

MERIDIAN

CIVIL ENGINEERING CONSULTANCY

THE PADDOCK,
HASSOCKS, BN6 9NA

FLLOOD RISK ASSESSMENT & SUDS ADDENDUM

NOVEMBER 2025

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Client : Westfield Investments Ltd

Rev	Date	Prepared by	Checked by	Approved by
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P1	17/11/2025	George Hoare		
P2	21/11/2025	George Hoare		

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1.0 INTRODUCTION

- 1.1 Meridian Civil Engineering Consultancy LTD (MCEC) has been instructed by Westfield Investments Ltd to prepare a site-specific Flood Risk Assessment (FRA) & SUDS Addendum for the redevelopment of The Paddock, Hassocks, BN6 9NA.
- 1.2 Planning consent has already been granted by Mid Sussex District Council for the subdivision and remodelling of existing dwelling, and construction of a new dwelling and can be viewed under planning ref: DM/21/2148.
- 1.3 It is understood the proposed development is for the erection of a third dwelling with associated access and parking in addition to the existing, remodelled dwelling and the new dwelling associated with the previously accepted planning application. The proposed Architects plans can be found in Appendix I.
- 1.4 The Environment Agency (EA) mapping for Flood Risk, shows the site redline boundary, as indicated on the proposed development plans, to encompass an area of Flood Zones 1, 2 and 3 (low, medium and High risk of fluvial or tidal flooding respectively). As the redline boundary encompasses areas of flood zones 2 and 3 the NPPF guidance states that planning applications should be accompanied by a Flood Risk Assessment (FRA).
- 1.5 The mapping shows the proposed development location to be within an area of 'Very Low' risk of flooding from surface water staying at a Very Low risk between 2040 and 2060. The EA state 'Very Low risk means that each year this area has a chance of flooding of less than 0.1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.'
- 1.6 Geology at the site is shown to be superficial deposits of River Terrace Deposits, 2 (adur) Sand and gravel over Weald Clay Formation Mudstone Sedimentary bedrock as published by the British Geological Survey online. As mentioned in the previously accepted scheme by GTA Consulting (Dated: September 2024, Ref: 13174) infiltration testing carried out on site "resulted in nil infiltration results as the trial pit failed to drain below the 25% empty mark." The test results can be found in Appendix V.
- 1.7 Details of the site and development proposals have been provided by the Client to clarify the scope of the proposed development and the existing site conditions.
- 1.8 MCEC have produced an updated drainage strategy to reflect the updated proposals on site. The updated strategy has been produced in accordance with the principles outlined in the previous strategy.
- 1.9 The increase in hardstanding area has resulted in an increase in required storage volume. According to causeway flow calculations, a total of 150m³ of storage is required, this has been provided in the form of an unlined permeable subbase with a plan area of 495m² and a depth of 0.55m and an attenuation tank with a plan area of 150m² and a depth of 0.6m The updated drainage design has been included within Appendix III.
- 1.10 In accordance with the previous drainage strategy outflow rates from the development have been limited to 1l/s with a connection to the ditch network on site. Network calcs have been included in Appendix IV
- 1.11 This report has been produced broadly in accordance with the National Planning Policy Framework (NPPF), West Sussex County Council (WSCC) SUDS guidance and associated Local Planning Authority technical guidance and National SuDS Standards.

2.0 POLICY COMPLIANCE

2.1 The purpose of this assessment is to demonstrate that the development proposal outlined above can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk of flooding, as per the:

- National Planning Policy Framework
- West Sussex LLFA Policy for the Management of Surface Water
- Mid Sussex District Council (MSDC) Strategic Flood Risk Assessment
- DEFRA Sustainable drainage systems: non-statutory technical standards
- Ciria SuDS Manual C753
- South Downs National Park - Water Cycle Study and Strategic Flood Risk Assessment (Level 1) – Scoping and Outline Report: 2015

3.0 SITE LOCATION

3.1 The Paddock, Hassocks, BN6 9NA is located just north of the town of Hassocks in West Sussex within the planning authority of Mid Sussex District Council. The site is located in a largely rural area being outside the main Hassocks conurbation. The slopes down from west to east to a watercourse that forms the eastern boundary of the plot.

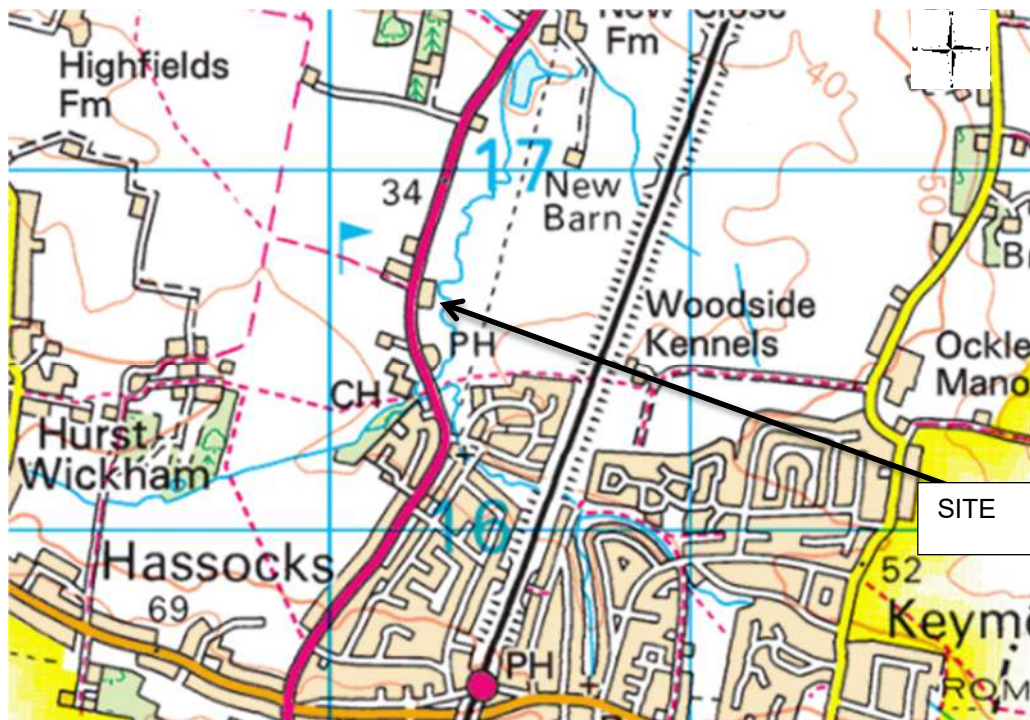


Figure 1: Site location

- 3.2 The site is currently a single residential dwelling with associated garden area.
- 3.3 Planning consent has already been granted by Mid Sussex District Council for the subdivision and remodelling of existing dwelling, and construction of a new dwelling and can be viewed under planning ref: DM/21/2148.
- 3.4 It is understood the proposed development is for the erection of a third dwelling with associated access and parking in addition to the existing, remodelled dwelling and the new dwelling

associated with the previously accepted planning application. The proposed Architects plans can be found in Appendix I.

- 3.5 The site redline boundary is approximately 4679sqm based on the architectural plan redline boundary. Levels range from 35.5m AOD on the west boundary to approximately 33.5m AOD on the east boundary. The existing property is located at approximately 35mAOD. The general topography slopes towards a watercourse located on the eastern boundary. A plan showing site contours (taken from a previous wider scheme FRA) can be seen in Appendix I.

4.0 GEOLOGY AND INFILTRATION POTENTIAL

- 4.1 Geology at the site is shown to be superficial deposits of River Terrace Deposits, 2 (adur) Sand and gravel over Weald Clay Formation Mudstone Sedimentary bedrock as published by the British Geological Survey online. As mentioned in the previously accepted scheme by GTA Consulting (Dated: September 2024, Ref: 13174) infiltration testing carried out on site “resulted in nil infiltration results as the trial pit failed to drain below the 25% empty mark.” The test results can be found in Appendix V.

