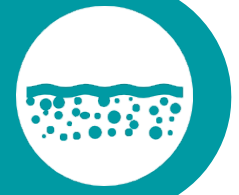


SuDSmart Plus



Sustainable Drainage Assessment

Site Address

31-35 Montague Street
Worthing
BN11 3BE

Grid Reference

514841, 102425

Report Prepared for

Waylan Investments Ltd.
21 Garrick Avenue
Golders Green
London
NW11 9AR

Date

2022-10-06

Report Status

FINAL

Site Area

0.15 ha

Report Reference

76693.03R1



Discharge to Sewer

The proposed Sustainable Drainage Scheme (SuDS) strategy is comprised of rainwater harvesting butts, raised planters, green roofs and an attenuation tank to attenuate surface water runoff.

Surface water will continue to discharge via the existing connection to the public sewer network, subject to confirmation from the sewer utility provider, and the incorporation of the proposed SuDS features.

Report Author

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1 Executive summary



This report assesses the feasibility of a range of Sustainable Drainage Scheme (SuDS) options in support of the Site development process. A SuDS strategy is proposed to ensure surface water runoff can be managed effectively over the lifetime of the development.

SuDS suitability

Risk	Issue	Result
Discharge Location	What is the infiltration potential at the Site?	Low*
	What is the potential to discharge to surface water features?	Low
	What is the potential to discharge to sewers?	High
	What is the potential to discharge to highway drains?	Medium
Flooding	What is the river (fluvial) flood risk at the Site?	Low
	What is the surface water (pluvial) flood risk at the Site?	Very Low to Low
	What is the groundwater flood risk at the Site?	Low
Pollution	Is the groundwater a protected resource?	No
	Is the surface water feature a protected resource?	No

*Whilst initial mapping has identified a Moderate potential for infiltration features on the basis of the spatial constraints at the Site this has been reduced to Low.

Summary of existing and proposed development

The existing development is a part three, part four-storey building with two retail units at ground/first floor level and an active frontage on to Montague Street, a large blank façade fronting on to Montague Place and an additional façade fronting on to Bath Place to the east. The upper second/third floors are vacant and were formerly used as additional retail space for the ground floor units.

The proposed development consists of the conversion of the second and third floor of the building into residential flats alongside the extension of the third floor across the full length of the building and infill extension to the rear of the site to provide a total of 14 residential flats. The proposal also includes alterations to the external facades of the existing building to facilitate the conversion of the upper floors to residential flats. Site plans and drawings are provided in Appendix A.

Summary of discharge routes

GeoSmart's SuDS Infiltration Potential (SD50) map indicates the Site has a High potential for infiltration, due to the anticipated high permeability of the superficial geology. Although the ground conditions are likely to be conducive to infiltration, the spatial constraints of the Site means that the required 5 m buffer (Building Regulations, 2010) between infiltration features and the buildings is not available, infiltration to ground is not considered feasible.

Ordnance Survey (OS) mapping indicates a surface water feature is located within 95 m south of the Site. Given the significant distance of third-party urbanised land required to be crossed, discharge into the surface water feature is not considered suitable.

The Southern Water asset location search included in Appendix C confirms the Site is located within 5 m of the public sewer network and currently discharges to this. Due to the short distance to nearby sewers and existing connection discharging surface water runoff to the sewer is considered feasible and is proposed.

According to Google Streetview, gullies are located within the adjacent highway, indicating the presence of the highway drainage network.

Proposed SuDS strategy

SuDS features comprised of rainwater harvesting butts, raised planters, green roofs and an attenuation tank are proposed to ensure surface water runoff is stored on-Site in SuDS features for the 1 in 100 year event including a 40% allowance for climate change and will not cause flooding to the proposed development in accordance with DEFRA's non-statutory technical standards (DEFRA, 2015).

SuDS & drainage network maintenance

The management and maintenance of the SuDS features, in line with the details and schedules outlined in Section 10 of this report, will be undertaken by contractors appointed by the owners and occupiers of the building, where payments for the works will form part of the property deeds and / or rental agreements.

Recommendations

The capacity of the public sewer network should be confirmed with the utility provider and gain permission to connect where required.

2 Proposed SuDS strategy



The most suitable SuDS options are outlined below and a SuDS strategy schematic is shown overleaf. Supporting information is provided in subsequent sections.

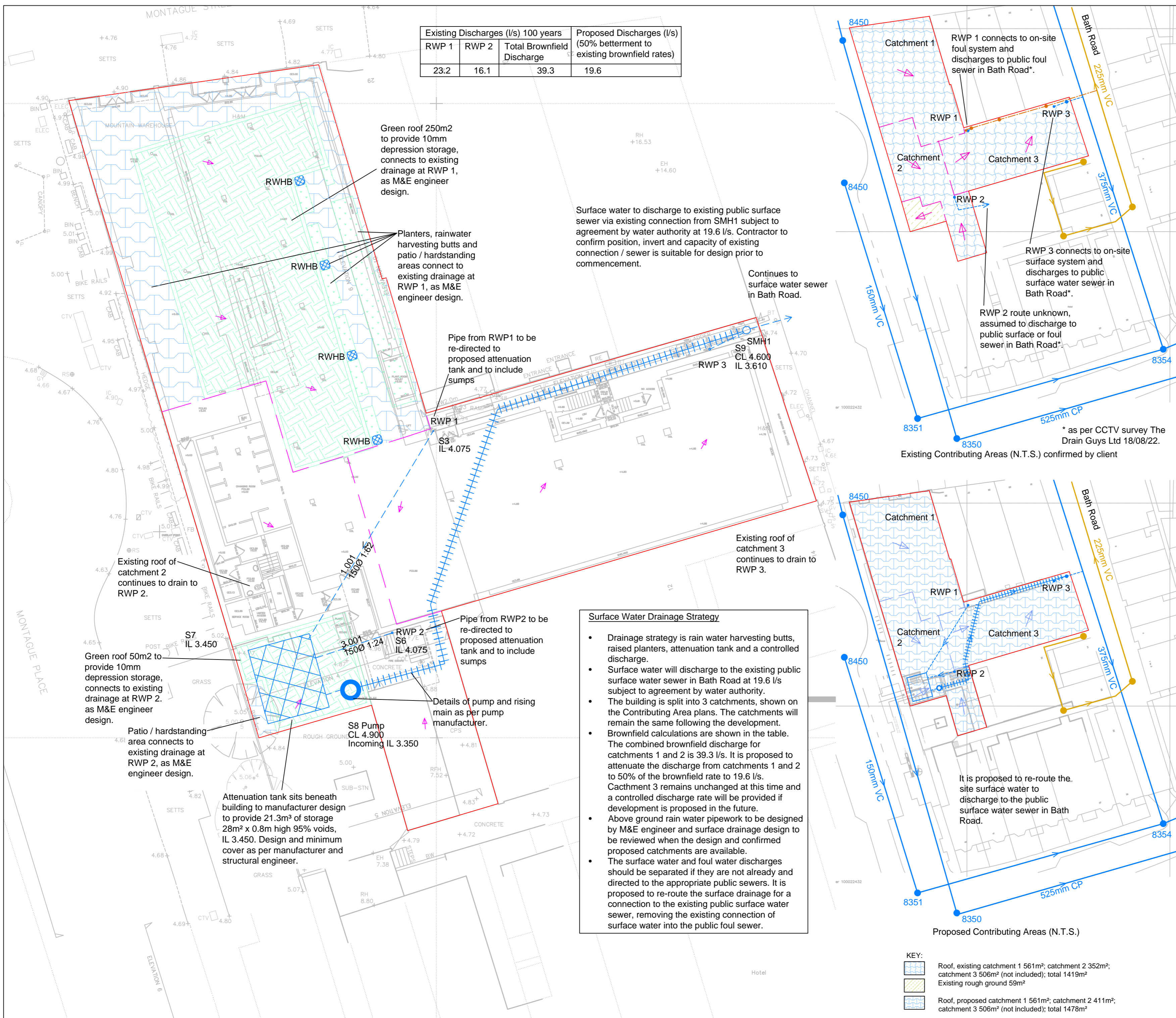
Table 1. Proposed SuDS type, features, discharge location and rate restriction

SuDS type	Source control (interception) and attenuation SuDS.
SuDS features	Rainwater harvesting butts, green roofs and an attenuation tank.
Discharge location	Surface water sewer.
Discharge rate	19.6 l/s (50% betterment on the existing runoff rates).

Table 2. Proposed SuDS sizing (dimensions) and attenuation volumes

Rainwater Harvesting	Rainwater harvesting butts are proposed for the development. In terms of attenuation storage within this SuDS scheme, the volume of run-off which could be attenuated by rainwater harvesting has not been considered.
Raised Planters	Raised Planters are proposed to be installed at the downpipes of the proposed building. This will provide additional biodiversity and amenity benefits to the development. In terms of attenuation storage within this SuDS scheme, the volume of run-off which could be attenuated by raised planters has not been considered.
Green Roof	A green roof covering a total area of 300 m ² (as per detailed drainage drawing ref: 76693 100 P03) to provide 10mm depression storage connecting to the existing drainage network.
Attenuation tank	An attenuation tank with a 95% void ratio beneath the building to provide a volume of 21.3 m ³ of storage. The tank is proposed to be 28 m ² to a depth of 0.8 m discharging into the existing drainage network.

Existing Discharges (l/s) 100 years			Proposed Discharges (l/s)
RWP 1	RWP 2	Total Brownfield Discharge	(50% betterment to existing brownfield rates)
23.2	16.1	39.3	19.6



Surface Water Drainage Strategy

- Drainage strategy is rain water harvesting butts, raised planters, attenuation tank and a controlled discharge.
- Surface water will discharge to the existing public surface water sewer in Bath Road at 19.6 l/s subject to agreement by water authority.
- The building is split into 3 catchments, shown on the Contributing Area plans. The catchments will remain the same following the development.
- Brownfield calculations are shown in the table. The combined brownfield discharge for catchments 1 and 2 is 39.3 l/s. It is proposed to attenuate the discharge from catchments 1 and 2 to 50% of the brownfield rate to 19.6 l/s. Catchment 3 remains unchanged at this time and a controlled discharge rate will be provided if development is proposed in the future.
- Above ground rain water pipework to be designed by M&E engineer and surface drainage design to be reviewed when the design and confirmed proposed catchments are available.
- The surface water and foul water discharges should be separated if they are not already and directed to the appropriate public sewers. It is proposed to re-route the surface drainage for a connection to the existing public surface water sewer, removing the existing connection of surface water into the public foul sewer.

- Notes:
1. Do not scale from this drawing.
 2. All dimensions are in millimeters unless otherwise stated.
 3. This drawing to be read in conjunction with all other relevant drawings and documents.
 4. All drainage to be constructed to SSG Design and Construction Guidance, current british standards and building regulations and other relevant standards.
 5. Exact locations of rain water and foul water downpipes and other internal drainage down pipes to be confirmed by architect.
 6. Contractor to confirm locations of existing services prior to commencement on site and to arrange for any necessary diversions, lowering or protection works as required.
 7. All specialist drainage components such as attenuation tanks, flow control and pumping stations to be designed and installed as per manufacturers requirements.
 8. Cover levels to be confirmed by architect. Cover levels and invert levels are in meters unless otherwise stated. If cover levels change from assumed then drainage design should be re-assessed, especially in regards to extreme events.
 9. Extent of linear drainage channel to perimeter of building and thresholds to doors or highway boundary to be confirmed by architect, design as per manufacturer. Linear channels to have rodding access, sump and grated cover.
 10. Private surface water pipes to be 1000 with minimum fall of 1:100 unless otherwise stated.
 11. Private foul pipes to be 100mm Ø with minimum fall of 1:40 unless a WC is connected then minimum gradient 1:80, unless otherwise stated.
 12. Minimum cover to thermoplastic pipes in garden or patio areas 0.6m, in driveway 0.9m, in road 1.2m, otherwise concrete protection will be required.
 13. Access chamber cover class A15 for garden and patio, B125 for driveway, C250 for lightly trafficked roads or small private carparks.
 14. As the site has previously been developed existing suitable discharge points may already be present on the site. A survey of existing drainage should be undertaken to confirm.
 15. Design is for planning purposes only and not for construction. Design should be confirmed prior to construction to ensure all available information is considered and any assumed information should be verified.
 16. Design should be reviewed in light of any additional information or on validation or otherwise of any assumptions.
 17. Catchments, connectivity, condition and capacity of the existing on-site surface drainage should be confirmed and the design should be reviewed when the information is available.
 18. Above ground surface pipework to be designed by M&E engineer and surface drainage design to be reviewed when the design and confirmed proposed catchments are available. Assumed proposed catchments are shown.
 19. The surface water and foul water discharges should be separated if they are not already and directed to the appropriate public sewers. If separate connections do not already exist then separate connections should be made, subject to agreement by the water authority.
 20. The design incorporates the use of a pump. If the electricity or pump fails the property could flood.

KEY continued:

- Proposed raised planters on roof 48m² (100%)
- Proposed green roof 300m² (100%)
- Attenuation tank
- RWP Rain water pipe
- FWP Foul water pipe
- Private surface water drain and manhole
- Private foul water drain and manhole
- Private surface water rising main
- S3 Manhole with reference number
- CL 67.000 Cover level
- IL 66.300 Invert level
- Assumed falls
- RWHB Rain water harvesting butt
- Flat numbers
- Existing public surface water sewer with Southern Water reference
- Existing public surface water sewer with Southern Water reference

P03	03.10.22	Note capacity of connection	MG	DS
P02	30.09.22	Updated following CCTV	MG	DS
P01	14.07.22	Initial issue	MG	DS
Rev	Date	Detail	Drawn	Chkd

Client:
Waylan Investments Ltd

Project:
31-35 Montague Street, Worthing

Drawing Title:
Proposed Surface Drainage



Suite 9-11, 1st Floor, Old Bank Buildings, Bellstone, Shrewsbury, SY1 1HU

Drawn by: MG	Checked by: DS	Date: July 2022
Scale: 1:200	Status: Preliminary	
Drawing No: 76693 100	Issue: P03	

KEY:

- Roof, existing catchment 1 561m²; catchment 2 352m²; catchment 3 506m² (not included); total 1419m²
- Existing rough ground 59m²
- Roof, proposed catchment 1 561m²; catchment 2 411m²; catchment 3 506m² (not included); total 1478m²



Site location

Figure 1. Aerial Imagery (Bluesky, 2022)

