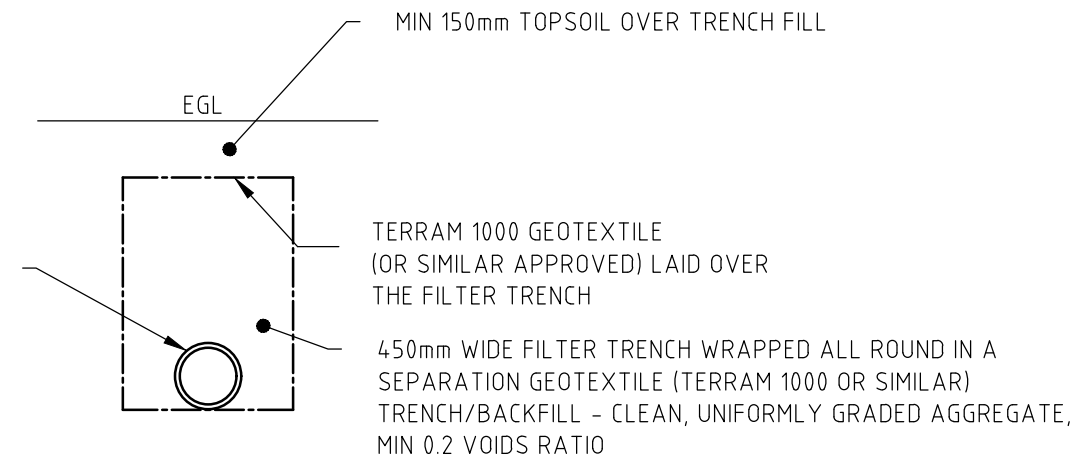
PERMEABLE BLOCK PAVEMENT - OPTION 2
(PERMEABLE CONSTRUCTION SYSTEM 2.0% CBR)
LIGHT VEHICLES ONLY



DIA. 600 ORIFICE FLOW CONTROL CHAMBER
WITH REMOVABLE BOX FILTER



PERMEABLE PAVEMENT SUB BASE DRAIN



PERFORATED DRAIN/TRENCH DETAIL
(CHAMBER S7 TO HEADWALL Hw1)

- General Notes
1. TO BE READ WITH ALL OTHER JDL CONSULTANTS LTD DRAWINGS AND SPECIFICATIONS.
 2. DO NOT SCALE THIS DRAWING.
 3. ALL BEDDING MATERIAL IS TO BE WELL COMPACTED.
 4. ALL DIMENSIONS IN MILLIMETRES UNLESS INDICATED OTHERWISE.
 5. REFERENCE TO PROPRIETARY GOODS SHALL NOT EXCLUDE OTHERS OF SIMILAR APPROVED QUALITY AND WHICH COMPLY WITH RELEVANT BRITISH STANDARDS.
 6. FLEXIBILITY IN DRAINS TO BE OBTAINED AT ALL MANHOLES AND CHAMBERS BY PROVIDING 1 NO. 600 LONG PIPE LENGTH IMMEDIATELY OUTSIDE THE MANHOLE OR CHAMBER AT ALL PIPE JUNCTIONS.
 7. ALL PCC SEWER PIPES TO BE EXTRA STRENGTH QUALITY.
 8. BRANCH CONNECTIONS TO BE VIA A 45 DEG. OBLIQUE JUNCTIONS BRANCH WHERE POSSIBLE.
 9. WHERE THE DISTANCE TO A DRAIN TRENCH FROM THE OUTSIDE FACE OF A FOUNDATION OR EXTERNAL WALL IS LESS

10. THAN 1 METRE AND THE DRAIN INVERT LEVEL IS BELOW FOUNDATION LEVEL. TRENCH FILL SHALL BE OF CONCRETE TO A LEVEL EQUAL TO THAT OF THE UNDERSIDE OF THE FOUNDATION. WHERE THE DISTANCE IS GREATER THAN 1000, THE CONCRETE TRENCH SHALL BE TO A LEVEL AT LEAST 150 BELOW THE UNDERSIDE OF THE FOUNDATION.
11. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH JDL SPECIFICATION.
12. ALL PIPE CONNECTIONS TO CHAMBERS TO BE INVERT TO INVERT DUE TO SHALLOW COVER.
13. THE FIRST 300mm OF FILL ABOVE THE CROWN OF THE PIPE IS TO BE LIGHTLY TAMPED BY HAND. MECHANICAL COMPACTION MAY BE USED ONLY ABOVE THIS LEVEL.
14. PIPES LAID IN FIELDS AND FOOTPATHS (INACCESSIBLE BY VEHICLES) AT COVER 0.6 - 3m TO BE CONSTRUCTED PIPE BEDDING DETAIL 1 (CLASS S); COVER LESS THAN 0.6m TO BE PIPE BEDDING DETAIL 2 (CONCRETE PROTECTION).
15. PIPES LAID IN ROADS AT MIN. 1.2m COVER TO BE AS PIPE BEDDING DETAIL 1 (CLASS S) AND PIPES CONSTRUCTED ABOVE 1.2m TO BE AS PIPE BEDDING DETAIL 2 (CONCRETE PROTECTION).