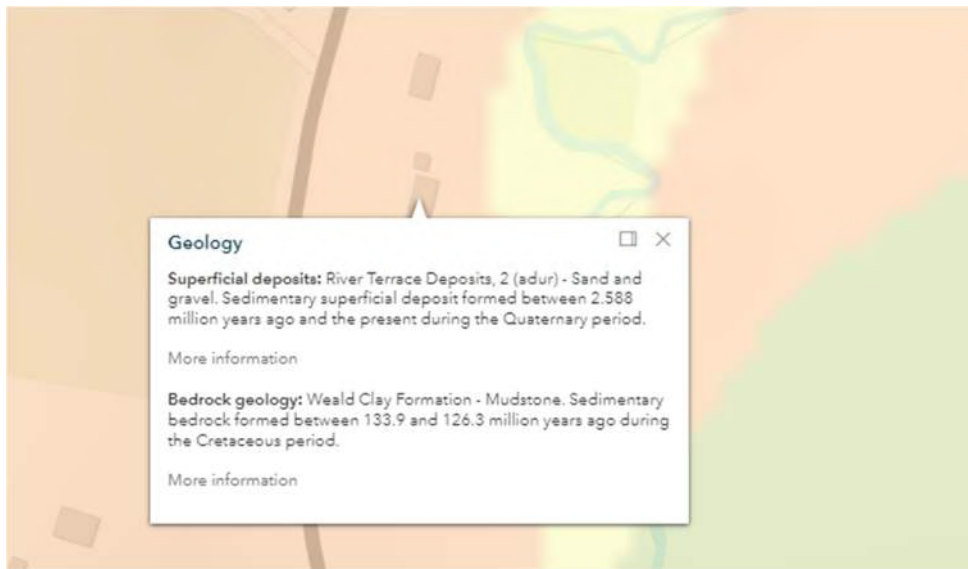


Figure 2: BGS online mapping extract

- 4.2 The DEFRA magicmap resource online groundwater mapping indicates that the site is located within an area classified as ‘Secondary A Aquifer’, this is likely to be associated with the River Terrace Deposits, since the Weald Clay Formation are described as ‘rocks with essentially no groundwater’. The Environment Agency online groundwater vulnerability map indicates that the site lies within an area which falls within the ‘Minor Aquifer Low’ groundwater vulnerability zone.
- 4.3 The DEFRA magicmap resource groundwater mapping indicates that the site is not within a Source Protection Zone (SPZ).

5.0 PROPOSED DEVELOPMENT

- 5.1 The site is currently a single residential dwelling with associated garden area.
- 5.2 Planning consent has already been granted by Mid Sussex District Council for the subdivision and remodelling of existing dwelling, and construction of a new dwelling and can be viewed under planning ref: DM/21/2148.
- 5.3 It is understood the proposed development is for the erection of a third dwelling with associated access and parking in addition to the existing, remodelled dwelling and the new dwelling associated with the previously accepted planning application. The proposed Architects plans can be found in Appendix I.
- 5.4 Based on the architectural plans provided the current approved planning permission extent of hardstanding is approximately 569sqm. The total area of hardstanding for the updated scheme, including the 3 dwellings roof area and the access road and parking areas is approximately 1353sqm.
- 5.5 The client has proposed that any new external hard surface is laid as a permeable surface to reduce runoff generated by any additional external hard surface.

6.0 SEQUENTIAL TEST/EXCEPTION TEST

- 6.1 Under the NPPF, all new planning applications should undergo a Sequential Test. This test should be implemented by local planning authorities with a view to locating particularly vulnerable new developments (e.g. residential, hospitals, mobile homes etc.) outside of the floodplain.
- 6.2 The Environment Agency (EA) mapping for Flood Risk, shows the site redline boundary, as indicated on the proposed development plans, to encompass an area of Flood Zones 1, 2 and 3 (low, medium and High risk of fluvial or tidal flooding respectively). As the redline boundary encompasses areas of flood zones 2 and 3 the NPPF guidance states that planning applications should be accompanied by a Flood Risk Assessment (FRA).
- 6.3 It can be seen from the site layout that the proposed development is located within the area of the site shown within Flood Zone 1 on the EA Flood map for planning therefore has been sequentially located within the site.
- 6.4 Following the published Flood Risk and Coastal Change Planning Policy Guidance (PPG) Table 2 and NPPF guidelines, the existing residential use on site is considered 'More Vulnerable' development. The proposed development is classed as 'More Vulnerable' development due to the continues residential use, so it is considered that the NPPF vulnerability of the site will be unchanged post development.
- 6.5 The NPPF Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table is reproduced below;

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Zone 3b Functional Floodplain	Exception Test Required	✓	✗	✗	✗

Table 1 The Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table as specified by NPPF. Please note: ✓ means development is appropriate; ✗ means the development should not be permitted.

- 6.6 Using the principles of the Sequential Test outlined above, the proposed development is classed as 'More Vulnerable' under the NPPF. The site is shown located within the area of the site shown within Flood Zone 1 (as defined by the EA flood map for planning in Figure 3) and therefore, in accordance with Table 3 of the Flood Risk and Coastal Change Planning Policy Guidance (PPG), the proposed development is appropriate for this flood zone location and does not require the application of the Exception Test.

7.0 SOURCES OF FLOODING

7.1 Tidal and Fluvial

- 7.1.1 The Environment Agency (EA) mapping for Flood Risk, shows the site redline boundary, as indicated on the proposed development plans, to encompass an area of Flood Zones 1, 2 and 3 (low, medium and High risk of fluvial or tidal flooding respectively). As the redline boundary encompasses areas of flood zones 2 and 3 the NPPF guidance states that planning applications should be accompanied by a Flood Risk Assessment (FRA).
- 7.1.2 The Environment Agency (EA) mapping for Flood Risk (Figure 3), shows the actual location of the proposed development within the site to be located within Flood Zone 1 (low risk of fluvial or tidal flooding). Flood zone 1 is described as land having a less than 1 in 1,000 annual probability of river or sea flooding.
- 7.1.3 As such risk to the actual development within the site can be considered low based on the published EA data.

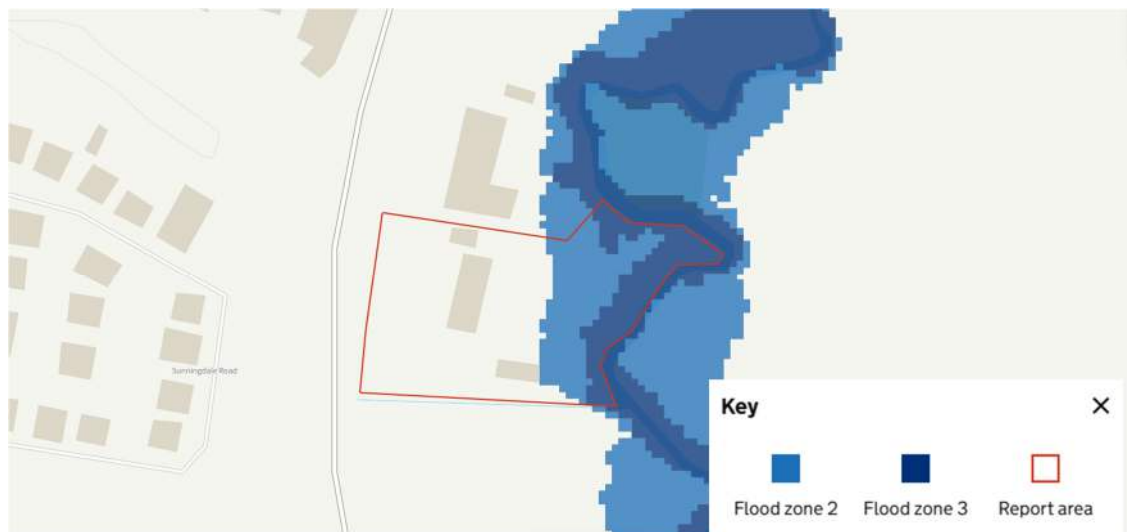


Figure 3: EA Flood map for planning extract

7.2 Surface Water (Pluvial)

- 7.2.1 The mapping shows the proposed development location to be within an area of 'Very Low' risk of flooding from surface water staying at a Very Low risk between 2040 and 2060. The EA state 'Very Low risk means that each year this area has a chance of flooding of less than 0.1%. Flooding

from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.'

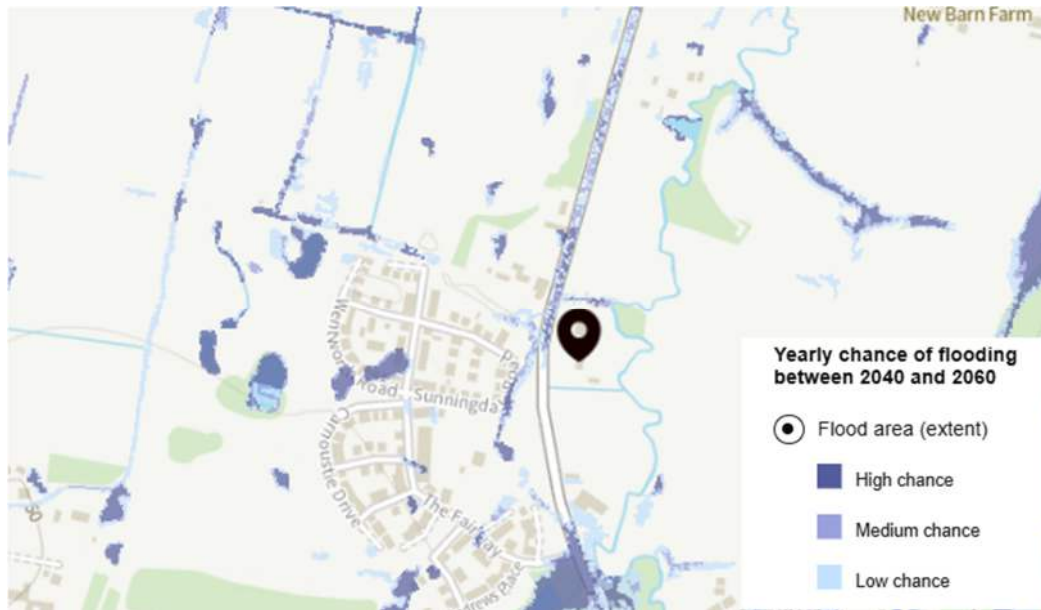


Figure 4: EA Risk of Flooding from Surface Water map extract

7.2.2 MCEC have reviewed the the EA's Risk of Flooding from Surface Water (RoFSW) depth data in QGIS to better understand the risk of surface water flooding to the site.