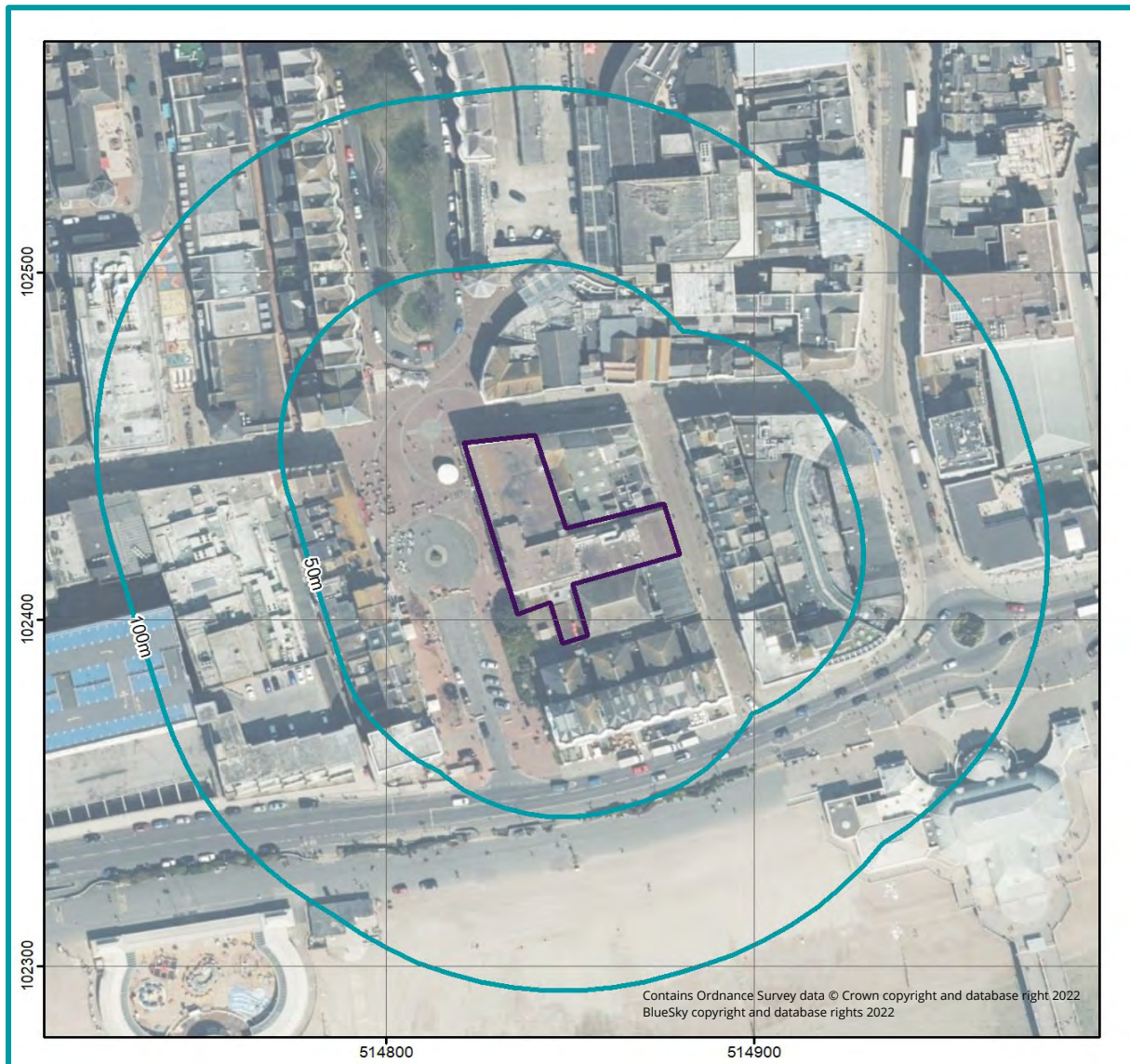
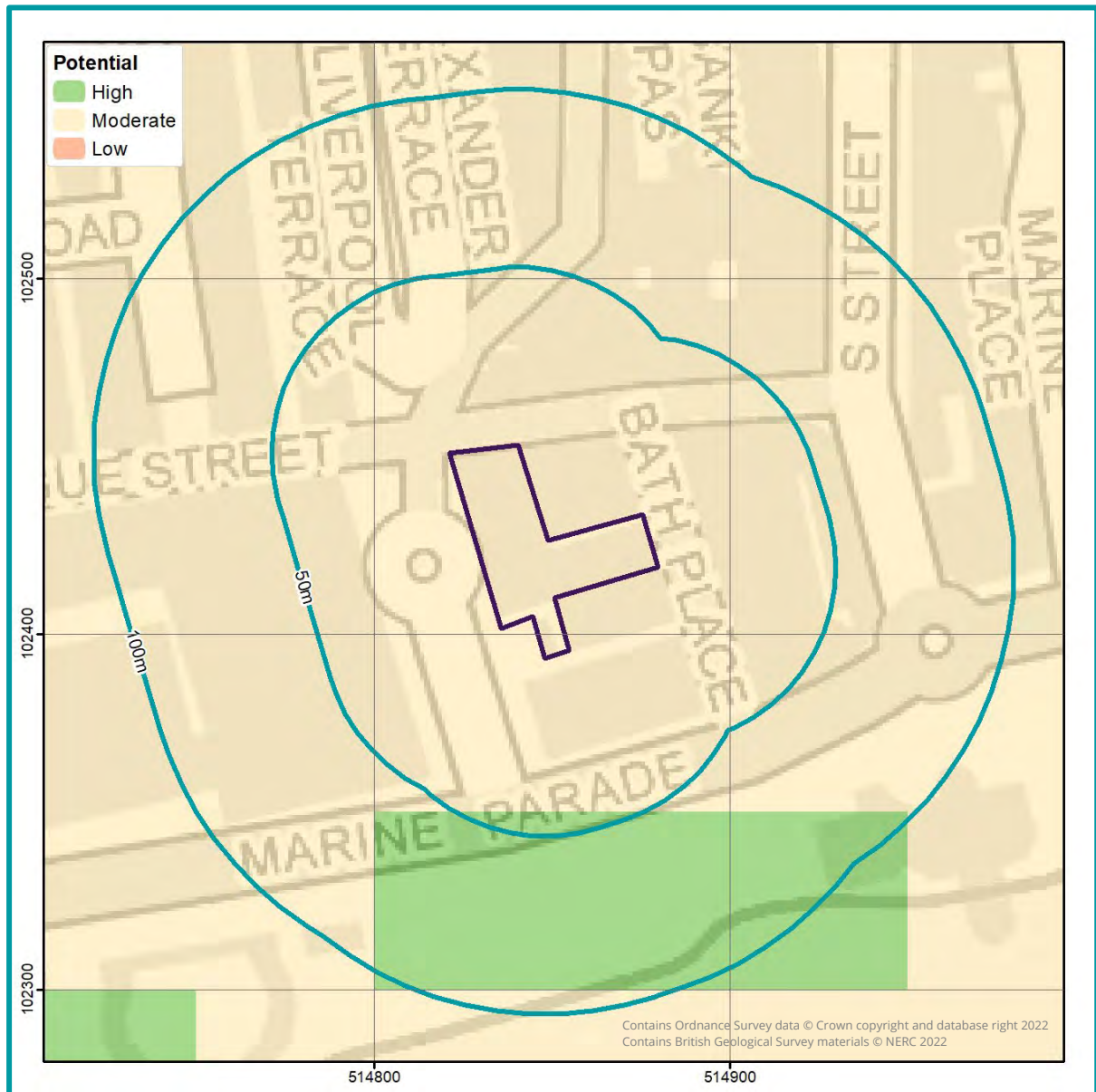


Figure 2. SuDS infiltration suitability (SD50) map (GeoSmart, 2022)



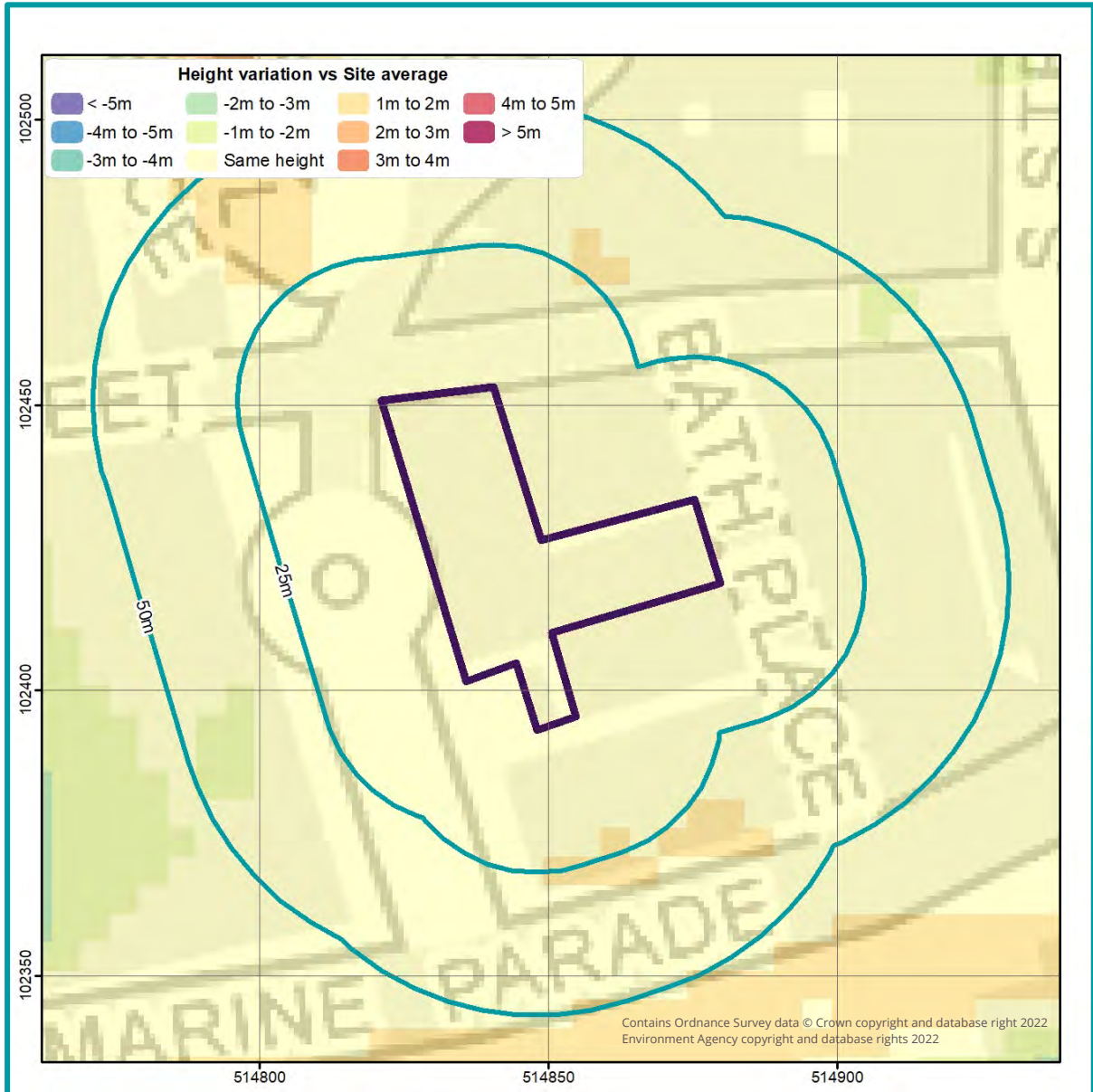
The GeoSmart SuDS Infiltration Suitability Map (SD50) screens the potential for infiltration drainage at the Site and indicates where further assessment is recommended. The map combines information on the thickness and permeability of the underlying material and the depth to the high groundwater table. It supports conceptual Site drainage design and the planning of further Site investigation.

There is a Moderate potential for infiltration SuDS across the Site. It is likely that the underlying geology at the Site has variable permeability and an infiltration SuDS scheme has the potential to be possible at the Site.

Despite this, due to the spatial constraints of the Site being confined by the adjacent buildings and boundaries focused infiltration is not considered feasible. This is due to the required 5

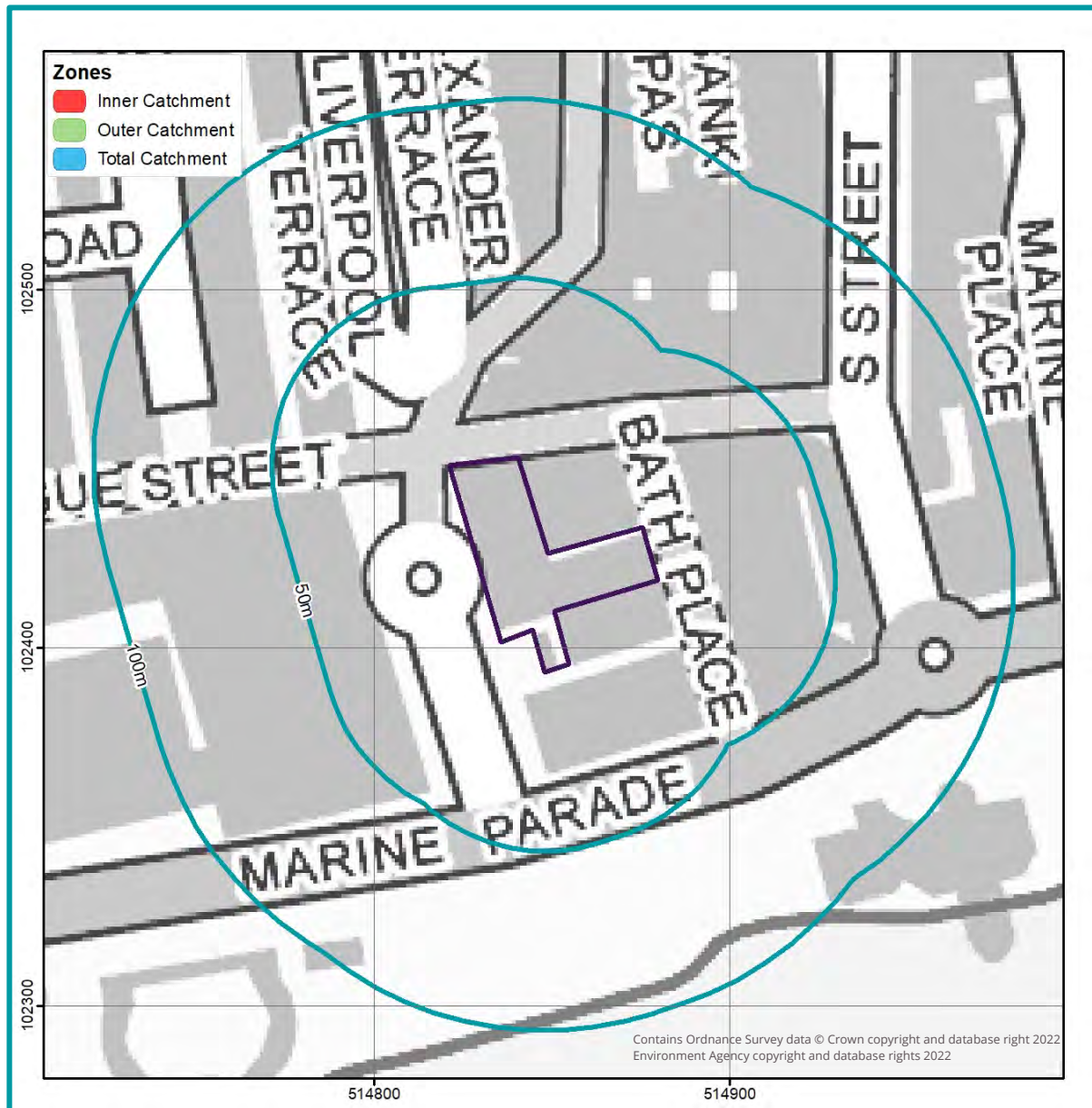
m buffer between infiltration features and buildings and 2.5 m from the Site boundary (Building Regulations, 2010) being unable to be met.

Figure 3. Site topography (GeoSmart, 2022)



An assessment of the topography at the Site has been undertaken using LiDAR DTM5 elevation data to identify the general slope and any localised depressions. The mapping shows a comparison between average ground levels on the Site with ground levels in the surrounding area. The mapping confirms the overall Site is generally level.

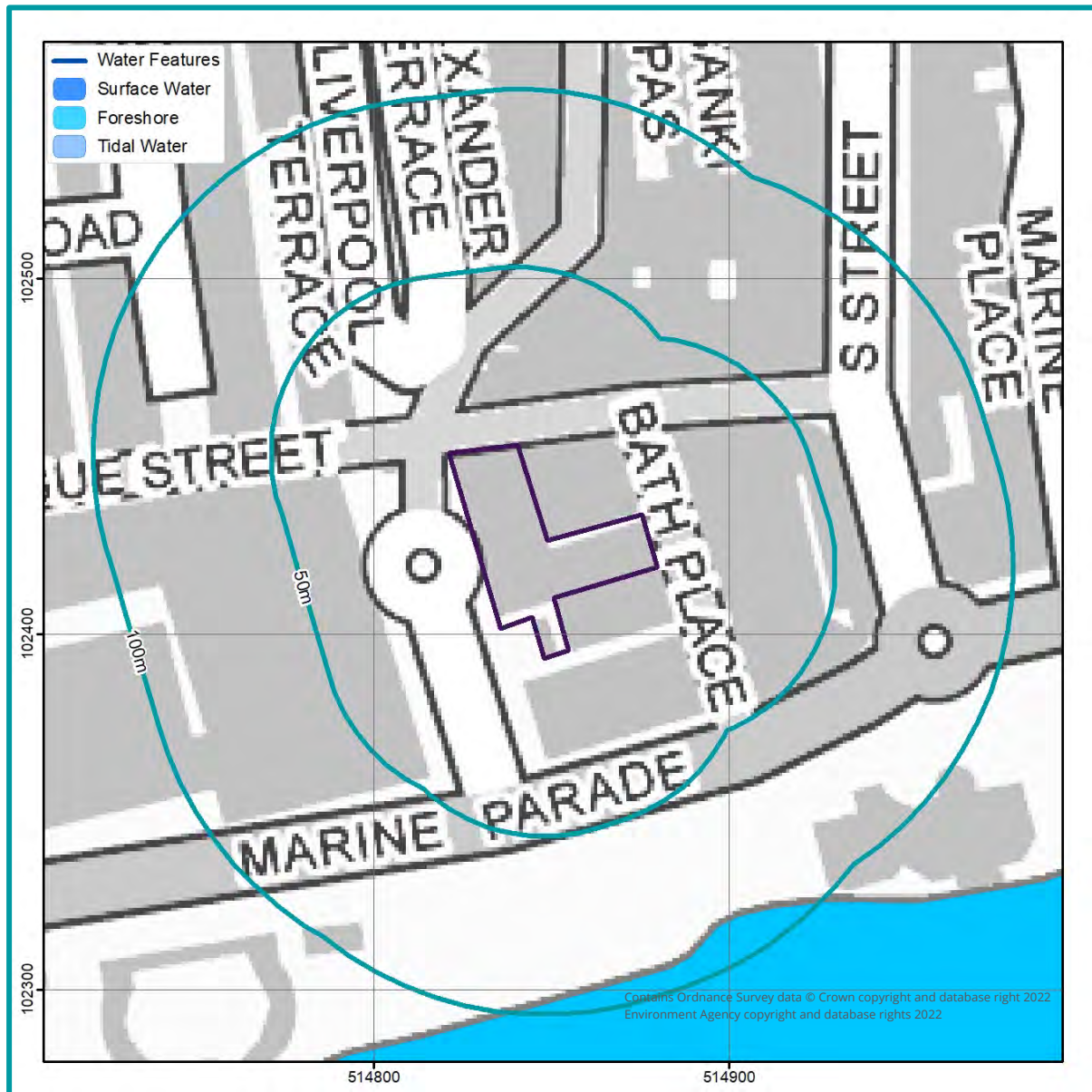
Figure 4. Source protection zone map (EA, 2022)



An assessment of the EA's groundwater Source Protection Zones (SPZs) has been undertaken within the vicinity of the Site and confirms the Site is not located within an SPZ.