Rev	Date	Revision Description	By	Chk
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Rev	Date	Revision Description	By	Chk
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Drawing Title
Drainage and SuDs Details

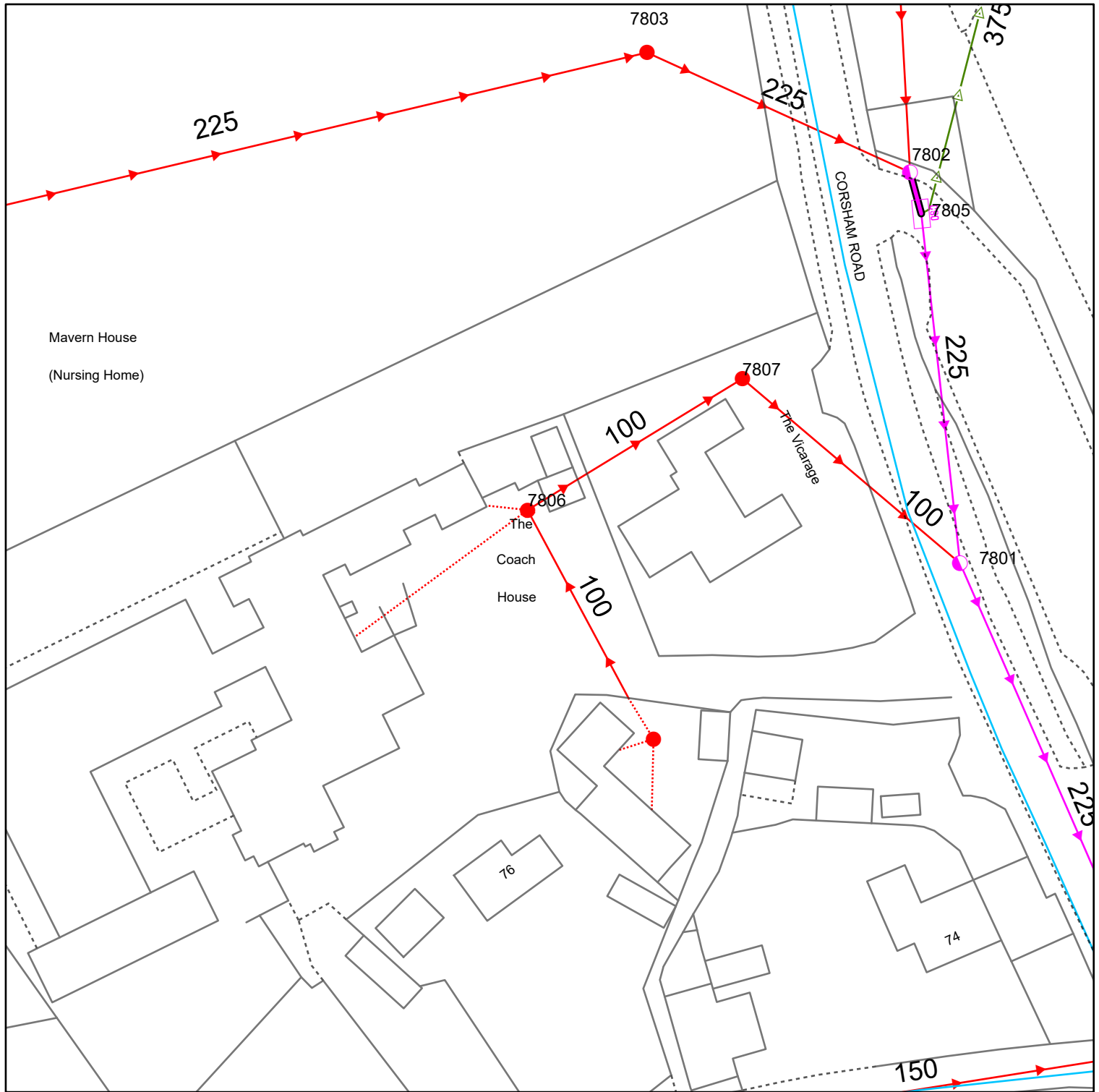
Author

Project
MAVERN CARE HOME

Drawn By TN	Checked By NB	Approved By NB	Date Drawn 13/10/25	Project No. 24390	Scale NTS
Project 24390	Originator JDL	Volume XX	Level XX	Type DR	Rev 03

Appendix D:
Wessex Water Mapping

Wessex Water Network Map



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WATER MAINS		SEWERS		STRATEGIC		PUBLIC		PRIVATE		SECTION 104		OTHER WESSEX PIPES		NON-WESSEX / UNKNOWN	
	Distribution		Foul		Surface								Rising Mains		Private Rising Mains
	Washout		Surface		Combined								Standby Rising Mains		Culverted Watercourse
	Raw Water		Abandoned										Effluent Disposal		Highway Drain
	Abandoned												Overflow		Use Unknown
	Private												Syphon		Status Unknown
Colours generally indicate the use of the sewer/drain (i.e Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow). Some styles of line and symbol are shown on the key in sample/typical colours.															
FITTINGS		STRUCTURES													
	Hydrant		Manhole - Foul		Pumping Station - Surface										
	Other		Manhole - Surface		Pumping Stn - Foul/Combined										
			Manhole - Combined		Gully										
			Inlet		Outfall										
			Lamphole		Vent Column										
			Bifurcation - Foul		Rodding Eye										
			Bifurcation - Surface		Catchpit										
			Bifurcation - Combined		Flushing Chamber										
			Combined Sewage Overflow		Soakaway										
					Non Return Valve										
					Air Valve										
					Hatch Box										
					Washout										
OTHER STRUCTURES Attenuation Tank Chamber Storage Tank Tunnel Interceptor															
Wessex Water YTL GROUP															

Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526633 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.

Date: 29/05/2026
Centre: 388743E, 165809N
Scale: 1:625
(when printed at A4 size)