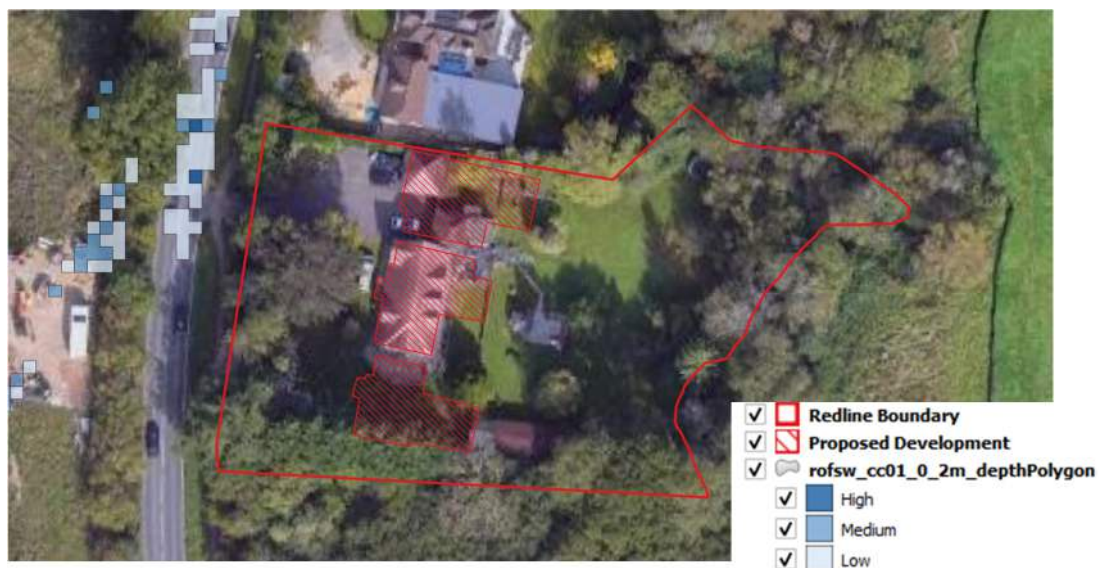


Figure 5: EA RoFSW map extract

7.2.3 The figure above shows the proposed development to be outside the area of flood risk from surface water. As such, the risk of flooding from surface water to the proposed development could be considered to be very low.

7.3 Groundwater

- 7.3.1 The Mid Sussex District Council (MSDC) SFRA 1 – Section 3.5 Table 3 states that 0.049% of Total Area of the Mid Sussex district is likely to be affected by groundwater flooding. The SFRA also states:

Large parts of the district are underlain by aquifers, particularly the chalk aquifers in the southern part of the district and the sandstone aquifers in the High Weald area of the district. Parts of the district where these aquifers lie are also low-lying. This includes part of the southern area of the district, particularly Hassocks, Hurstpierpoint and Sayers Common.

The District Council sought to obtain data on where flooding from high groundwater levels had occurred from Town and Parish Council's, the Environment Agency and the District Council's own Drainage Team. Only a limited number of historical flood records, where the cause had been documented as groundwater flooding, were obtained. It is possible that some of the records of flooding, where the cause was recorded as overland flow, may have been in part caused by water levels in the ground rising above surface elevations however it has not been possible to determine if this is the case with any certainty. Areas where the cause of flooding is known to be groundwater have been included within the SFRA mapping

- 7.3.2 Given the above the MSDC SFRA generally considers ground water risk areas to be associated underlying aquifers. The Environment Agency online groundwater vulnerability map indicates that the site lies within an area which falls within the 'Minor Aquifer Low' groundwater vulnerability zone. Given the Weald Clay underlying can be considered generally of low permeability it is concluded therefore that the site is only likely to be exposed to a relatively low risk from groundwater flooding from the superficial River Terrace Deposits rather than from the Principal Aquifer.
- 7.3.3 The South Downs National Park (SDNP) Water Cycle Study 2015-Scoping and Outline Report includes mapping which shows the potential groundwater flooding type to be superficial as shown in figure 5.



Figure 6: SDNP Groundwater Flood Risk Type extract

The SDNP study also includes mapping that shows the likely percentage of properties that may be affected by flooding in a particular area as extracted in figure 6 below. This shows the site to be located within an area where 25-50% of properties may be affected.

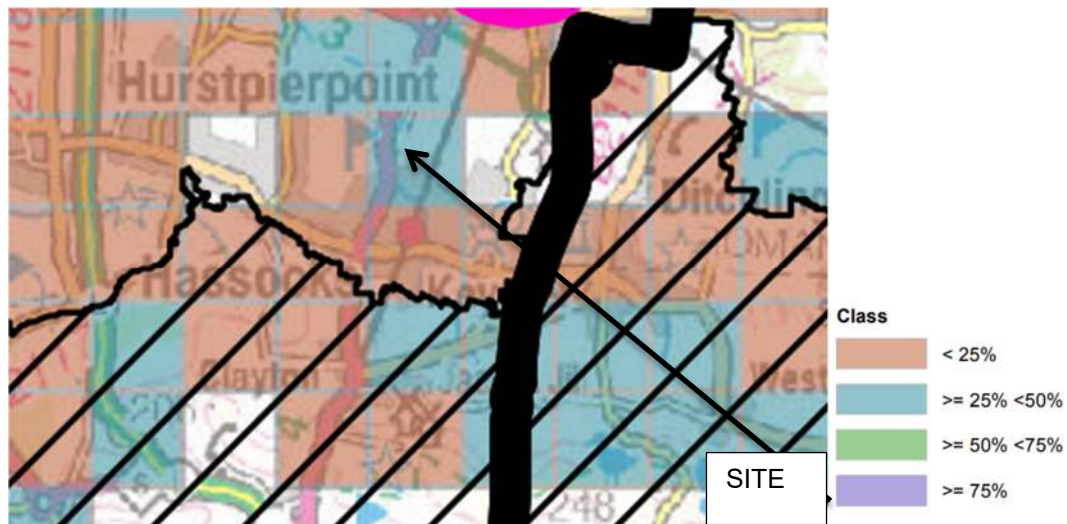


Figure 7 SDNP Groundwater flood risk percentage extract

7.3.4 Therefore the risk to the undeveloped site from groundwater flooding can be considered to be low (as risk can be attributed to the superficial deposits only and given the slope of the site) and mitigation is not considered to be required. However, a ground investigation should be undertaken in order to inform ground conditions and groundwater levels.

7.4 Sewer

7.4.1 There are no surface water sewers present on or near the site. The nearest surface water sewer is close to Belmont Close to the south of the site. There are no public sewers indicated within the proposed development site boundary. Two sewers are indicated in and adjacent to London Road to the west of the site. It is assumed there is a foul sewer connection to the main drain in London Road.

7.4.2 Given there are no recorded sewer flooding incidents shown the risk of sewer flooding at the site can be considered to be low. However, it is recommended any new sewer connection at the site should be agreed with the local sewer provider, to ensure there is capacity in the network (to ensure no increased risk); and fitted with non-return valves to mitigate the risk of internal sewer flooding.

7.5 Historical Flooding

7.5.1 Mid Sussex District council have compiled a plan showing recorded historical flood events in the district. This shows a flood event recorded on the property directly north of the proposal site as extracted below. The type of flooding during this event is unknown at this time.



Figure 8 Mid Sussex District Historic Flood map extract

8.0 CLIMATE CHANGE ALLOWANCES

- 8.1 Making an allowance for climate change in the design of surface water drainage systems will help to minimise vulnerability and provide resilience to flooding and coastal change in the future. Climate Change allowances vary across the UK subject to catchment conditions and are based on climate change projections and different scenarios of carbon dioxide (CO₂) emissions to the atmosphere.

1% annual exceedance rainfall event

Epoch		
	Central allowance	Upper end allowance
2050s	20%	45%
2070s	25%	45%

Figure 9 Adur and Ouse Management Catchment climate change allowances

- 8.2 The site is located in the Adur and Ouse Management Catchment. On the basis of the climate change table above, the Peak rainfall allowance should therefore be 45% for residential development with a 100yr design life.