If further analysis is required, this would involve a review of Site specific contaminated land data. If hazards are identified, it is recommended that the Local Authority and the Environment Agency are contacted to confirm the susceptibility of any SPZs within the wider area.

Figure 5. Surface water features map (EA, 2022)

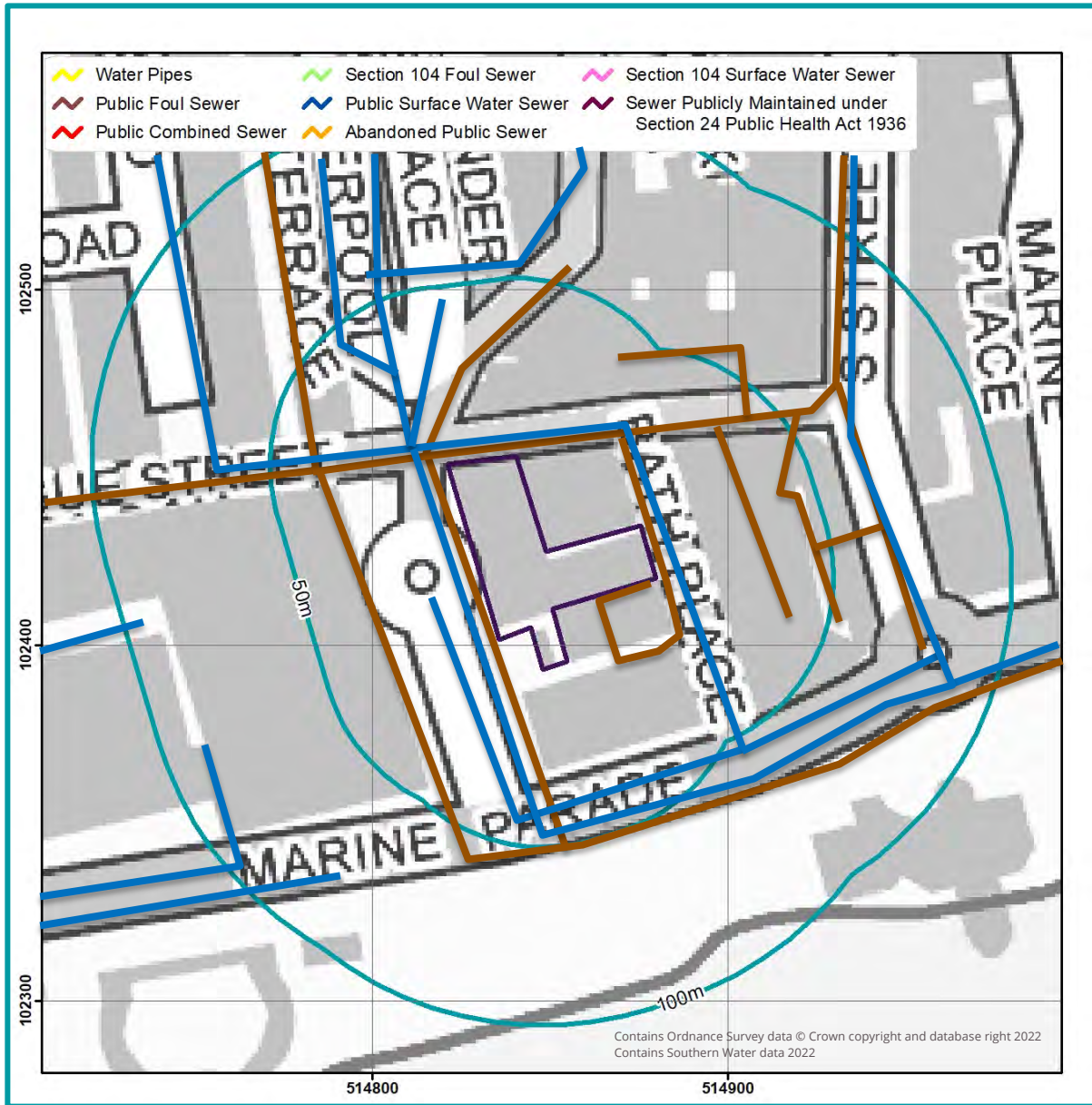


OS mapping indicates the English Channel is located approximately 90 m south of the Site. Whilst a surface water feature has been identified within the vicinity of the Site given the requirement to cross significant distance of third-party urbanised land, discharge to the surface water body is not considered feasible.

According to DEFRA's Magic Map, the Site is not within 250m of a SSSI or SPA.

Further analysis could be undertaken by visiting the Site or by contacting the Local Council and the Environment Agency (EA) to confirm the presence, location and condition of any additional unmapped surface water features.

Figure 6. Sewer features map (OS & Southern Water, 2022)



GeoSmart has undertaken an assessment of the location of sewer features within the vicinity of the Site. According to the Southern Water asset plan obtained for the Site there is a public surface water sewer, located adjacent to the north, east and west of the Site beneath the adjacent highways. As per information provided by the Client the Site possesses a connection to the surface water sewer to the east of the Site beneath Bath Place, the continued discharge via this is proposed.

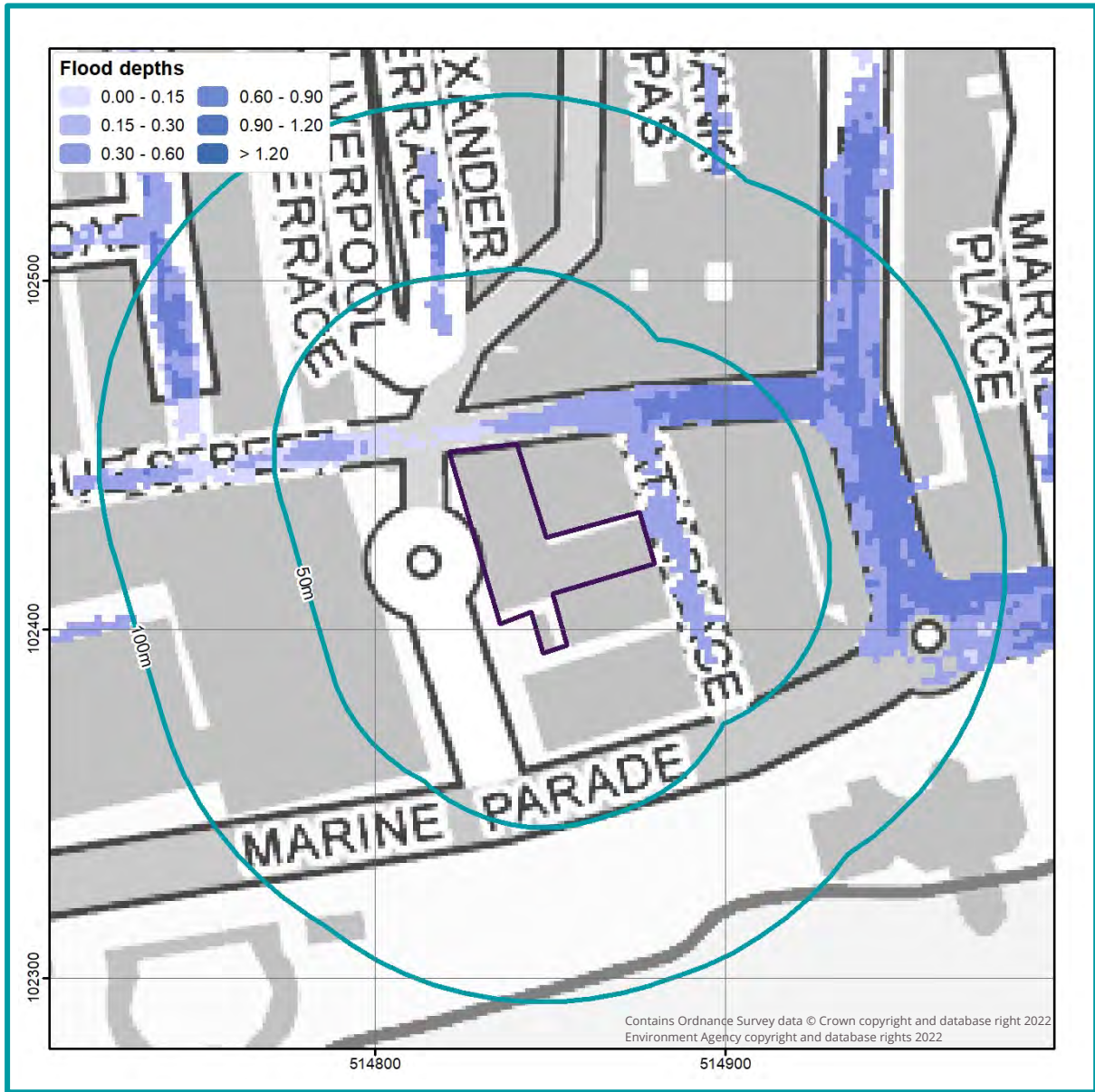
A CCTV survey has been undertaken for the Site by The DrainGuys Ltd. on 18/08/2022 confirming a 100 mm surface water connection to the public sewer network beneath Bath Place. The CCTV survey also confirmed a separate foul connection discharging to the public foul sewer.

Figure 7. Risk of flooding from rivers & sea map (EA, 2022)



According to the EA's Risk of Flooding from Rivers and the Sea (RoFRS) map, the Site has a Low risk with less than 1% annual probability of flooding from fluvial or coastal flooding, therefore the SuDs design is unlikely to be affected.

Figure 8. Risk of surface water flooding map (EA,2022)

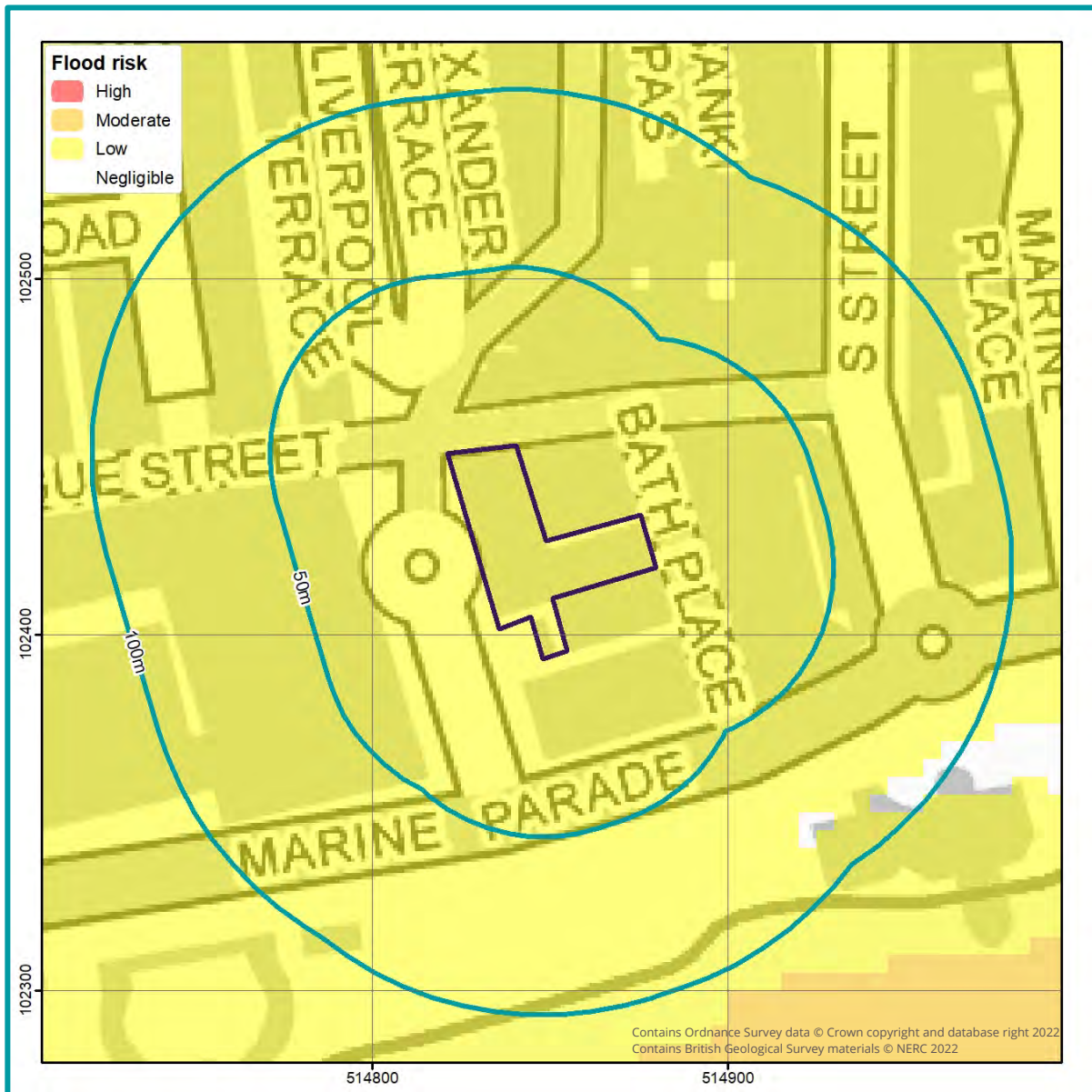


GeoSmart have undertaken an assessment of the risk of flooding from surface water (pluvial) sources within the vicinity of the Site using the EA's Risk of Flooding from Surface Water (RoFSW) mapping. The EA's mapping confirms the Site is considered to be at Very Low to Low risk of surface water flooding.

The above map shows the extent and depth of flooding during a 1% annual probability (1 in 100 year) event, this confirms there are no areas on the Site which would be affected by flooding in the 100 year event.

Further analysis could be undertaken by visiting the Site or by contacting the Local Council and the Environment Agency to confirm the pluvial flood risk, flood depths and velocities where applicable.

Figure 9. Groundwater flood risk (GW5) map (GeoSmart, 2022)



GeoSmart have undertaken an assessment of the risk of flooding from groundwater within the vicinity of the Site. GeoSmart's Groundwater Flood Risk Screening (GW5) map confirms the Site has a Low risk of groundwater flooding during a 1% annual probability (1 in 100 year) event.

The Low risk indicates the groundwater table may be particularly shallow in these areas and further investigation may be required.



Site information

The purpose of this report is to assess the potential for disposing of surface water through a Sustainable Drainage System (SuDS) for the site of 31-35 Montague, Worthing BN11 3BE (the Site). The Site is located within Worthing in a setting of commercial and residential use.

Development

The existing development is a part three, part four-storey building with two retail units at ground/first floor level and an active frontage on to Montague Street, a large blank façade fronting on to Montague Place and an additional façade fronting on to Bath Place to the east. The upper second/third floors are vacant and were formerly used as additional retail space for the ground floor units.

The proposed development consists of the conversion of the second and third floor of the building into residential flats alongside the extension of the third floor across the full length of the building and infill extension to the rear of the site to provide a total of 14 residential flats. The proposal also includes alterations to the external facades of the existing building to facilitate the conversion of the upper floors to residential flats. Site plans and drawings are provided in Appendix A.

Geology, permeability and thickness

British Geological Survey (BGS) national superficial and bedrock geology mapping confirms the geological formations underlying the Site and each formation may have a range of permeability.

Table 3. Site Geology

Geology present on-Site		Potentially permeable?
Superficial geology (Figure 11)	River terrace deposits (undifferentiated)- sand, silt and clay (RTDU)	✓
Bedrock geology (Figure 12)	Lewes Nodular Chalk Formation- chalk (LECH)	✓

The BGS website was used to extract ground information from the nearest borehole records to the Site (ref: TQ10SW74), located approximately 90 m to the west of the Site.

The borehole records confirm the underlying geology is comprised of Made Ground to a depth of 0.8 m below ground level (bgl), overlying soft mottled clay to a depth of 1.5 m bgl,

overlying soft brown clay to a depth of 3.7 m bgl, overlying soft chalk to a depth of 12.2 m bgl, where the borehole was terminated. Groundwater was reported to have been encountered at a depth of 6.7 m bgl with a standing water level of 4.2 m bgl.

Figure 10. Superficial Geology (BGS, 2022)

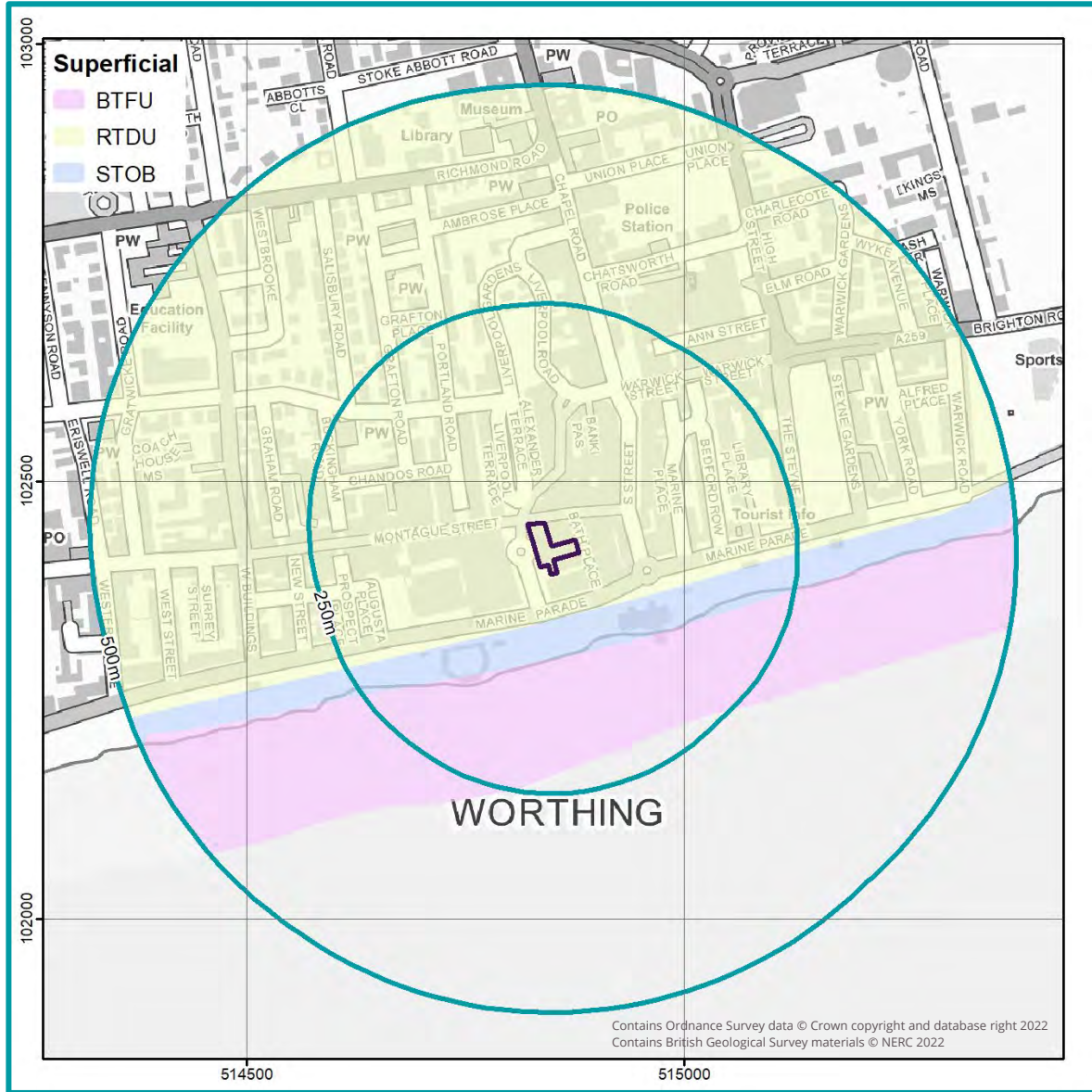
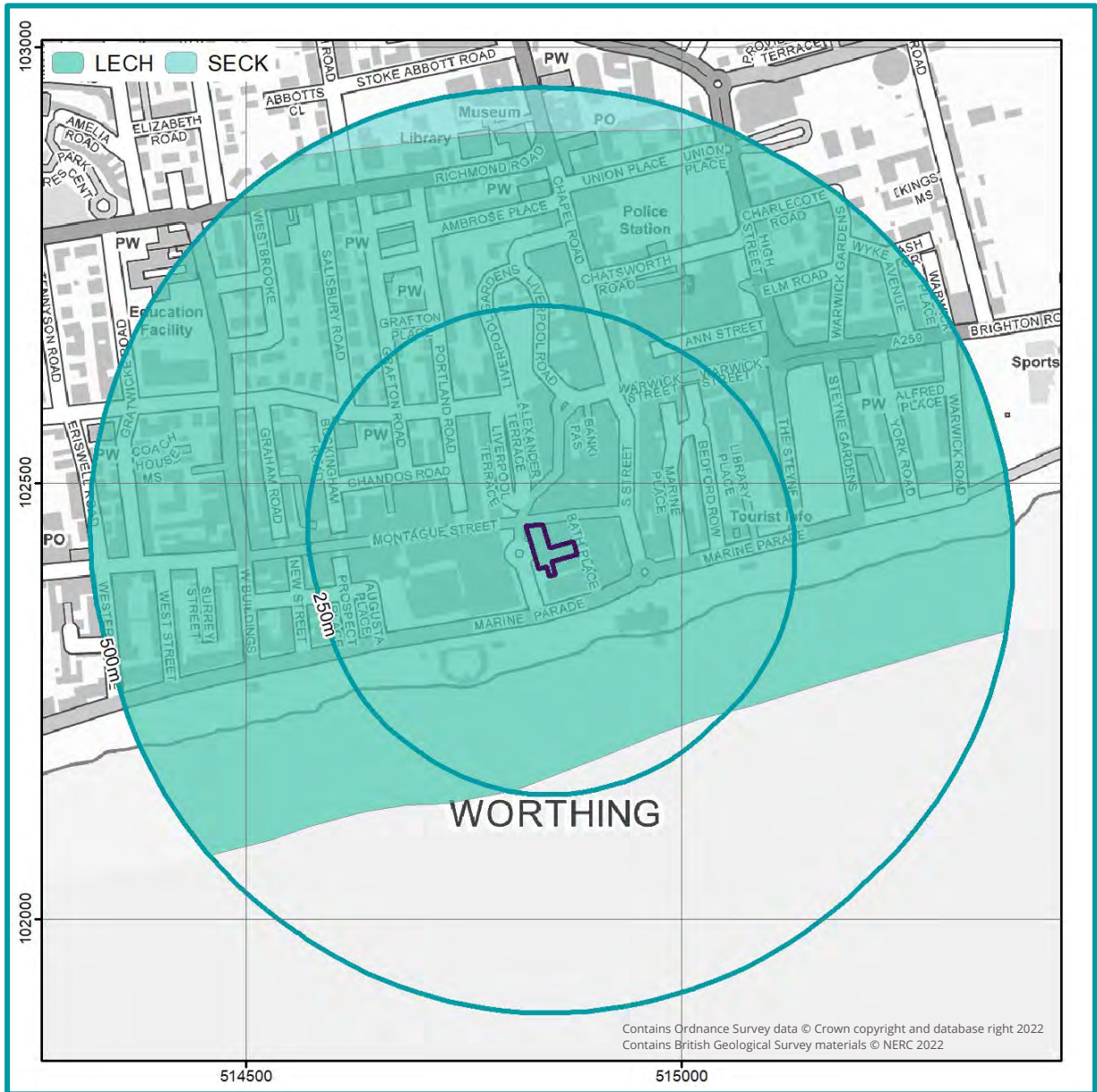


Figure 11. Bedrock Geology (BGS, 2022)



Depth to groundwater

The SuDS system should be designed to operate in periods of extreme groundwater levels.

According to borehole data and GeoSmart's Groundwater Flood Risk (GW5) map, shallow groundwater has the potential to be an issue at the Site.

Relevant Borehole records within the vicinity of the Site identified a standing water level of 4.2 m bgl, subject to seasonal variations. Infiltration features are not proposed due to the spatial constraints at the Site.

Ground conditions

Infiltration SuDS features are not proposed at the Site, therefore a detailed investigation into the ground conditions is not required.

Water quality

The Site does not lie within an SPZ and infiltration features are not proposed therefore further assessment of historical land uses is not considered necessary.

5 National & local policy context



National Guidance

CIRIA SuDS Manual (C753) (2015)

A development should utilise sustainable drainage systems (SUDS) unless there are practical reasons for not doing so, and should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the following drainage hierarchy:

1. Use infiltration techniques, such as porous surfaces in non-clay areas,
2. attenuate rainwater in ponds or open water features for gradual release,
3. attenuate rainwater by storing in tanks or sealed water features for gradual release,
4. discharge rainwater direct to a watercourse,
5. discharge rainwater to a surface water sewer / drain,
6. discharge rainwater to the combined sewer.

Defra - Sustainable Drainage Systems: Non-statutory technical standards for sustainable drainage systems (2015)

Peak Flow control

For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event.

Volume control

Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event. The runoff volume must be discharged at a rate that does not adversely affect flood risk.

The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the Site for a 1 in 30 year rainfall event.

Ministry of Housing, Communities & Local Government – National Planning Practice Guidance: Flood risk assessments: climate change allowances (2014)

The Peak rainfall intensity allowances section provides advice on the increased rainfall effects on river levels and land and urban drainage systems. As of May 2022, the applicable climate change allowance is defined by specific Management Catchment for the 1 in 30 ($\geq 3.3\%$ AEP) and 1 in 100 (< 3.3 to 1% AEP) year event.

As the Site is located within the Adur and Ouse Management Catchment the following climate change allowances are applicable.

Table 4. Adur and Ouse Management Catchment peak rainfall allowances

Upper Mersey Management Catchment	3.3% Annual exceedance rainfall event		1% Annual exceedance rainfall event	
	2050s	2070s	2050s	2070s
Central	20%	35%	20%	25%
Upper end	20%	40%	45%	45%

The drainage system should be designed to make sure there is no increase in the rate of runoff discharged from the Site for the upper end allowance.

Where on-Site flooding for the upper end allowance presents a significant flood hazard (for example, depths and velocities of surface water runoff cause a significant danger to people), you will need to take further mitigation measures to protect people and property (for example, raising finished floor levels). As a minimum, there should be no significant flood hazard to people from on-Site flooding for the central allowance.

Local Policy

Adur & Worthing District Council Supplementary Requirements for Surface Water Drainage Proposals (2019).

Infiltration Drainage Design

Any infiltration drainage design must include adequate winter groundwater monitoring data to determine the highest winter groundwater table. Residential developments in excess of ten properties will require ground water monitoring to be carried out between October and March inclusive. The extent of monitoring required for smaller developments will be subject to agreement with the Council’s Engineers but will need to capture likely peak groundwater levels during the winter period. This is likely to be during January/February but is dependent on the weather etc. up to that point.

Adequate freeboard must be provided between the base of the soakaway structure and the highest recorded groundwater level identified in that location.

Infiltration rates for soakage structures are to be based on infiltration tests undertaken at an agreed time during the winter period at the location and depth of the proposed structures. The infiltration test depth is also dependent upon the peak groundwater levels recorded at that location, ensuring that test depth does not exceed the depth of the peak groundwater level recorded. The infiltration tests must be carried out in accordance with BRE DG365, CIRIA R156 or a similar approved method. For the purpose of design, the infiltration rate must be applied to the sides of the infiltration structure only and the rate for the base must be zero, unless otherwise agreed. In respect to permeable paving the infiltration rate is applied to the base only.

There must be provision to ensure that there is capacity in the system to contain the 1 in 100 year storm event plus 40% on stored volumes, as an allowance for climate change and cater for the 1 in 10 year storm event between the invert of the lowest entry pipe into the infiltration structure and the base. The infiltration structure should also drain 50% of its total volume in 24 hours or less for both the 1 in 10 and 1 in 100 year (plus 40%) storm events, in order to provide spare capacity for subsequent storms.

Restricted Discharge

Discharge to a watercourse or surface water sewer must be restricted to the estimated 1 year greenfield runoff rate using the area of the site to be developed in the calculations, rather than the entire greenfield site area. This also applies to brownfield sites, as a minimum a 50% reduction in the peak runoff rate should be achieved for brownfield sites. Flow restriction is to be achieved using a suitable controlled outflow with a minimum outflow of 2l/s, unless otherwise agreed, with satisfactory blockage mitigation measures specified.

Greenfield runoff rates can be derived from IH124 or a similar approved method. Any storage design must be submitted with groundwater monitoring data where applicable to ensure there will be no detrimental effect on the structure or storage. Storage areas are preferred to be in an 'open' form such as ponds, rather than underground tanks.

Flow Exceedance Routes

The drainage design should show flow routes through the proposed development, demonstrating where surface water will be conveyed for three types of flow:

1. Low flow routes Regular flow from source control features such as permeable pavements should travel in low flow channels through the development in a controlled way contributing to landscape quality.
2. Overflows In the event of local blockages or surcharge a simple overflow arrangement should allow water to bypass the obstruction and return to the management train sequence until conditions return to normal.

Exceedance routes

3. When SuDS are overwhelmed by exceptional rainfall, then exceedance routes are required to protect people and property. These provide unobstructed overland flow

routes from the development and should be considered for all drainage schemes. Exceedance routes should also be protected from future changes in land use.

Maintenance and Management

Ditches and watercourses (including culverts) should retain a minimum three metre easement with access that allows for its future maintenance. Details of the maintenance and management of the SuDS system are to be set out in writing in a site specific maintenance manual. This manual shall include details of the financial management and arrangements for the replacement of components at the end of the manufacturers recommended design life. This document is then to be submitted as part of the planning process.

6 Storage, volume and peak flow rate



Surface water runoff

An increase in impermeable area on-Site will result in greater rainfall runoff. Reduction in runoff will help mitigate flood risk both on and off-Site. Further information on the surface water runoff calculations is provided in Section 12 'Background Information'.

Guidance

The Non-Statutory Technical Guidance for SuDS (Defra, March 2015) states:

"Where reasonably practicable, for Greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the Greenfield runoff volume for the same event. Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the Greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event."

Table 5. Change in impermeable area associated with the development

Total Site area	1,561 m²
Impermeable area (and as a percentage of the total area of the proposed development footprint of 1,561 m²)	
Pre-development	Post-development
1,561 m ² (100%)	
New impermeable land use: Building footprint	
New permeable land use: N/A	

Guidance

"The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event' and 'flooding does not occur during a 1 in 100 year rainfall event in any part

of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development”

(Defra, March 2015, non-statutory guidance).

Peak discharge rates

The table below presents peak discharge rates for a range of storm events used to assess the impact of the proposed development and select the maximum permitted discharge rate. Further information on the calculation and control of peak discharge rates is provided in Section 12 ‘Background Information’.

Table 1. Peak discharge rates associated with catchment 1 and 2

Rainfall event	Greenfield runoff rates (l/s)	Existing runoff rates (l/s)
QBAR	0.6	N/A
2 year	0.5	13.1
30 year	1.2	32.8
100 year	1.6	39.3

Relevant national, regional and local planning policy has been consulted in Section 5 to determine restrictions on runoff from previously developed and greenfield sites. In some cases, greenfield rates may be requested, but in practice it is difficult to restrict discharge rates at any one control point to less than 2.0 l/s, without increasing the risk of any potential blockages occurring in the drainage network. In accordance with the local guidance, a 50% betterment on the existing brownfield runoff rates is proposed equating to a maximum discharge rate of 19.6 l/s.

Total discharge volumes

The table below presents discharge volumes for the 6 hour 100 year event which is used to assess the impact of the proposed development and calculate the required storage volumes. Further information on the calculation of total discharge volumes is provided in Section 11 'Methodology and Limitations'. Please note that these values are estimates and are superseded by the detailed drainage calculations.