9.0 SUSTAINABLE URBAN DRAINAGE ASSESSMENT

- 9.1 A surface water drainage strategy was produced for the previous accepted planning application. This strategy proposed attenuation in the form of permeable paving with a subbase and a geocellular attenuation tank with a connection to the existing ditch network on site. The drainage strategy for the previous scheme can be found in Appendix II.
- 9.2 MCEC have produced an updated drainage strategy to reflect the updated proposals on site. The updated strategy has been produced in accordance with the principles outlined in the previous strategy.
- 9.3 The increase in hardstanding area has resulted in an increase in required storage volume. According to causeway flow calculations, a total of 150m³ of storage is required, this has been provided in the form of an unlined permeable subbase with a plan area of 495m² and a depth of 0.55m and an attenuation tank with a plan area of 150m² and a depth of 0.6m The updated drainage design has been included within Appendix III.
- 9.4 In accordance with the previous drainage strategy outflow rates from the development have been limited to 1l/s with a connection to the ditch network on site. Network calcs have been included in Appendix IV.

10.0 RESIDUAL RISKS

- 10.1 Residual risks will be limited to exceedance rainfall events causing overtopping of the designed drainage, blockage in underground drainage or reservoir breach.
- 10.2 It is recommended finished floor levels are sited a minimum of 150mm above external ground levels, where feasible, to protect properties from overland flows or potential ground water.
- 10.3 Ground levels should also be designed, where feasible, to drain runoff away from proposed buildings towards low risk areas.

11.0 FLOOD RISK MANAGEMENT MEASURES

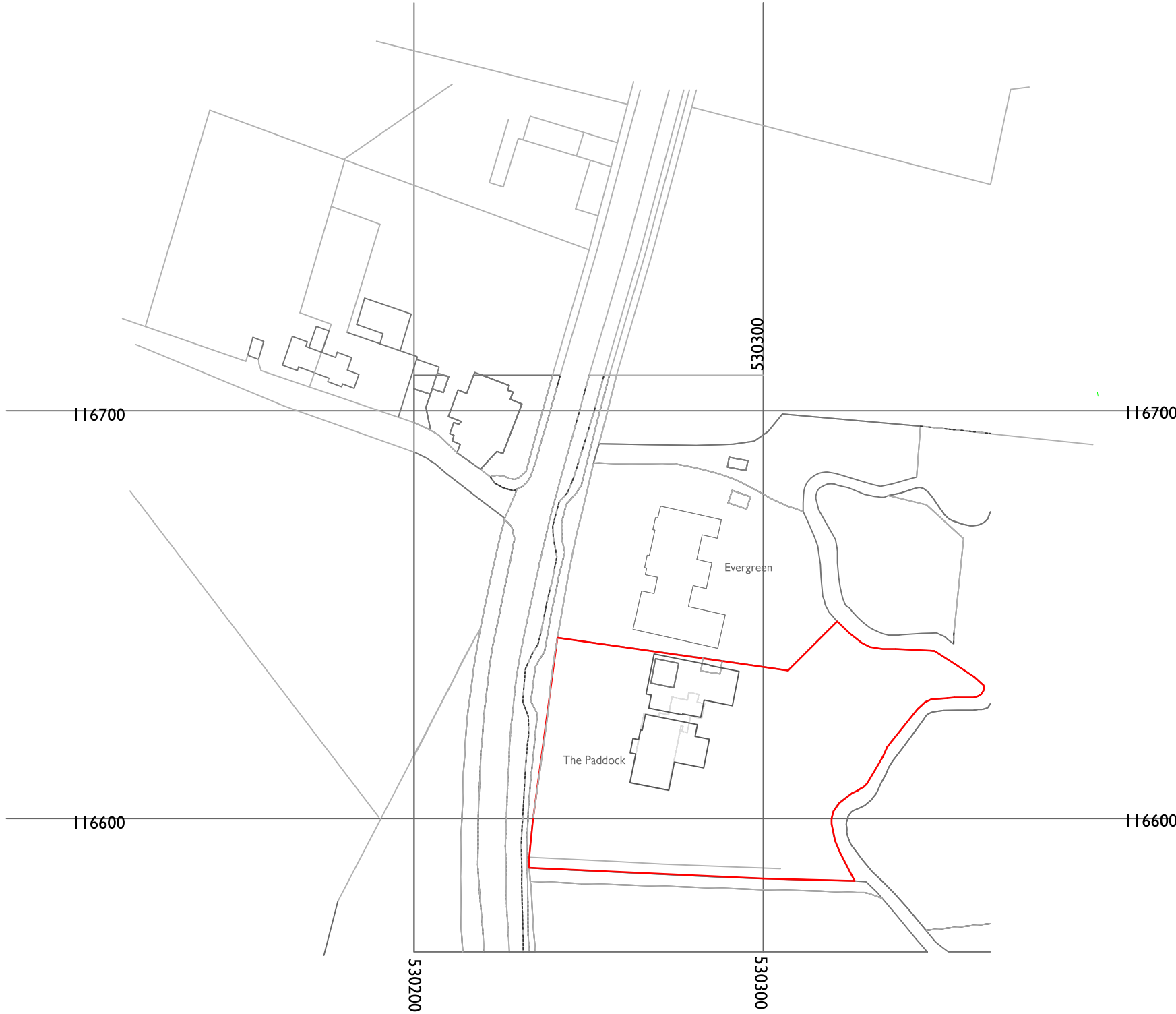
- 11.1 Given the development site is situated in a largely low flood risk area with only limited risk from ground water flood events the necessary flood mitigation measures are limited.
- 11.2 As stated previously it is recommended finished floor levels are sited a minimum of 150mm above external ground levels, where feasible, to protect properties from overland flows. Ground levels will also be designed, where feasible, to drain runoff away from proposed buildings towards low risk areas.
- 11.3 Surface water runoff should be managed on site to a rate as close as practical to greenfield runoff rates, in accordance with national guidance and local planning policy, to reduce flood risk to others as a result of development.
- 11.4 Non return valves should be placed on offsite drainage connections to reduce the likelihood of surcharged drains offsite affecting the site or on-site drainage.
- 11.5 All new external paving should be laid as a permeable surface to reduce the potential for increased runoff from the new paved areas affecting others downstream of the site.
- 11.6 It is proposed to provide water butts to the new dwelling to collect rain water for re-use in garden and amenity areas.

12.0 CONCLUSION

- 12.1 Meridian Civil Engineering Consultancy LTD (MCEC) has been instructed by Westfield Investments Ltd to prepare a site-specific Flood Risk Assessment (FRA) & SUDS Addendum for the redevelopment of The Paddock, Hassocks, BN6 9NA.
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APPENDIX I Architects plans

The Paddock, London Road, Hassocks



Proposed site location plan



Proposed block plan



1. Dimensions and Levels

Figured dimensions and levels should be verified by the Contractor on site before construction or manufacture and any discrepancies brought to the attention of the Architect. Dimensions should not be scaled.

2. Existing Building and Services

Where shown, existing buildings and services will not indicate condition. The Contractor shall therefore investigate and report to the Architect at the commencement of the works.

3. Copyright

Copyright for all designs and drawings in full or part shall remain with the Flint Architecture in accordance with the Copyright Act, Designs and Patents Act 1988.

4. Scope of Works

Drawings are issued in accordance with and on the basis of the RIBA Conditions of Engagement and the JCT Form of Contract unless otherwise agreed in writing

5. Statutory Requirements and Standards

All work is to comply with the current Building Regulations and the requirements of the respective local authority. Workmanship and standards shall also comply with the current Codes of Practice and the relevant British Standards.

6. Drawing status

Unless otherwise noted below this drawing is not to be used for construction purposes.

If indicated as feasibility this drawing is subject to a detailed site investigation, including ground conditions/ contaminants, drainage design and planning / density negotiations. The layout may be based upon an enlargement of an OS sheet or other small scale plans and its accuracy needs to be verified by survey. CDM regulations may not have not been fully considered.

Current status

PLANNING.