Table 2. Total discharge volumes associated with the development

Rainfall event	Greenfield runoff volume (m ³)	Existing runoff volume (m ³)
QBAR	N/A	N/A
1 year	7	37
30 year	16	77
100 year	21	96
100 year plus 40% climate change	32	134

Guidance

The Non-Statutory Technical Guidance for SuDS (Defra, March 2015) states:

"Where reasonably practicable, for Greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the Greenfield runoff volume for the same event. Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the Greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event."

7 Runoff destination



Options for the destination for the runoff generated on-Site have been assessed in line with the prioritisation set out in the Building Regulations Part H document (HM Government, published in 2010 and updated in 2015) and Defra's Non-statutory Technical Standards for SuDS (2015).

Flow attenuation using infiltration SuDS (discharge to ground) is generally the preferred option. If discharge to ground is not available, runoff discharge to surface water is the other preferred method. Only if these two options are impractical should discharge to the sewer network be considered.

Discharge to ground

The Site has a Moderate potential for infiltration features with potentially permeable underlying Whilst the ground conditions at the Site have the potential to be conducive to infiltration features the Site is constrained by adjacent buildings and boundaries. As a result of this the 5 m buffer between focused infiltration features and buildings and 2.5 m from Site boundaries (Building Regulations, 2010) cannot be provided. As a result of this infiltration to ground is not considered a feasible method of surface water management and therefore not proposed.

Discharge to surface watercourse

According to OS mapping a surface water body is located approximately 95 m to the south of the Site. Due to the significant drainage pipework that would be required across third-party urbanised land this is not considered a feasible option for discharging runoff.

Discharge to sewer

According to the Southern Water asset location plan obtained for the Site (Appendix C) there is a surface water sewer within Bath Place that runs adjacent to the Site, it is understood that there is an existing connection. Discharge to sewer is likely to be feasible and the most appropriate method of discharge. Southern Water should be contacted to confirm the capacity of the sewer to accept the additional runoff from the development.

8 Water quality



A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution. This can be effectively managed by an appropriate “train” or sequence of SuDS components that are connected in series. The frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals and various organic and inorganic contaminants). Therefore, the first 5-10 mm of rainfall (first flush) should be adequately treated with SuDS.

The minimum number of treatment stages will depend on the sensitivity of the receiving water body and the potential hazard associated with the proposed development SuDS Manual (CIRIA, 2015). The proposed development is comprised exclusively of roof drainage run off and is therefore classified as very low hazard

Table 6. Level of hazard

Hazard	Source of hazard
Very Low	Residential roof drainage
Low	Residential, amenity uses including low usage car parking spaces and roads, other roof drainage.
Medium	Commercial, industrial uses including car parking spaces and roads (excluding low usage roads, trunk roads and motorways).
High	Areas used for handling and storage of chemicals and fuels, handling of storage and waste (incl. scrap-yards).

The recommended minimum number treatment stages suggested for the different runoff waters identified for the proposed development is highlighted in the table below.

Table 7. Minimum number of treatment stages for runoff

		Sensitivity of the receiving water body		
		Low	Medium	High
Hazard	Low	1	1	1
	Med	2	2	2
	High	3	3	3

9 Proposed SuDS strategy



Sustainable drainage systems

DEFRA's non-statutory requirements for SuDS require the below ground drainage systems to have the capacity to accommodate at least the 1 in 30 year event and to manage the 1 in 100 year event without flooding of on-site buildings and substations. All runoff should be managed on-Site though for the 1 in 100 year event, accounting for the maximum impacts of climate change to ensure flood risk is not increased to third-parties.

It is assumed that drainage from areas outside the development footprint will continue to use existing drainage arrangements.

A surface water drainage strategy (summarised in Section 2 of this report) includes the following SuDS features to intercept, attenuate and treat surface water runoff.

SuDS Strategy:

Infiltration to ground is not achievable at the Site, and water features were not identified or available, therefore surface water runoff will be managed within SuDS features and discharged to the public sewer network.

Table 8. Proposed SuDS type, features, discharge location and rate restriction

SuDS type	Source control (interception) and attenuation SuDS.
SuDS features	Rainwater harvesting butts, green roofs and an attenuation tank.
Discharge location	Surface water sewer.
Discharge rate	19.6 l/s (50% betterment on the existing runoff rates).

Table 9. Proposed SuDS sizing (dimensions) and attenuation volumes

Rainwater Harvesting	Rainwater harvesting butts are proposed for the development. In terms of attenuation storage within this SuDS scheme, the volume of run-off which could be attenuated by rainwater harvesting has not been considered.
Raised Planters	Raised Planters are proposed to be installed at the downpipes of the proposed building. This will provide additional biodiversity and amenity benefits to the development. In terms of attenuation storage within this SuDS scheme, the volume of run-off which could be attenuated by raised planters has not been considered.

Green Roof	A green roof covering a total area of 300 m ² (as per detailed drainage drawing ref: 76693 100 P03) to provide 10mm depression storage connecting to the existing drainage network.
Attenuation tank	An attenuation tank with a 95% void ratio beneath the building to provide a volume of 21.3 m ³ of storage. The tank is proposed to be 28 m ² to a depth of 0.8 m discharging into the existing drainage network.

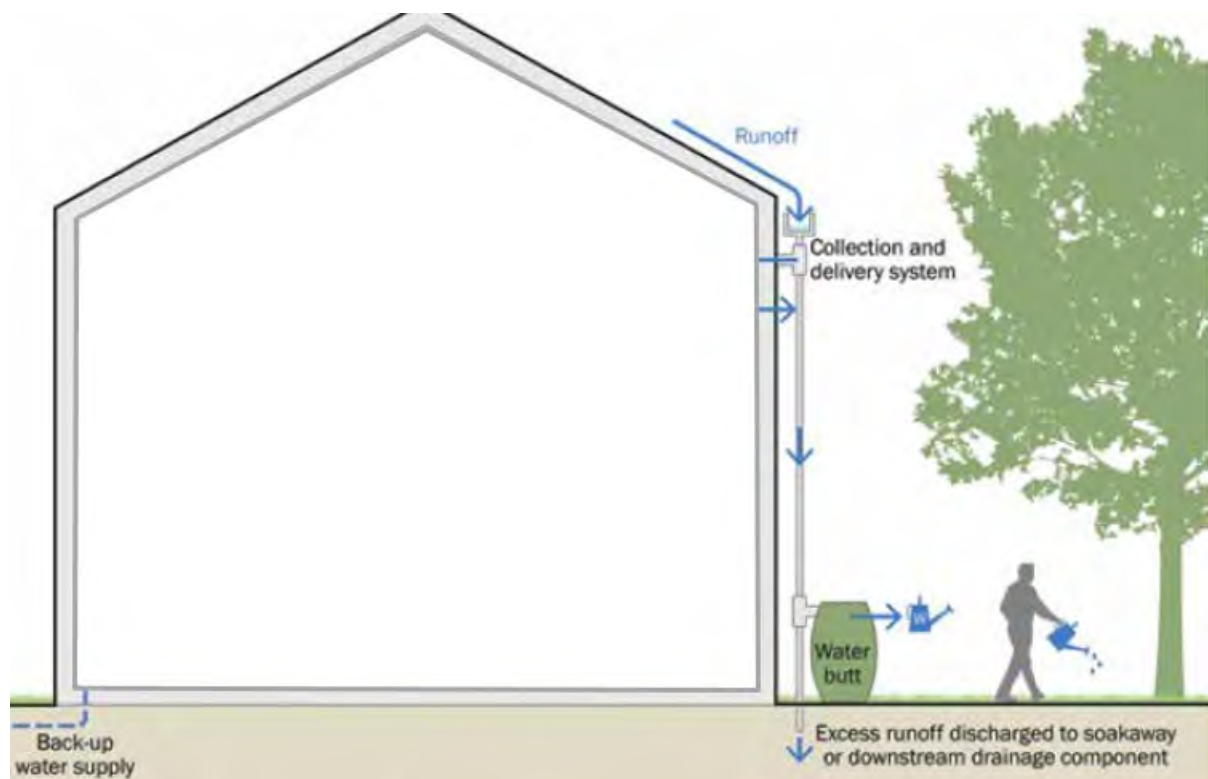
Rainwater harvesting

The run-off from the proposed development roof should be led into rainwater harvesting butts via rainwater downpipes and guttering to catch run-off from the extension roof.

Due to the relatively insignificant amounts of attenuation provided by rainwater harvesting tanks in this instance and the requirement to retain water for non-potable uses such garden maintenance, the volume of run-off which could be attenuated by rainwater harvesting has not been considered within the report.

As there is an issue with the storage capability of Rainwater Harvesting tanks, this method should have a fixed attenuation volume and a controlled outlet to discharge into the proposed SuDS feature. An overflow system will be required for implementation on the Site due to exceedance events (where the pumps fail or there is a blockage within the system / or the number of residents and subsequent water usage is reduced).

Roof run-off is generally less polluted than run-off from road surfaces but can still generate pollutants such as sediments. Pollutants would be captured by the collection and filtration system and, by reducing the volume of run-off generated from the Site. Primary screening devices are used to prevent leaves and other debris from entering the butt and first flush devices can be designed to divert the first part of the rainfall away from the main storage tank and can pick up most of the dirt, debris and contaminates that collect on a residential roof.



Modified from Figure 11.3 of the CIRIA SuDS Manual (C753) (2015)

Green Roof

Green Roofs are proposed on the roofs as per drainage design drawing no. 76693 100 P03 over a total area of 200 m² which will aim to intercept and store runoff within a 10mm depression storage .

Interception via green/brown roofs will enable the storage of run-off and infiltrate collected water gradually into the underlying substrate; this provides various levels of storage depending on the surface area of the feature and the thickness / type of the substrate being use. The different types of green roof include the following:

- Extensive roofs, have low substrate depths (and therefore low loadings on the building structure), simple planting and low maintenance requirements; these tend not to be accessible.
- Intensive roofs (or roof gardens) have deeper substrates (and therefore higher loadings on the building structure) that can support a wide variety of accessible planting but which tend to require more intensive maintenance.

Green roofs can also provide improvements to water quality as they intercept water at the source, and the layering of the substrate can incorporate filtration measures to remove pollutants from the system. Green Roofs are roofs which incorporate planting, often sedum or wildflower and meadow planting, grasses and mosses. In fact, some can even be planted with trees and shrubs. Brown roofs are similar to green roofs, the main difference is that whilst green roofs are often installed partly for the aesthetic value, brown roofs tend to be installed for environmental reasons, mainly, to encourage plants and wildlife.

In addition, although green roofs absorb most of the rainfall that they receive during frequent events, there will always be a need to discharge excess water to the building's drainage system and these areas should be positively drained. The hydraulic performance of green roofs once saturated tends to be fairly similar to standard roofs. Therefore, the hydraulic design of green roof drainage should follow the advice in BS EN 12056-3:2000. Useful information is also provided in BS 6229:2003. Detailed guidelines for the planning, execution and upkeep of green roof sites are contained within GRO (2014).

It is recommended that attenuation should be provided in the form of a high porosity substrate underlying the growing medium (approximately 50% depending on the supplier), which would provide sufficient storage (depending on loading requirements of a fully saturated substrate). It is likely that the high porosity medium would only have to be relatively thin in order to achieve the attenuation requirements. Surface water would then be throttled to a suitable rate at a downpipe entrance before discharging to the combined sewer system, via an existing connection.

SuDS planters

These are boxed systems (that can be prefabricated) constructed above the surrounding ground surface, with a planted soil mix and an underdrain to collect the filtered water. They are often used to manage runoff from adjacent roofs, and this can be retrofitted in urban situations.

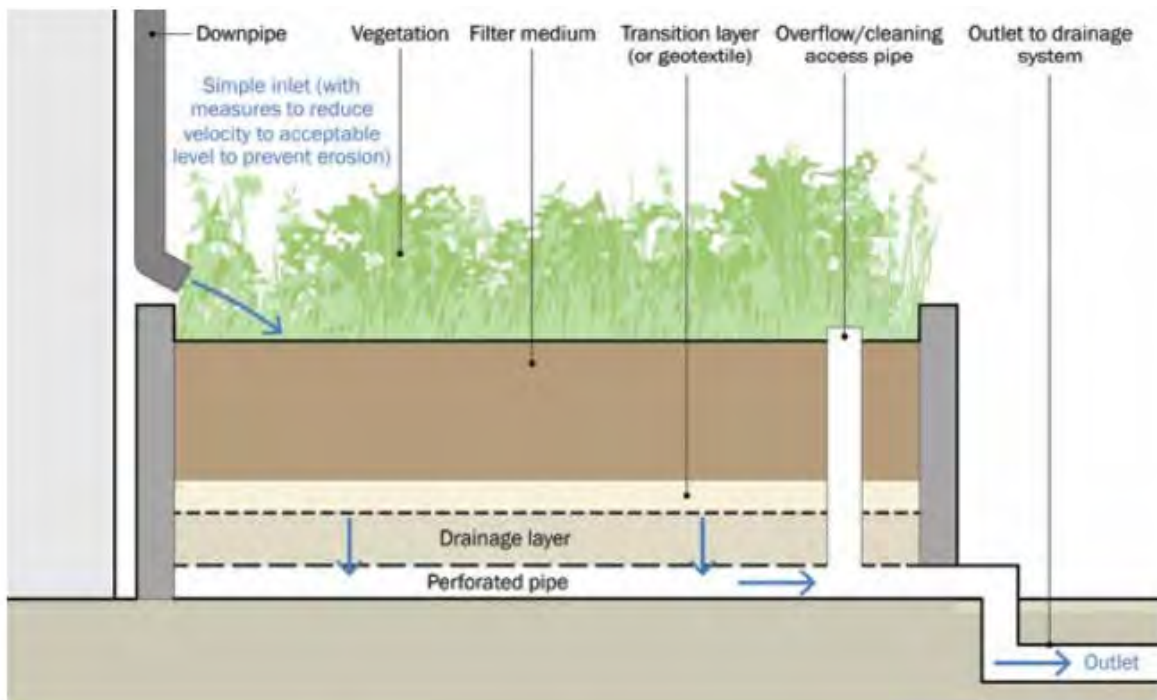


Figure 18.5 of the CIRIA SuDS Manual (C753) (2015)

Attenuation Tanks

An attenuation tank is proposed to provide the storage required. Attenuation tanks provide a below-ground void space for use of temporary storage via controlled release. They can also be modified to suit specific characteristics of a site. DEFRA, 2015 states that the run-off

volume from the development to drain to any sewer or surface water body in the 1 in 100 year rainfall event must be constrained to a value as close as is reasonably practical to the greenfield runoff volume for the same event but should never exceed the runoff volume from the development prior to redevelopment from the Site. Issues with attenuation tanks are the level of accessibility, lack of treatment performance and cost in comparison to surface systems.

10 SuDS maintenance



Regular maintenance is essential to ensure effective operation of the SuDS features over the intended lifespan of the proposed development. The SuDS Manual (C753) (CIRIA, 2015) provides a maintenance schedule for SuDS with details of the necessary required actions as shown in the Table below.

Table 10. SuDS operation and recommended maintenance requirements

Asset type	Maintenance schedule (and frequency)
Underground drainage pipe network	<p>Regular maintenance:</p> <ul style="list-style-type: none"> • Remove sediment and debris from pre-treatment devices and floor of inspection tube or chamber (annually). • Cleaning of gutters and any filters on downpipes (annually). • Trimming any roots that may be causing blockages (annually or as required). <p>Monitoring:</p> <ul style="list-style-type: none"> • Inspect silt traps and note rate of sediment accumulation (monthly in the first year and then annually).
Green Roof	<p>Regular inspection:</p> <ul style="list-style-type: none"> • Inspect all components (soil substrate, vegetation, drainage, irrigation systems, membranes and roof structure, waterproofing, structural stability (annually and after severe storms) • Inspect soil substrate for evidence of erosion channels (annually and after severe storms). • Inspect drain inlets for unrestricted run-off (annually and after severe storms). • Inspect underside of roof for leakage (annually and after severe storms). <p>Regular maintenance:</p> <ul style="list-style-type: none"> • Remove litter and debris from inlet drains (six monthly, annually or as required). • Cleaning of clippings (six monthly or as required). • Trimming of grasses and removal of nuisance weeds and invasive vegetation (six monthly or as required). • Replace dead plants (annually or as required). <p>Monitoring:</p> <ul style="list-style-type: none"> • Stabilise any erosion channels with extra soil substrate (as required). • Identify sources of erosion and control (as required).

Asset type	Maintenance schedule (and frequency)
	<ul style="list-style-type: none"> Investigate and repair drain inlet if inlet has settled, cracked or moved (as required).
Rainwater Harvesting	<p>Regular maintenance:</p> <ul style="list-style-type: none"> Inspection of tank for debris and sediment build up (annually and following poor performance). Inspection of inlets, outlets, overflow areas, pumps and filters (annually and following poor performance). Cleaning of tank, inlets, outlets, gutters, roof drain filters and withdrawal devices (annually or as required). <p>Remedial actions:</p> <ul style="list-style-type: none"> Repair or overflow erosion damage or damage to tank and associated components (as required)
Attenuation tank	<p>Regular maintenance:</p> <ul style="list-style-type: none"> Remove litter and debris from inlets and outlets (monthly). Trimming any roots and surrounding grass blockages (as required). <p>Monitoring:</p> <ul style="list-style-type: none"> Inspect inlets, outlets and overflows for blockages (monthly or after a heavy storm). Inspect inlets and outlets for silt accumulation (half yearly). Inspect infiltration surfaces for compaction and ponding (monthly).

Client checklist

A drainage strategy has been recommended as suitable on the basis of the information provided. Prior to installation of the Site drainage system it is recommended that the client carries out the following checks to confirm the development proposals. GeoSmart would be able to support with any updates required to the drainage scheme, please contact us and we would be happy to provide you with a proposal to undertake the work.

Table 11. Potential SuDS limitations

Conditions in Non-Statutory Technical Standards (Defra, 2015), limitations to infiltration SuDS	Do these conditions arise at the Site?
Is the surface runoff greater than the rate at which water can infiltrate into the ground?	
Is there an unacceptable risk of ground instability?	
Is there an unacceptable risk of mobilising contaminants?	
Is there an unacceptable risk of pollution to groundwater?	
Is there an unacceptable risk of groundwater flooding?	
Is the infiltration system going to create a high risk of groundwater leakage to the combined sewer?	

Table 12. SuDS design considerations

Confirm that potential flooding on-Site in excess of the design storm event and exceedance flow routes have been considered.	
Review options for the control of discharge rates (e.g. hydrobrake).	
Confirm the owners/adopters of the drainage system. Consider management options for multiple owners.	
Is there an unacceptable risk of pollution to groundwater?	
Review access and way leave requirements.	
Review maintenance requirements.	

Health and safety considerations for SuDS

GeoSmart reports may include outline strategies or designs to support with development plans. Any drawings or advice provided do not comprise any form of detailed design. Implementation of any conceptual scheme options may constitute 'Construction Work' as defined by CDM Regulations (2015).

The CDM Regulations place specific Health and Safety duties on those commissioning, planning and undertaking construction works. If you are uncertain what this means you should seek the advice of your architect, builder or other competent professional.

GeoSmart does not provide health and safety advisory services but we are required to advise you of your general responsibilities under CDM (visit <http://geosmartinfo.co.uk/knowledge-hub/cdm-2015/> for more information).

Please remember that detailed design work should be undertaken by a competent professional who might be your engineer, architect, builder or another competent party.

11 Methodology and limitations of study



This report assesses the feasibility of infiltration SuDS and alternative drainage strategies in support of the Site development process. From April 6th 2015 SuDS are regulated by Local Planning Authorities and will be required under law for major developments in all cases unless demonstrated to be inappropriate. What is considered appropriate in terms of costs and benefits by the Planning Authority will vary depending on local planning policy, and Site setting. The Lead Local Flood Authority will require information as a statutory consultee on major planning applications with surface water drainage implications. The National Planning Policy Framework requires that new developments in areas at risk of flooding should give priority to the use of SuDS and demonstrate that the proposed development does not increase flood risk downstream to third parties.

How was the suitability of SuDS estimated for the Site?

There are a range of SuDS options available to provide effective surface water management that intercept and store excess runoff. When considering these options, the destination of the runoff should be assessed using the order of preference outlined in the Building Regulations Part H document (HM Government, 2010) and Defra's National Standards for SuDS (2015):

1. Discharge to the ground;
2. Discharge to a surface water body;
3. Discharge to a surface water sewer;
4. Discharge to a local highway drain; and
5. Discharge to a combined sewer.

Data sets relating to each of the potential discharge options have been analysed to assess the feasibility of each option according to the hierarchy set out above. Hydrogeological characteristics for the Site are assessed in conjunction with the occurrence of SPZ's to assess infiltration suitability. The Site has been screened to determine whether flood risk from groundwater, surface water, fluvial or coastal sources may constrain SuDS. The distance to surface water bodies and sewers has been reviewed gauge whether these provide alternative options.

GeoSmart SuDS Infiltration Suitability Map (SD50)

The GeoSmart SuDS Infiltration Suitability Map (SD50) screens the suitability for infiltration drainage in different parts of the Site and indicates where further assessment is recommended. In producing the SuDS Infiltration Suitability Map (SD50), GeoSmart used data from the British Geological Survey on groundwater levels, geology and permeability to screen

for areas where infiltration SuDS may be suitable. The map classifies areas into 3 categories of High, Medium and Low suitability for infiltration SuDS. This can then be used in conjunction with additional data on Site constraints to give recommendations for SuDS design and further investigation.

The primary constraint on infiltration potential is the minimum permeability of the underlying material and in some cases the range in permeability may be considerable, ranging down to low. The map classifies these areas as moderate infiltration suitability requiring further investigation. In cases where the thickness of the receiving permeable horizon is less than 1.5 meters then additional Site investigation is recommended. If the Site is at risk of groundwater flooding for up to the 1% annual occurrence the map classifies these areas as moderate infiltration suitability requiring further investigation.

The GeoSmart SuDS Infiltration Suitability Map (SD50) is a national screening tool for infiltration SuDS techniques but a Site specific assessment should be used before final detailed design is undertaken. Further information on the GeoSmart SuDS Infiltration Suitability Map (SD50) is available at geosmartinfo.co.uk

How is the suitability to discharge to sewers and watercourses calculated?

The suitability to discharge to discharge to sewers and watercourses has been calculated using the distance from the Site to both. For example, where the Site is within 50m of a surface water body. Discharge to surface water is potentially appropriate subject to land access arrangements and a feasibility assessment. Where the Site is within 50m of a sewer, discharge to sewer is potentially appropriate subject to land access arrangements and a feasibility assessment. The utility company should be contacted to agree connection feasibility and sewer capacity.

Further information relating to sewers available in the area can be found in Appendix C.

What is a Source Protection Zone?

The Environment Agency have defined Source Protection Zones (SPZs) for 2000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. The maps show three main zones (inner, outer and total catchment) and a fourth zone of special interest, which is occasionally applied. The zones are used to set up pollution prevention measures in areas which are at a higher risk. The shape and size of a zone depends on the condition of the ground, how the groundwater is removed, and other environmental factors. Inner zone (Zone 1) is defined as the 50 day travel time from any point below the water table to the source (minimum radius of 50 metres). Outer zone (Zone 2) is defined by a 400 day travel time. Total catchment (Zone 3) is defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source.

How was surface water runoff estimated from the Site?

In accordance with The SuDS Manual (C753) (CIRIA, 2015), the Greenfield runoff from the Site has been calculated using the IoH124 method and is assumed representative of the runoff generated on the undeveloped surfaces that are affected by the proposed development. The method used for calculating the runoff complies with the NPPF (MHCLG, 2021). For the impermeable surfaces, it has been assumed that 100% runoff will occur (calculations provided in Appendix B). Rainfall data is derived from the Flood Estimation Handbook (FEH), developed by NERC (2009). Only areas affected by the proposed development are considered in the flow and volume calculations. Permeable areas that remain unchanged are not included in the calculations as it is assumed these will not be actively drained and attenuated.

What is the peak discharge rate?

An estimation of peak runoff flow rate and volume is required to calculate infiltration, storage and discharge requirements. The peak discharge rate is the maximum flow rate at which surface water runoff leaves the Site during a particular storm event, without considering the impact of any mitigation such as storage, infiltration or flow control. Proposed discharge rates (with mitigation) should be no greater than existing rates for all corresponding storm events. If all drainage is to infiltration there will be no discharge off-Site. Discharging all flow from Site at the existing 1 in 100 event would increase flood risk during smaller events. Flow restriction is generally required to limit the final discharge from Site during all events as a basic minimum to the green field QBAR rate. A more complex flow restriction which varies the final discharge rate from the Site depending on the storm event will reduce the volume of storage required on-Site. Drainage to infiltration SuDS is subtracted from the total discharge off-Site to achieve a beneficial net affect.

What is the total discharge volume?

The total discharge volume is calculated on the basis of the surface water runoff that has the potential to leave the Site as a result of the assumed 6 hour duration design storm event. The runoff is related to the underlying soil conditions, impermeable cover, rainfall intensity and duration of the storm event. The total volume generated by the current Site is compared to the potential total volume from the developed Site (not taking into consideration any mitigation). The difference provides the minimum total volume that will need to be stored and infiltrated on-Site or released at a controlled rate. Guidance indicates that the total discharge volume should never exceed the runoff volume from the development Site prior to redevelopment for that event and should be as close as is reasonably practicable to the Greenfield runoff volume.

12 Background SuDS information



SuDS control surface water runoff close to where it falls. SuDS are designed to replicate, as closely as possible, the natural drainage from the Site before development to ensure that the flood risk downstream does not increase as a result of the Site being developed, and that the Site will have satisfactory drainage under current and likely future climatic conditions. SuDS provide opportunities to reduce the causes and impacts of flooding; remove pollutants from urban runoff at source; and combine water management with green space with benefits for amenity, recreation and wildlife. Government planning policy and planning decisions now include a presumption in favour of SuDS being used for all development Sites, unless they can be shown to be inappropriate.

For general information on SuDS see our website: <http://geosmartinfo.co.uk/>

Infiltration SuDS

Government policy for England is to introduce sustainable drainage systems (SuDS) via conditions in planning approvals. Guidance indicates that capturing rainfall runoff on-Site and infiltrating it into the ground (infiltration SuDS) is the preferred method for managing surface water without increasing flood risk downstream.

The greatest benefit to general flood risk is if all runoff is infiltrated on-Site, however, this may not be feasible due to physical and economic constraints in which case infiltration may be considered as a part of an integrated drainage solution. The final design capacity for an infiltration SuDS system depends on the Site constraints and the requirements of the individual Planning Authority and the Lead Local Flood Authority.

The capacity of the ground to receive infiltration depends on the nature, thickness and permeability of the underlying material and the depth to the high groundwater table. The final proportion of the Site drained by infiltration will depend on topography, outfall levels and a suitable drainage gradient. It is important to note that, even if the whole Site cannot be drained by infiltration, the use of partial infiltration is encouraged, with the remainder of runoff discharged via other SuDS systems.

Types of infiltration SuDS

Infiltration components include infiltration trenches, soakaways, swales and infiltration basins without outlets, rain gardens and permeable pavements. These are used to capture surface water runoff and allow it to infiltrate (soak) and filter through to the subsoil layer, before returning it to the water table below.

An infiltration trench is usually filled with permeable granular material and is designed to promote infiltration of surface water to the ground. An infiltration basin is a dry basin or depression designed to promote infiltration of surface water runoff into the ground. Soakaways are the most common type of infiltration device in the UK where drainage is often connected to over-sized square or rectangular, rubble-filled voids sited beneath lawns.

According to the guidance in Building Research Establishment (BRE) Digest 365 (2016) a soakaway must be able to discharge 50% of the runoff generated during a 1 in 10 year storm event within 24 hours in readiness for subsequent storm flow. This is the basic threshold criteria for a soakaway design and the internal surface area of the proposed soakaway design options should be calculated on this basis by taking into account the soil infiltration rate for the Site.

Developers need to ensure their design takes account of the construction, operation and maintenance requirements of both surface and subsurface components, allowing for any machinery access required.

SuDS maintenance and adoption


Regular maintenance is essential to ensure effective operation of the soakaway(s) over the intended lifespan of the proposed development. A maintenance schedule for SuDS is required. Sewerage undertakers or Local Authorities may adopt SuDS and will require maintenance issues to be dealt with in accordance with their Management Plan. If the SuDS will not be adopted other provision is required with associated financial implications. Maintenance is a long-term obligation requiring the upkeep of all elements of the SuDS, including mechanical components (e.g. pumps), as well as inspections, regular maintenance and repair.

Additional background SuDS information can be found on our website: <http://geosmartinfo.co.uk/>

13 Further information



The following table includes a list of additional products by GeoSmart:

Additional GeoSmart Products			
✓	Additional assessment: FloodSmart Report		<p>The FloodSmart Report range provides clear and pragmatic advice regarding the nature and potential significance of flood hazards which may be present at a Site. Our consultants assess available data to determine the level of risk based on professional judgement and years of experience.</p> <p>Please contact info@geosmartinfo.co.uk for further information.</p>
	Additional assessment: EnviroSmart Report		<p>Provides a robust desk-based assessment of potential contaminated land issues, taking into account the regulatory perspective.</p> <p>Our EnviroSmart reports are designed to be the most cost effective solution for planning conditions. Each report is individually prepared by a highly experienced consultant conversant with Local Authority requirements.</p> <p>Ideal for pre-planning or for addressing planning conditions for small developments. Can also be used for land transactions.</p> <p>Please contact info@geosmartinfo.co.uk for further information.</p>

14 References and glossary



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Glossary

General terms

Attenuation	Reduction of peak flow and increased duration of a flow event.
Combined sewer	A sewer designed to carry foul sewage and surface water in the same pipe.
Detention basin	A vegetated depression, normally is dry except after storm events, constructed to store water temporarily to attenuate flows. May allow infiltration of water to the ground.
Evapotranspiration	The process by which the Earth's surface or soil loses moisture by evaporation of water and by uptake and then transpiration from plants.
FEH	Flood Estimation Handbook, produced by Centre for Ecology and Hydrology, Wallingford (formerly the Institute of Hydrology).
Filter drain or trench	A linear drain consisting of a trench filled with a permeable material, often with a perforated pipe in the base of the trench to assist drainage, to store and conduct water, but may also be designed to permit infiltration.
First flush	The initial runoff from a site or catchment following the start of a rainfall event. As runoff travels over a catchment it will collect or dissolve pollutants, and the "first flush" portion of the flow may be the most contaminated as a result. This is especially the case for intense storms and in small or more uniform catchments. In larger or more complex catchments pollution.
Flood plain	Land adjacent to a watercourse that would be subject to repeated flooding under natural conditions (see Environment Agency's Policy and practice for the protection of flood plains for a fuller definition).
Greenfield runoff	This is the surface water runoff regime from a site before development, or the existing site conditions for brownfield redevelopment sites.
Impermeable surface	An artificial non-porous surface that generates a surface water runoff after rainfall.
Permeability	A measure of the ease with which a fluid can flow through a porous medium. It depends on the physical properties of the medium, for example grain size, porosity and pore shape.

Runoff	Water flow over the ground surface to the drainage system. This occurs if the ground is impermeable, is saturated or if rainfall is particularly intense.
Sewerage undertaker	This is a collective term relating to the statutory undertaking of water companies that are responsible for sewerage and sewage disposal including surface water from roofs and yards of premises.
Soakaway	A subsurface structure into which surface water is conveyed to allow infiltration into the ground.
Treatment	Improving the quality of water by physical, chemical and/or biological means.

The terms included in this glossary have been taken from CIRIA (2015) guidance.