Revisions			
rev	date	comment	drawn
A	June 21	Dimensions added	

Client

Mr Colin Bruce

Project

Proposed 3rd house
The Paddock, London Road, Hassocks

Drawing

Site location and block plan

Drawn	Date	Scale
EP	26/07/25	1:1250 @ A1 1:500 @ A1

Job No.	Drg. No.	Rev.
2450	PL001	A

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**The Paddock, London Road,
Hassocks**

LONDON ROAD



Proposed site plan



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Current status **PLANNING.**

Revisions			
rev	date	comment	drawn

Client
Mr Colin Brace

Project

Proposed 3rd house

The Paddock, London Road, Hassocks

Drawing
Proposed site plan

Drawn	Date	Scale
EP	16/05/25	1:200 @ A1
Job No.	Drwg. No.	Rev.
2450	PL010	

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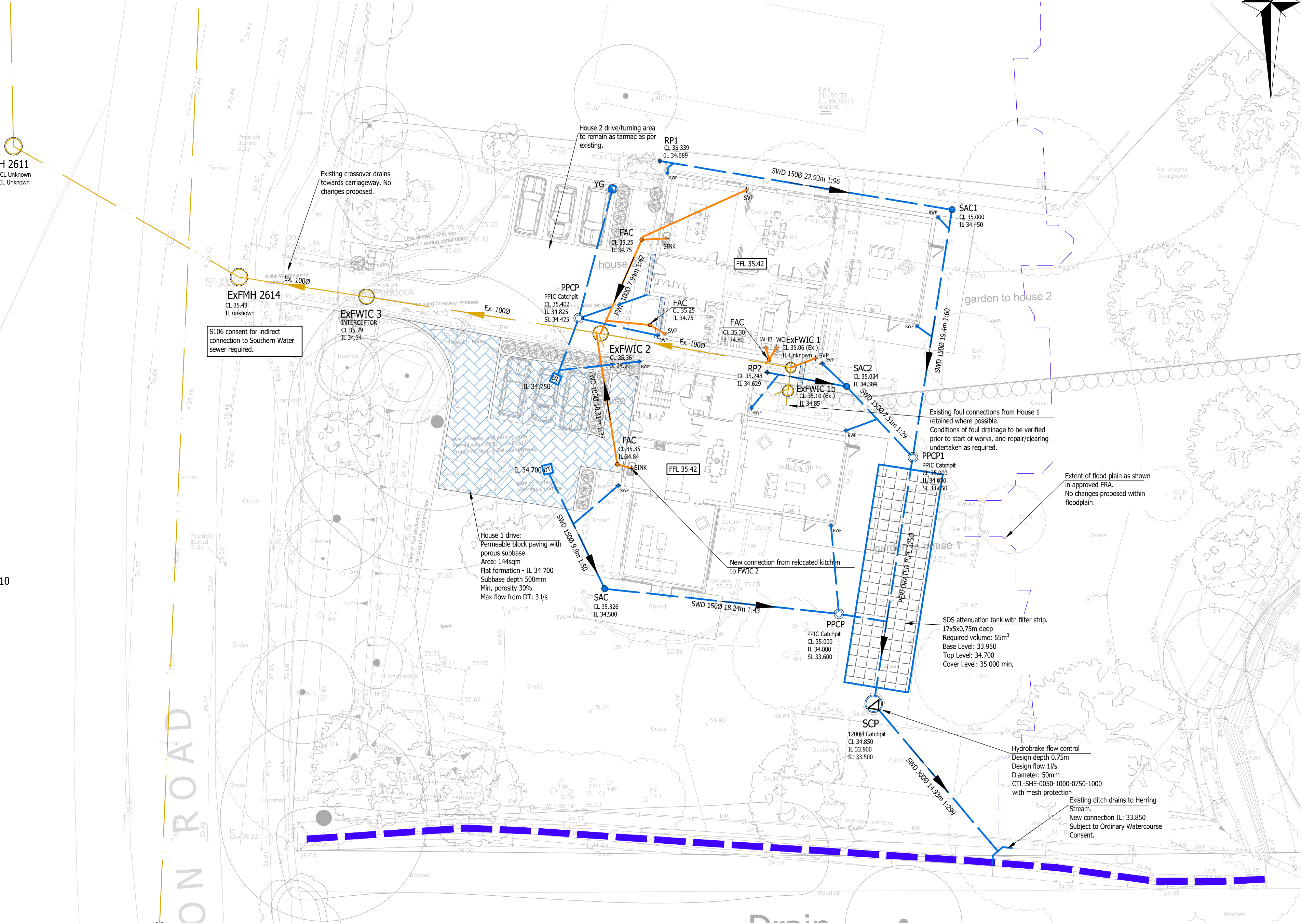
Site Contours



APPENDIX II Previous SuDS Strategy

DESIGN NOTES

1. STORAGE DESIGN BASED ON 1 IN 100 YR STORM + 45%.
2. GREENFIELD QBAR = 6.31 l/s/ha. IMPERMEABLE AREAS MEASURED AS 0.083ha. TARGET RATE SET TO 1 l/s TO LIMIT RISKS OF BLOCKAGE.
3. DRAIN POINTS AND LOCATIONS TO BE CONFIRMED BY ARCHITECT. ALL FINISHED FLOOR LEVELS BASED ON ARCHITECT DRAWINGS.
4. CONTRACTOR TO ESTABLISH LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING.
5. EXISTING TREES TO BE PROTECTED WHERE EXCAVATIONS RUN CLOSE.
6. APPROVAL TO BE GAINED FROM THAMES WATER FOR NEW INDIRECT CONNECTIONS TO SEWERS.



ABBREVIATIONS

D307.0	DETAIL NUMBER - SEE DRAINAGE DETAIL SHEET
FD	FOUL DRAIN
SWD	SURFACE WATER DRAIN
FWS	ADOPTABLE FOUL WATER SEWER
SWS	ADOPTABLE SURFACE WATER SEWER
MH	MANHOLE
IC	INSPECTION CHAMBER
SA	SOAKAWAY
FIC	450mm DIA. FOUL INSPECTION CHAMBER - D202.6
SIC	450mm DIA. SURFACE WATER INSPECTION CHAMBER - D202.6
FAC	300mm DIA. FOUL ACCESS CHAMBER - D202.18
SAC	300mm DIA. SURFACE WATER ACCESS CHAMBER - D202.18
CI	CAST IRON
VC	VITRIFIED CLAY
CONC	CONCRETE
PVC-U	POLYVINYL CHLORIDE - UNPLASTICISED
G	SMALL GULLY - D209.0
YG	YARD GULLY - D209.2
RG	ROAD GULLY - D208.1
CPG	CAR PARK GULLY - D208.2
DP	BELOW GROUND DRAIN POINT
SVP	SOIL VENT PIPE DROP
SS	STUB STACK OR DIRECT DRAIN CONNECTION
RP	EXTERNAL RODDING POINT - D213.1
DT	SURFACE WATER DISTRIBUTION TANK
FFL	FINISHED FLOOR LEVEL
SSL	STRUCTURAL SLAB LEVEL
GL	GROUND LEVEL
CL	COVER LEVEL
IL	INVERT LEVEL
SL	SUMP LEVEL
HL	BASE LEVEL
BD	BACKDROP
CBS	CONCRETE BED & SURROUND
CLASS S	GRANULAR BED & SURROUND
CLASS B	GRANULAR BED