Data Sources

Aerial Photography	<p>Contains Ordnance Survey data © Crown copyright and database right 2022</p> <p>BlueSky copyright and database rights 2022</p>
Bedrock & Superficial Geology	<p>Contains British Geological Survey materials © NERC 2022</p> <p>Ordnance Survey data © Crown copyright and database right 2022</p>
Flood Risk (RoFRS/Pluvial/Surface Water Features/SPZ)	<p>Environment Agency copyright and database rights 2022</p> <p>Ordnance Survey data © Crown copyright and database right 2022</p>
Flood Risk (Groundwater) and SuDS infiltration suitability (SD50)	<p>GeoSmart, BGS & OS</p> <p>GW5 (v2.4) Map (GeoSmart, 2022)</p> <p>Contains British Geological Survey materials © NERC 2022</p> <p>Ordnance Survey data © Crown copyright and database right 2022</p>
Sewer Location	<p>Contains Ordnance Survey data © Crown copyright and database right 2022</p> <p>Contains STL Regulated Drainage and Water Search data 2022</p>
Topographic Data	<p>OS LiDAR/EA</p> <p>Contains Ordnance Survey data © Crown copyright and database right 2022</p> <p>Environment Agency copyright and database rights 2022</p>

15 Appendices



Appendix A



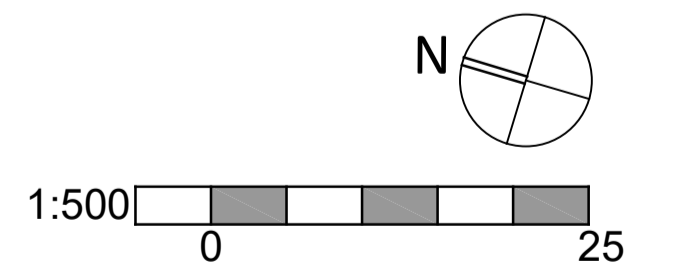
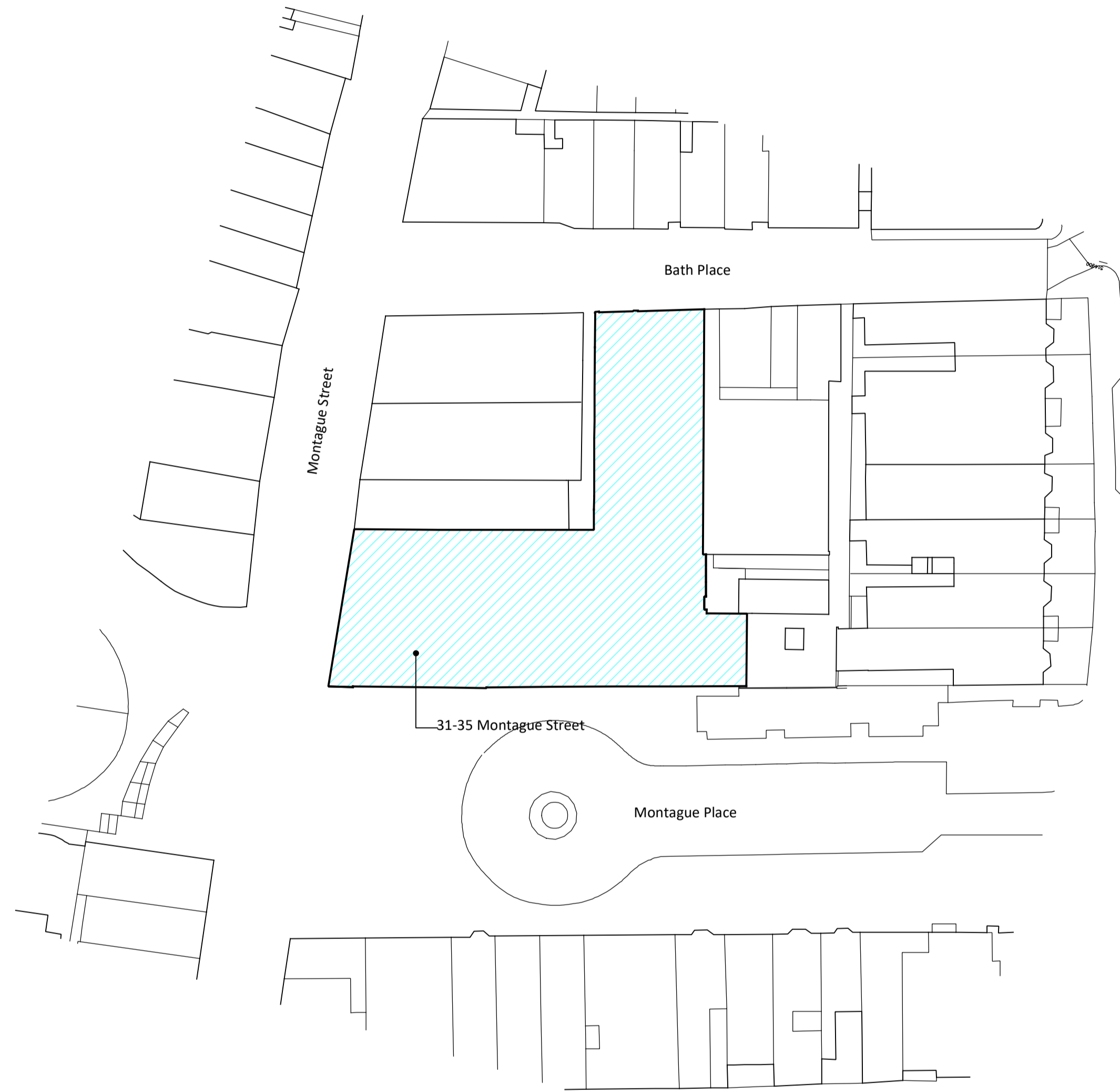
Site plans (layout and topography)

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Redevelopment of upper floors
31-35 Montague Street
As proposed block plan

DRAWING STATUS

Preliminary	<input type="checkbox"/>	Tender	<input type="checkbox"/>
For Approval	<input checked="" type="checkbox"/>	Construction	<input type="checkbox"/>
Information	<input type="checkbox"/>	As-Built	<input type="checkbox"/>

Revisions

Project	Redevelopment of upper floors
Client	Wothing Investments Ltd
Site	31-35 Montague Street
Title	As proposed block plan
Scale at A1	1:500
Date	Jul 20

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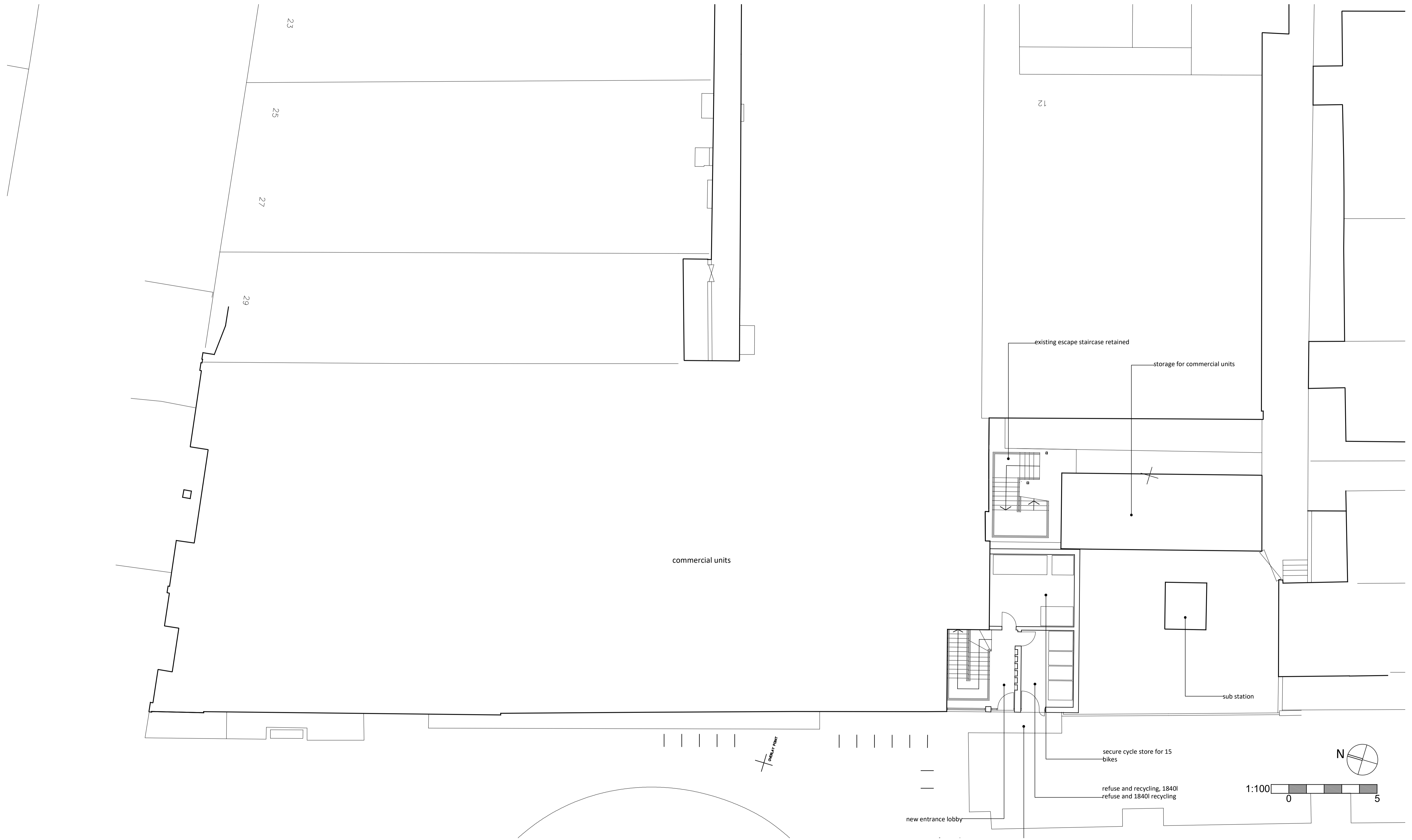
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Redevelopment of upper floors
31-35 Montague Street
As proposed ground floor/block plan

DRAWING STATUS

Preliminary
For Approval
Information

Tender
Construction
As-Built

Revisions

Project Redevelopment of upper floors
Client Wothing Investments Ltd
Site 31-35 Montague Street
Title As proposed ground floor/block plan
Scale at A1 1:100
Date Jan 2019

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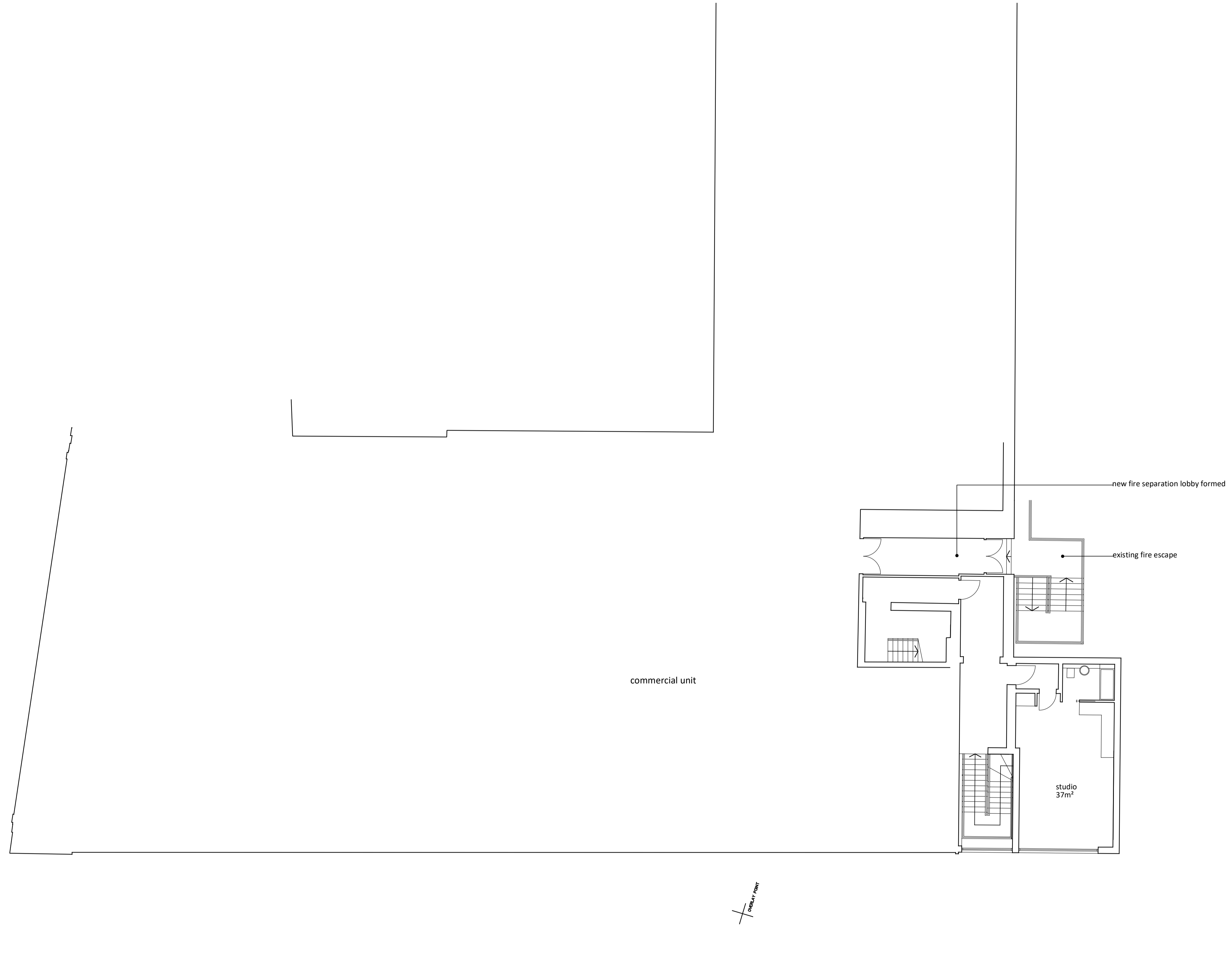
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Space Standards		
Flat no.	Type	GIA
1	studio	37m ²
2	1bed/2person	55m ²
3	2bed/4person	105m ²
4	2bed/4person	88m ²
5	2bed/4person	88m ²
6	3bed/6person	116m ²
7	1bed/2person	51m ²
8	1bed/2person	55m ²
9	1bed/2person	64m ²
10	2bed/4person	81m ²
11	2bed/4person	81m ²
12	2bed/4person	81m ²
13	2bed/4person	73m ²
14	1bed/2person	54m ²

Redevelopment of upper floors
31-35 Montague Street
As proposed first floor

DRAWING STATUS

Preliminary
For Approval
Information

Tender
Construction
As-Built

Revisions

Project

Redevelopment of upper floors
Client: Wothing Investments Ltd
Site: 31-35 Montague Street
Title: As proposed first floor
Scale at A1: 1:100
Date: Jan 2019

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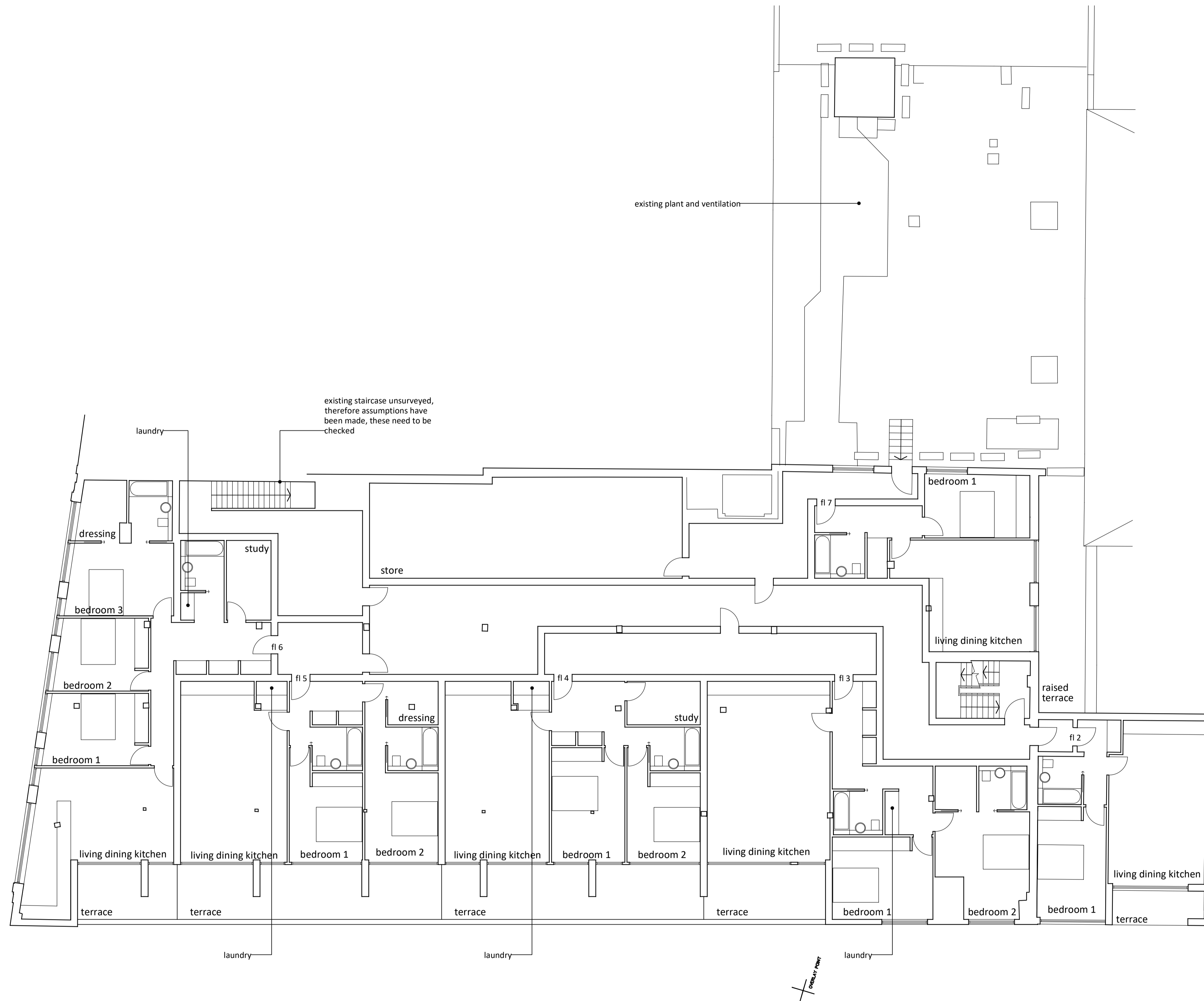
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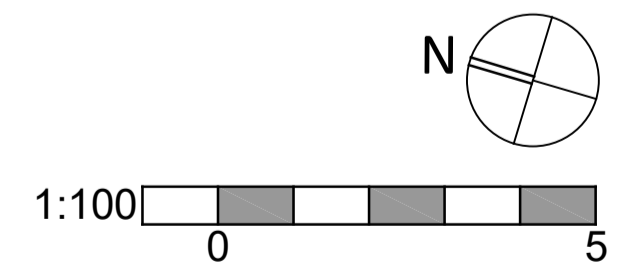
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Flat no.	Type	GIA
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3	2bed/4person	105m ²
4	2bed/4person	88m ²
5	2bed/4person	88m ²
6	3bed/6person	116m ²
7	1bed/2person	51m ²
8	1bed/2person	55m ²
9	1bed/2person	64m ²
10	2bed/4person	81m ²
11	2bed/4person	81m ²
12	2bed/4person	81m ²
13	2bed/4person	73m ²
14	1bed/2person	54m ²