SPECIFICATION NOTES

1. ALL DRAINAGE SHALL BE CONSTRUCTED AND COMMISSIONED IN ACCORDANCE WITH BS EN 295 & BS EN752, BUILDING REGULATIONS DOC. H AND ANY PARTICULAR REQUIREMENTS OF THE BUILDING CONTROL OFFICER.
2. DRAIN BEDDING IS TO BE PROVIDED AS D200.0, D200.1 AND D200.2 AS SHOWN ON THE DRAINAGE DETAILS SHEETS.
3. 'EFFECTIVE COVER' IS THE MINIMUM DEPTH OF COVER OVER THE PIPE CROWN AT ANY TIME DURING THE CONSTRUCTION PROCESS.
4. ALL CONCRETE PIPEWORK, MANHOLES AND FITTINGS SHALL BE TO BS 5911 (ALL RELEVANT PARTS). ALL CONCRETE PIPEWORK TO BE TO HIGH STRENGTH
5. WHERE CONNECTIONS ARE TO BE MADE TO EXISTING MANHOLES/SEWERS, INVERT LEVELS, PIPE SIZES & ORIENTATION SHALL BE CHECKED PRIOR TO THE COMMENCEMENT OF THE WORKS AND ANY VARIANCE REPORTED TO THE ENGINEER IMMEDIATELY. WORK TO COMMENCE AT DOWNSTREAM END WHEREVER POSSIBLE.
6. WHERE PIPELINES CROSS, EACH IS TO BE SURROUNDED WITH GRADE ST4 MASS CONCRETE FOR A DISTANCE NOT LESS THAN 1m CENTRED ON THE CROSSING POINT. LENGTH OF SURROUND TO BE EXTENDED AS NECESSARY TO WITHIN 150mm OF THE NEXT NEAREST FLEXIBLE JOINTS.
7. THE CONTRACTOR IS TO ENSURE THAT PROTECTIVE MEASURES ARE TAKEN TO ENSURE THAT DRAINAGE PIPEWORK AND FITTINGS ARE NOT DAMAGED BY SITE TRAFFIC PRIOR TO OVERSITE FILLING OPERATIONS BEING COMPLETED AROUND BUILDINGS.
8. ALL PRIVATE DRAINAGE PIPEWORK SHALL BE PVC-U. ALL ADOPTED DRAINAGE TO BE VC. ALL UNDERBUILDING DRAINS TO BE LAID AT A GRADIENT OF 1:40
9. WHERE DRAINS PASS THROUGH FOUNDATIONS OR CONNECT TO MANHOLES, FLEXIBLE PIPE JOINTS ARE TO PROVIDED WITHIN 150mm OF THE FACE OF THE STRUCTURE AND WITHIN A FURTHER 600mm TO FORM A ROCKER PIPE.
10. WHERE PIPES PASS THROUGH SCREEN WALLS, FOOTINGS OR RETAINING WALLS, LINTELS ARE TO BE PROVIDED.
11. WHERE PIPELINES PASS WITHIN 1m OF BUILDINGS OR WALLS THE FOUNDATIONS ARE TO BE TAKEN DOWN BELOW THE BOTTOM OF THE TRENCH
12. 450mm DIA. INSPECTION CHAMBERS (FIC/SIC) MAY BE USED:
 - WITH 350mm REDUCED OPENING WHERE THE DEPTH FROM COVER TO INVERT EXCEEDS 1000mm.
- 300mm DIA. POLYPROPYLENE ACCESS CHAMBERS (FAC/SAC) MAY BE USED
 - WHERE THE DEPTH FROM COVER TO INVERT DOES NOT EXCEED 600mm AND WHERE THE PIPE SIZE DOES NOT EXCEED 100mm DIA.
13. STEEL COVERS WITHIN PROPERTY BOUNDARIES SHALL BE:
 - (UNLESS NOTED ON DRAWING OR MANHOLE SCHEDULE)
 - ON PRIVATE DRIVEWAYS: FACTA GRADE B (BS EN ISO 1461: 1999)
 - ON PRIVATE PATHWAYS, VERGES OR ON GARDENS: FACTA GRADE A (BS EN ISO 1461: 1999)
- DUCTILE IRON COVERS OUTSIDE PROPERTY BOUNDARIES SHALL BE:
 - (UNLESS NOTED ON DRAWING OR MANHOLE SCHEDULE)
 - ON ACCESS ROADS AND CAR PARKS: GRADE D400 (BS EN 124:1994)
 - ON SHARED PATHWAYS, VERGES: GRADE A15 (BS EN 124:1994)
14. COVER LEVELS SHOWN 'CL' AND INVERT LEVELS SHOWN 'IL' ARE IN METRES ABOVE ORDNANCE DATUM.
15. ALL DRAINS TO BE 100mm DIAMETER UNLESS NOTED OTHERWISE
16. ALL DRAINS MARKED 'FWS' OR 'SWS' ARE PROPOSED ADOPTED SEWERS AND ARE TO BE CONSTRUCTED IN ACCORDANCE WITH 'SEWERAGE SECTOR GUIDANCE' (SSG)

GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the file. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
2. Tender or billing drawings shall not be used for construction or the ordering of materials.
3. Do not scale. All dimensions and levels to be site confirmed.
4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements.
5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.
6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.

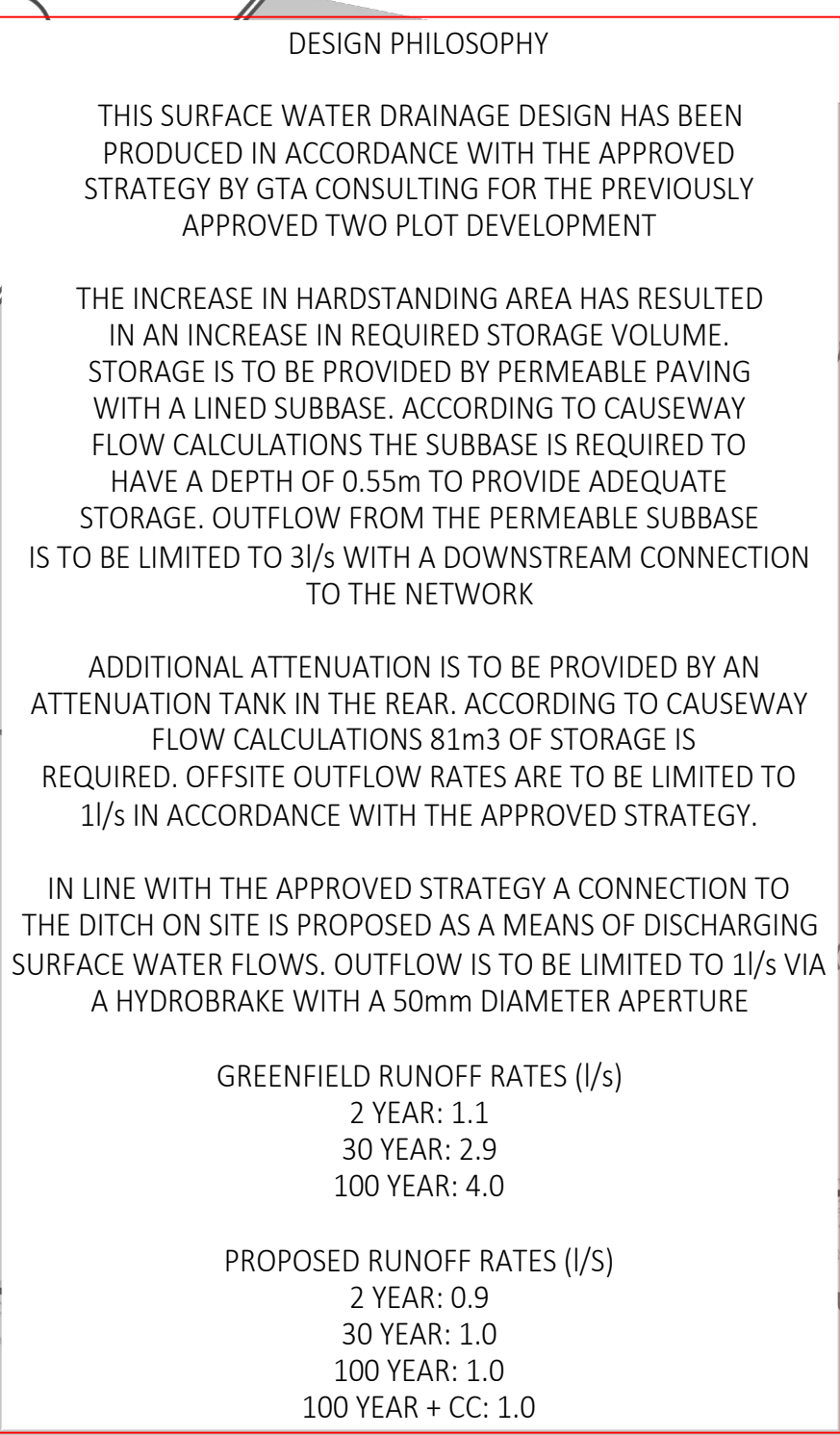
KEY

- Existing surface water drain
- Existing surface water drain
- Private surface water drain
- Private foul drain

- FIC 300mm diameter Foul Plastic Inspection Chamber - D202.6
- SIC 300mm diameter Surface Water Plastic Inspection Chamber - D202.6
- SAC 300mm diameter Surface Water Access Chamber - D202.18
- FAC 300mm diameter Foul Water Access Chamber - D202.18
- SVP Foul drain point D307.0
- RWP SW Drain point for RWP D203.5
- Drainage channel
- Private Yard gully
- Rodding point
- Distribution/collection tank in permeable paving sub-base

P1	FIRST ISSUE	19.09.24	FV	MR	
Rev	Amendments	Date	Don	Chk	
Status		CONSTRUCTION			
Client		COLIN BRACE			
Architect		FLINT ARCHITECTURE			
Project		THE PADDOCK LONDON ROAD, HASSOCKS			
Title		DRAINAGE LAYOUT			
Date		SEPTEMBER 2024		Scale @ A1	
Clients Ref		Project Ref.		1:200	
				13174	
 Civils & Transport Maple House, 192-198 London Road, Burgess Hill, West Sussex, RH15 9RD Tel 01444 871444 Web: www.gtacivils.co.uk					
Drawing Number		13174/1601		Rev.	
				P1	

APPENDIX III Proposed SuDS Strategy



- | LEGEND | |
|--------|--|
| | PROPOSED SW PIPE RUN - DESIGNED BY MCEC |
| | HEADWALL |
| | PROPOSED SW RODDING EYE |
| | PROPOSED PERFORATED SW DRAIN |
| | PROPOSED TYPE D SW INSPECTION CHAMBER |
| | PROPOSED TYPE E SW INSPECTION CHAMBER |
| | PERMEABLE PAVING - TANKED |
| | GEOCELLULAR ATTENUATION - TANKED |
| | CATCHPIT CHAMBER/MANHOLE |
| | PROPOSED ORIFICE PLATE MANHOLE |
| | PROPOSED HYDROBRAKE MANHOLE |
| | PROPOSED SW RAINWATER PIPE |
| | PROPOSED SW BOTTLE GULLY |
| | DIFFUSER UNIT |
| | EXISTING PRIVATE INSPECTION CHAMBER / MANHOLE - RETAINED |
| | EXISTING PRIVATE FW RUN - RETAINED |

REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY			
MERIDIAN CIVIL ENGINEERING CONSULTANCY			
CLIENT: Westfield Investments Ltd			
SITE: The Paddock, Main Road Hassocks, BN6 9NA			
TITLE: Proposed Surface Water Drainage Layout			
SCALE AT A1: 1:100	DATE: 13/11/2025	DRAWN: GH	CHECKED: MN
PROJECT NO: MC0020	DRAWING NO:	REVISION:	

APPENDIX IV Calculations

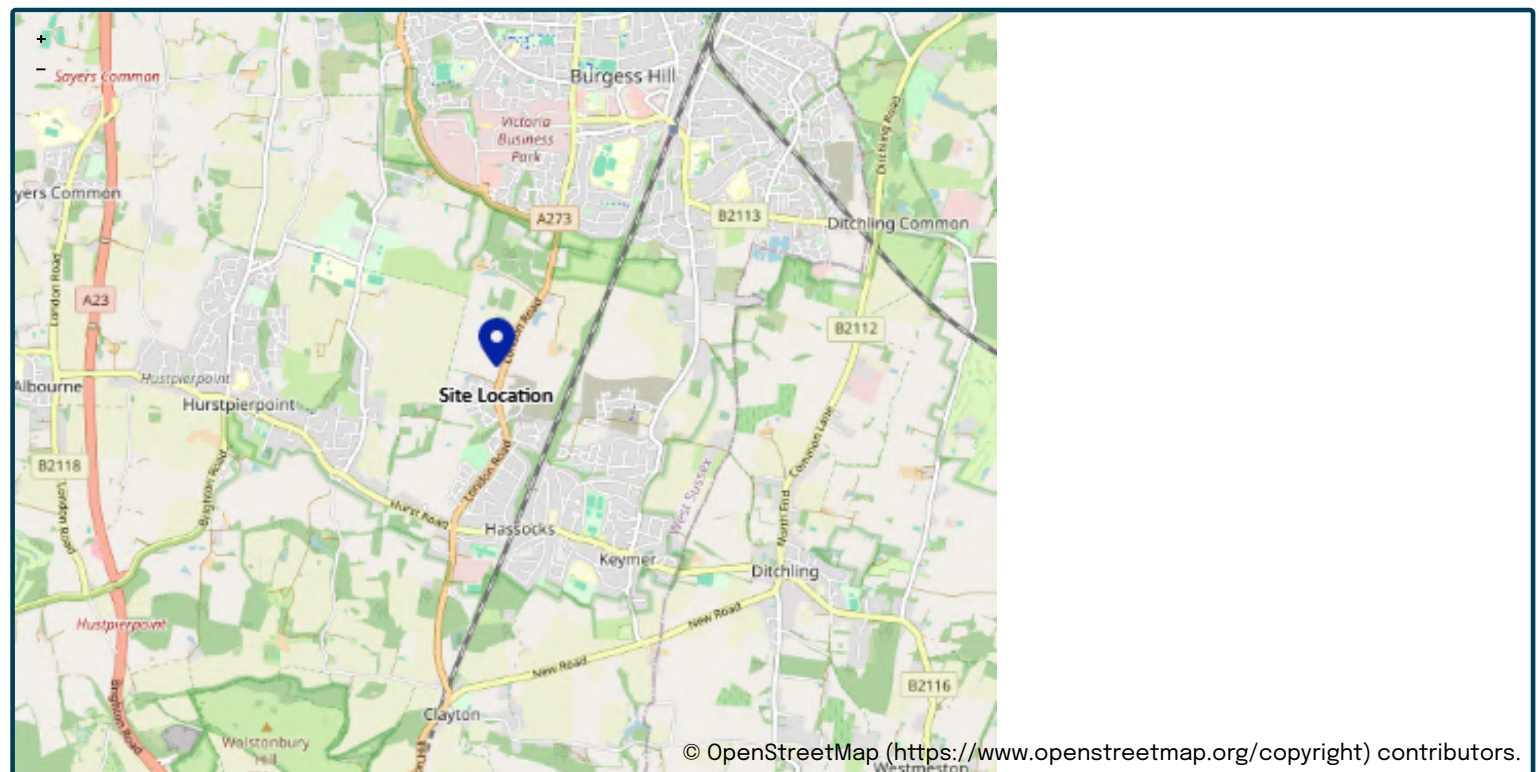
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	13/11/2025
Calculated by	George Hoare
Reference	MC0020
Model version	2.2.2

Location

Site name	The Paddock
Site location	Hassocks



Site easting (British National Grid)	530230
Site northing (British National Grid)	116634

Site details

Total site area (ha)	0.136	ha
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Greenfield runoff

Method

Method	FEH statistical (2025)
--------	------------------------

FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	901	mm
BFIHOST19scaled	0.304	
QMed-QBar conversion	1.136	☒ 1.136
QMed (l/s)	1.1	l/s
QBar (FEH statistical 2025) (l/s)	1.3	l/s

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	7	☒ 7
1 year growth factor	0.85	
2 year growth factor	0.88	
10 year growth factor	1.62	
30 year growth factor	2.3	
100 year growth factor	3.19	
200 year growth factor	3.74	

Results

Method	FEH statistical (2025)	
Flow rate 1 year (l/s)	1.1	l/s
Flow rate 2 year (l/s)	1.1	l/s
Flow rate 10 years (l/s)	2.0	l/s
Flow rate 30 years (l/s)	2.9	l/s
Flow rate 100 years (l/s)	4.0	l/s
Flow rate 200 years (l/s)	4.7	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.2) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.017	4.00	35.000	450	214.144	-26.380	0.672
2	0.017	4.00	35.000	600	204.415	-48.806	0.500
3	0.014	4.00	35.000	600	204.935	-43.505	0.697
ATTENUATION			35.000		211.716	-44.854	1.000
6			34.200	600	219.529	-63.957	0.366
CAR PARK	0.088	4.00	35.326		189.098	-43.699	0.726
8		4.00	35.000	150	215.973	-14.288	0.550
FC			35.000	1200	209.911	-56.450	1.078

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	8	1	12.229	0.600	34.450	34.328	0.122	100.0	150	4.20	50.0
1.001	1	ATTENUATION	18.633	0.600	34.328	34.014	0.314	59.3	100	4.51	50.0
2.000	CAR PARK	3	15.838	0.600	34.600	34.303	0.297	53.3	225	4.15	50.0
3.000	2	3	5.327	0.600	34.500	34.433	0.067	80.0	100	4.10	50.0
2.001	3	ATTENUATION	6.913	0.600	34.303	34.257	0.046	150.0	225	4.26	50.0
1.002	ATTENUATION	FC	11.736	0.600	34.000	33.922	0.078	150.0	225	4.70	50.0
1.003	FC	6	12.201	0.600	33.922	33.834	0.088	138.6	225	4.88	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.005	17.8	0.0	0.400	0.522	0.000	0.0	0	0.000
1.001	1.002	7.9	4.4	0.572	0.886	0.017	0.0	54	1.030
2.000	1.795	71.4	23.1	0.501	0.472	0.088	0.0	87	1.602
3.000	0.861	6.8	4.5	0.400	0.467	0.017	0.0	60	0.922
2.001	1.065	42.3	31.1	0.472	0.518	0.119	0.0	144	1.161
1.002	1.065	42.3	35.5	0.775	0.853	0.136	0.0	159	1.190
1.003	1.108	44.1	35.5	0.853	0.141	0.136	0.0	153	1.229

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m ³ /ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

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

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

Node 5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	0.000	Product Number	CTL-SHE-0050-1000-0750-1000
Design Depth (m)	0.750	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node CAR PARK Online Orifice Control

Flap Valve	x	Replaces Downstream Link	x	Design Depth (m)	0.300	Diameter (m)	0.030
Downstream Link	2.000	Invert Level (m)	34.600	Design Flow (l/s)	3.0	Discharge Coefficient	0.600

Node FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.003	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0050-1000-0750-1000
Invert Level (m)	33.922	Min Outlet Diameter (m)	0.075
Design Depth (m)	0.750	Min Node Diameter (mm)	1200
Design Flow (l/s)	1.0		

Node ATTENUATION Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	34.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

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	150.0	0.0	0.600	150.0	0.0	0.601	0.0	0.0

Node CAR PARK Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	49.500	Depth (m)	0.550
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	34.600	Length (m)	10.000	Inf Depth (m)	
Safety Factor	2.0	Time to half empty (mins)	855	Slope (1:X)	9999.0		

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	34.375	0.047	3.5	0.0075	0.0000	OK
15 minute summer	2	10	34.556	0.056	3.6	0.0159	0.0000	OK
15 minute summer	3	10	34.365	0.062	6.6	0.0174	0.0000	OK
600 minute summer	ATTENUATION	525	34.066	0.066	2.5	9.3379	0.0000	OK
600 minute summer	6	510	33.857	0.023	0.9	0.0000	0.0000	OK
720 minute summer	CAR PARK	495	34.730	0.130	2.7	19.2046	0.0000	OK
15 minute summer	8	1	34.450	0.000	0.0	0.0000	0.0000	OK
600 minute summer	FC	435	34.079	0.157	3.4	0.1781	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	1	1.001	ATTENUATION	3.5	0.967	0.444	0.0673	
15 minute summer	2	3.000	3	3.6	0.837	0.532	0.0229	
15 minute summer	3	2.001	ATTENUATION	6.5	0.763	0.155	0.0593	
600 minute summer	ATTENUATION	1.002	FC	3.4	0.217	0.081	0.2297	
720 minute summer	CAR PARK	2.000	3	0.6	0.443	0.009	0.0309	
15 minute summer	8	1.000	1	0.0	0.000	0.000	0.0291	
600 minute summer	FC	1.003	6	0.9	0.446	0.021	0.0254	45.8

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	34.433	0.105	8.7	0.0167	0.0000	SURCHARGED
15 minute summer	2	10	34.668	0.168	8.8	0.0476	0.0000	SURCHARGED
15 minute summer	3	10	34.403	0.100	16.0	0.0283	0.0000	OK
960 minute summer	ATTENUATION	975	34.176	0.176	3.9	25.0994	0.0000	OK
1440 minute winter	6	1410	33.857	0.023	1.0	0.0000	0.0000	OK
600 minute summer	CAR PARK	450	34.856	0.256	5.7	37.9617	0.0000	SURCHARGED
15 minute summer	8	1	34.450	0.000	0.0	0.0000	0.0000	OK
960 minute summer	FC	960	34.181	0.259	3.3	0.2925	0.0000	SURCHARGED
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	1	1.001	ATTENUATION	8.1	1.098	1.027	0.1417	
15 minute summer	2	3.000	3	8.6	1.103	1.276	0.0408	
15 minute summer	3	2.001	ATTENUATION	16.0	0.970	0.377	0.1138	
960 minute summer	ATTENUATION	1.002	FC	3.3	0.205	0.077	0.4291	
600 minute summer	CAR PARK	2.000	3	0.9	0.505	0.013	0.0470	
15 minute summer	8	1.000	1	0.0	0.000	0.000	0.0804	
960 minute summer	FC	1.003	6	1.0	0.451	0.022	0.0262	95.4

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	11	34.568	0.240	10.9	0.0381	0.0000	SURCHARGED
15 minute summer	2	10	34.755	0.255	11.1	0.0720	0.0000	FLOOD RISK
15 minute summer	3	10	34.417	0.114	20.1	0.0322	0.0000	OK
1440 minute summer	ATTENUATION	1470	34.274	0.274	4.0	39.0356	0.0000	SURCHARGED
720 minute summer	6	1515	33.857	0.023	1.0	0.0000	0.0000	OK
720 minute winter	CAR PARK	555	34.930	0.330	4.3	48.8573	0.0000	SURCHARGED
15 minute summer	8	11	34.564	0.114	1.5	0.0021	0.0000	OK
1440 minute summer	FC	1470	34.278	0.356	2.4	0.4023	0.0000	SURCHARGED
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	1	1.001	ATTENUATION	9.2	1.179	1.172	0.1435	
15 minute summer	2	3.000	3	10.8	1.382	1.599	0.0413	
15 minute summer	3	2.001	ATTENUATION	20.0	1.026	0.472	0.1346	
1440 minute summer	ATTENUATION	1.002	FC	2.4	0.132	0.057	0.4668	
720 minute winter	CAR PARK	2.000	3	1.0	0.524	0.015	0.0437	
15 minute summer	8	1.000	1	1.6	-0.141	0.089	0.1955	
1440 minute summer	FC	1.003	6	1.0	0.451	0.022	0.0262	135.7

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.77%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	11	34.882	0.554	15.8	0.0881	0.0000	FLOOD RISK
15 minute summer	2	10	34.975	0.475	16.0	0.1344	0.0000	FLOOD RISK
1440 minute summer	3	1800	34.528	0.225	3.1	0.0638	0.0000	SURCHARGED
1440 minute summer	ATTENUATION	1800	34.528	0.528	4.2	75.2666	0.0000	SURCHARGED
180 minute winter	6	1524	33.857	0.023	1.0	0.0000	0.0000	OK
960 minute summer	CAR PARK	690	35.100	0.500	7.6	74.1002	0.0000	FLOOD RISK
15 minute summer	8	11	34.885	0.435	3.2	0.0078	0.0000	FLOOD RISK
1440 minute summer	FC	1800	34.528	0.606	3.5	0.6855	0.0000	SURCHARGED
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	1	1.001	ATTENUATION	11.9	1.524	1.516	0.1443	
15 minute summer	2	3.000	3	15.2	1.940	2.245	0.0413	
1440 minute summer	3	2.001	ATTENUATION	3.1	0.616	0.072	0.2748	
1440 minute summer	ATTENUATION	1.002	FC	3.5	0.171	0.082	0.4668	
960 minute summer	CAR PARK	2.000	3	1.3	0.491	0.018	0.2895	
15 minute summer	8	1.000	1	-3.2	-0.197	-0.183	0.2153	
1440 minute summer	FC	1.003	6	1.0	0.451	0.022	0.0262	138.2

APPENDIX V Infiltration Test Results

Appendix C

Infiltration Tests

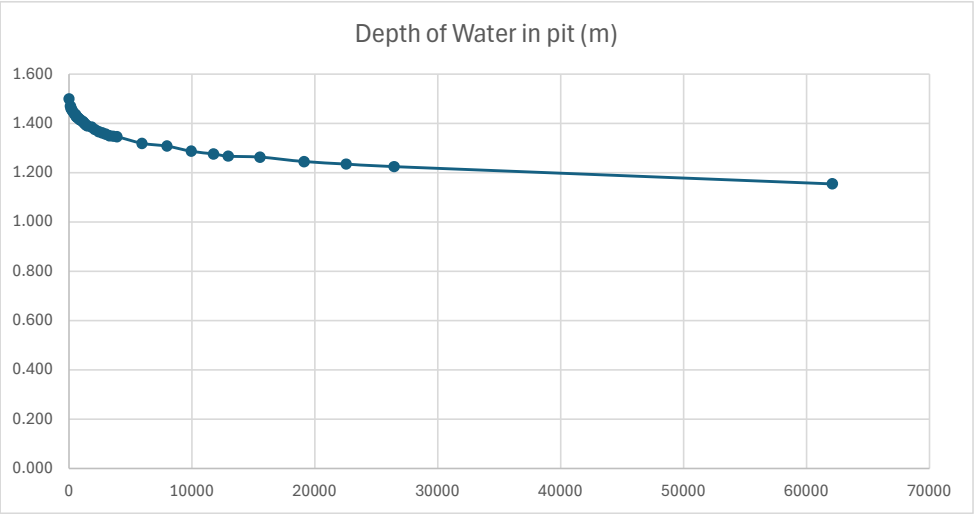




Water Infiltration Test Sheet

Address: The Paddock, London Road, Hassocks, BN6 9NA
Date: 27/08/2024

TIME	ELAPSED	ELAPSED (sec)	Depth of water in pit (m)*
14:04	0	0	1.500
14:06	02:00	120	1.470
14:07	03:00	180	1.460
14:08	04:00	240	1.455
14:09	05:00	300	1.450
14:11	07:00	420	1.440
14:13	09:00	540	1.436
14:14	10:00	600	1.428
14:15	11:00	660	1.426
14:16	12:00	720	1.424
14:17	13:00	780	1.420
14:18	14:00	840	1.417
14:19	15:00	900	1.414
14:21	17:00	1020	1.411
14:23	19:00	1140	1.408
14:24	20:00	1200	1.403
14:25	21:00	1260	1.400
14:27	23:00	1380	1.394
14:29	25:00	1500	1.391
14:35	31:00	1860	1.385
14:39	35:00	2100	1.375
14:44	40:00	2400	1.367
14:49	45:00	2700	1.361
14:54	50:00	3000	1.356
14:59	55:00	3300	1.350
15:04	1:00:00	3600	1.348
15:09	1:05:00	3900	1.346
15:43	1:39:00	5940	1.319
16:17	2:13:00	7980	1.308
16:50	2:46:00	9960	1.287
17:20	3:16:00	11760	1.276
17:40	3:36:00	12960	1.267
18:23	4:19:00	15540	1.263
19:23	5:19:00	19140	1.245
20:20	6:16:00	22560	1.235
21:25	7:21:00	26460	1.225
07:19	17:15:00	62100	1.155



75% 1.125
25% 0.375