Redevelopment of upper floors
31-35 Montague Street
As proposed second floor

DRAWING STATUS

Preliminary
For Approval
Information

Tender
Construction
As-Built

Revisions

Project

Redevelopment of upper floors
Client: Wothing Investments Ltd
Site: 31-35 Montague Street
Title: As proposed second floor
Scale at A1: 1:100
Date: Jan 2019

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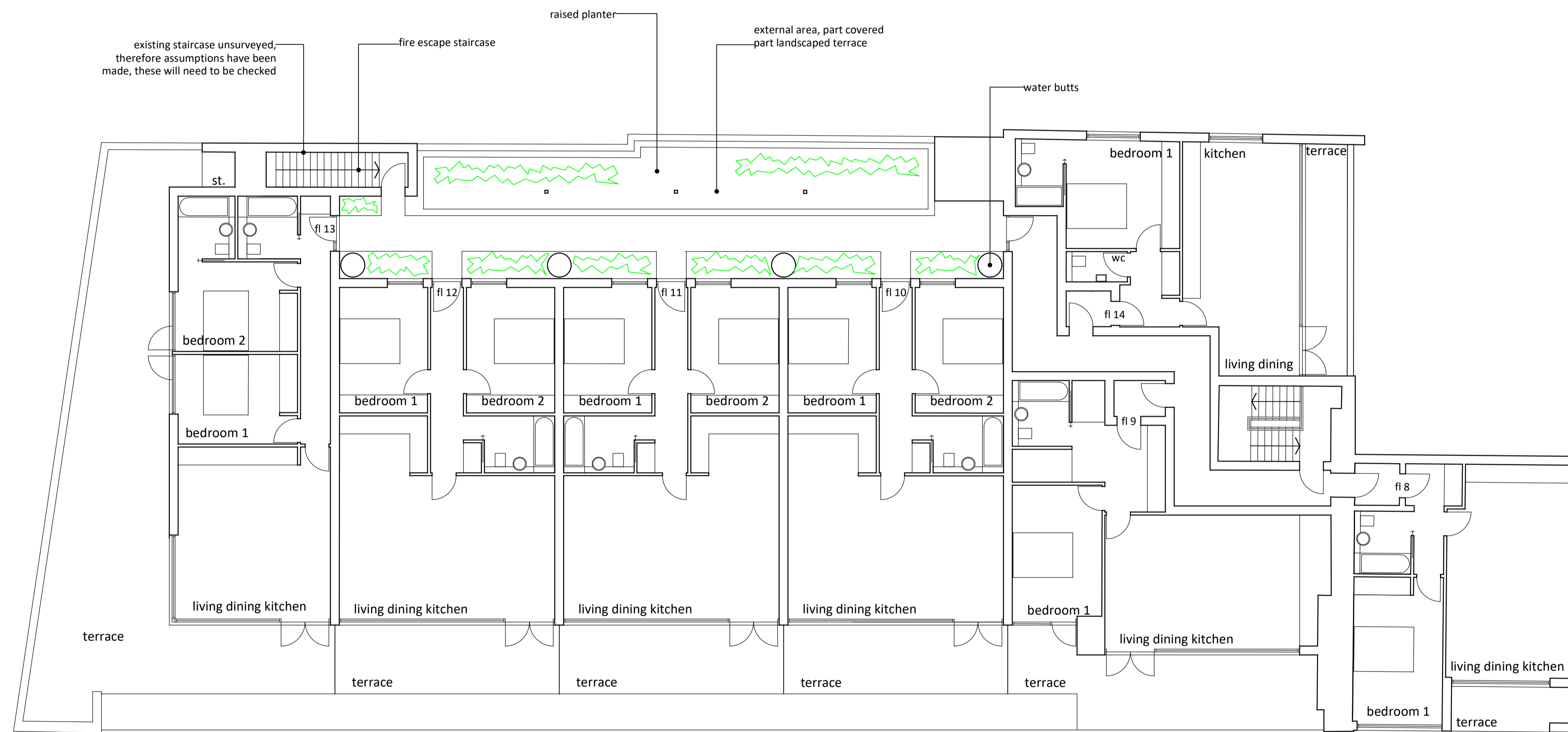
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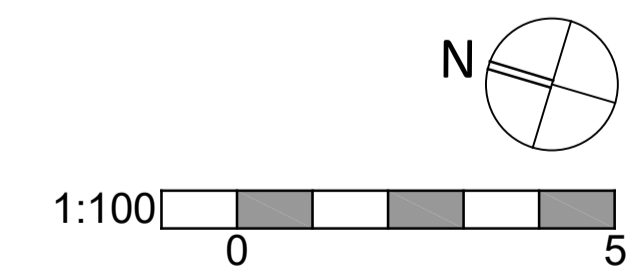
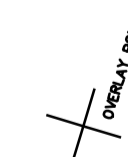
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Flat no.	Type	GIA
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6	3bed/6person	116m ²
7	1bed/2person	51m ²
8	1bed/2person	55m ²
9	1bed/2person	64m ²
10	2bed/4person	81m ²
11	2bed/4person	81m ²
12	2bed/4person	81m ²
13	2bed/4person	73m ²
14	1bed/2person	54m ²



Redevelopment of upper floors
31-35 Montague Street
As proposed third floor

DRAWING STATUS

Preliminary
For Approval
Information
Tender
Construction
As-Built

Revisions

Project Redevelopment of upper floors
Client Wothing Investments Ltd
Site 31-35 Montague Street
Title As proposed fourth floor
Scale at A1 1:100
Date Jan 2019

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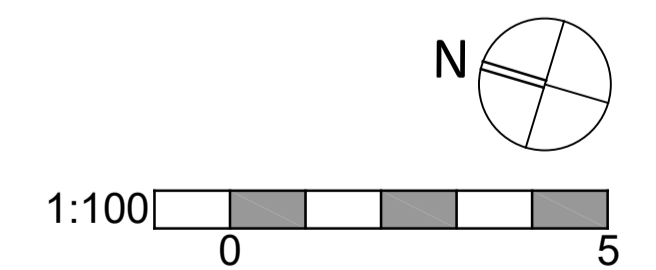
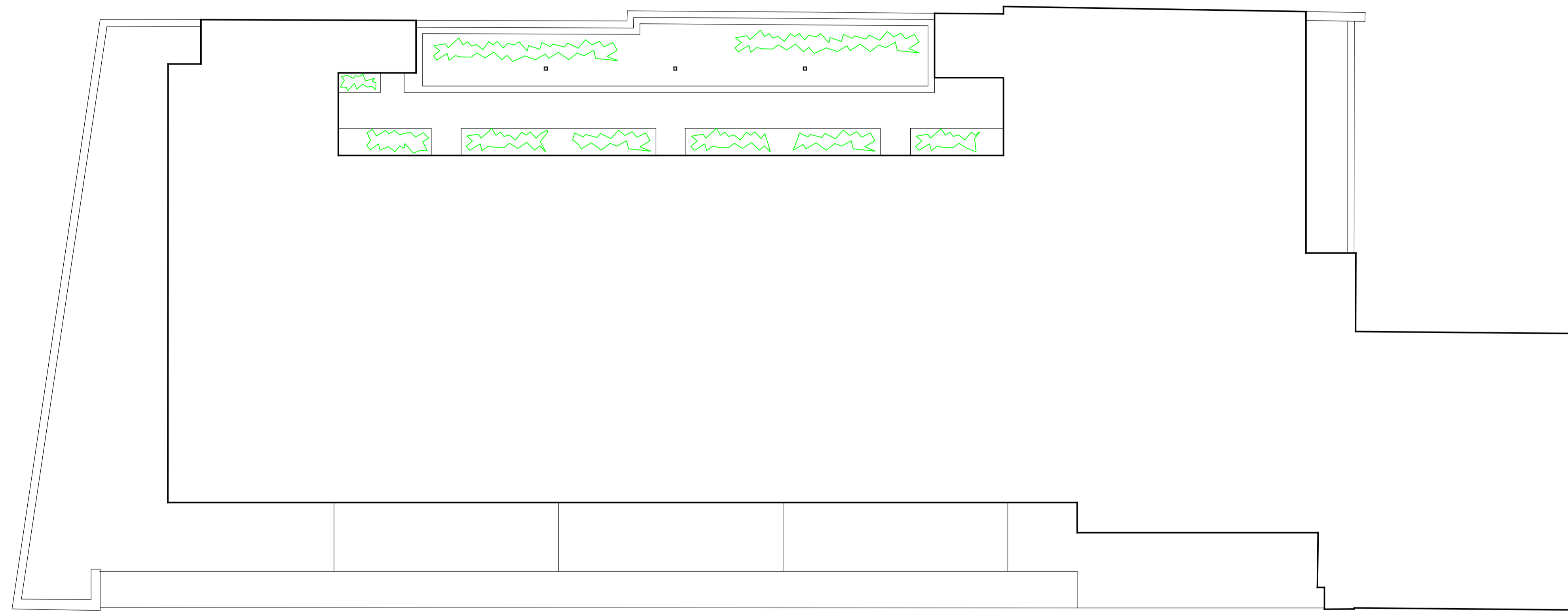
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Redevelopment of upper floors
31-35 Montague Street
As proposed roof plan

DRAWING STATUS

Preliminary
For Approval
Information

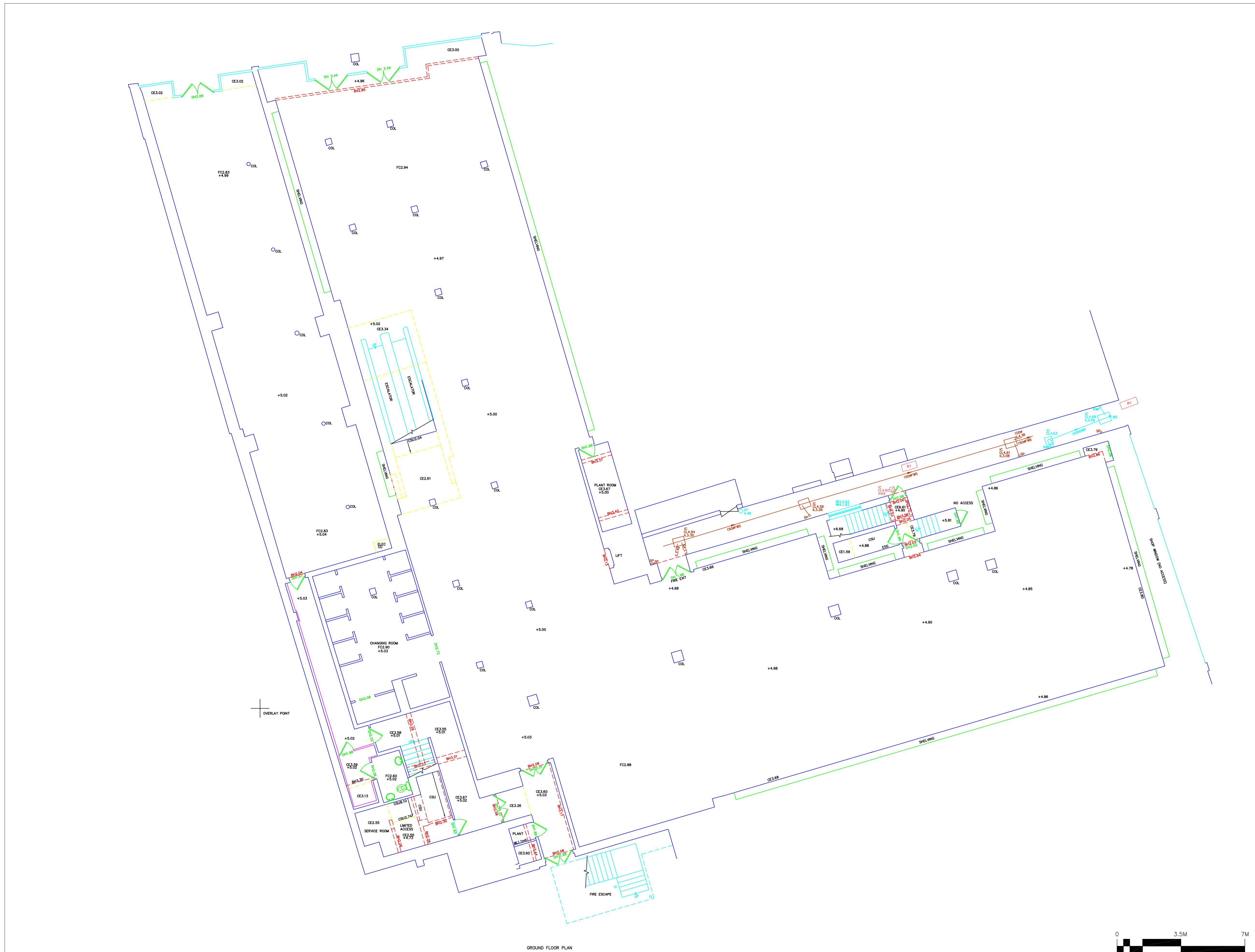
Tender
Construction
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Revisions

Project Redevelopment of upper floors
Client Wothing Investments Ltd
Site 31-35 Montague Street
Title As proposed roof floor
Scale at A1 1:100
Date Jul 20

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ABBREVIATIONS

ABH Arched Beam Height	KO Kerb Outlet
B Brick	L Light
BAL Balcony	LP Lamp Post
BB Battled Beacon	MH Manhole
BD Back Drop	MKR Marker
BH Beam Height	MSF Metal Security Fence
BL Bed Level	N/A No Access
BP Brick Pier	OHC Overhead Cables
BRW Brick Retaining Wall	P Post
BS Bus Stop	PALF Palisade Fence
BT British Telecom	PF Picket Fence
BW Brick Wall	PT Trail Pit
BWF Battled Wire Fence	PL Pavement Light
C Concrete	PM Parking Meter
CAB Cabinet	PRF Post & Rail Fence
CBF Close Boarded Fence	PWF Post & Wire Fence
CBW Concrete Block Wall	R Render
CIF Corrugated Iron Fence	RAD Radiator
CL Cover Level	RE Rodding Eye
CLF Chain Link Fence	RH Ridge Height
COL Column	RS Road Sign
CPF Concrete Panel Fence	RWP Rain Water Pipe
CPS Concrete Paving Slabs	S Stone
CRW Concrete Retaining Wall	SV Stop Valve
CSU Ceiling Slopes Up	SL Skylight
CTV Cable Television	SP Soil Pipe
CW Concrete Wall	SPS Stone Paving Slabs
CZY Crazy Paving	SRW Stone Retaining Wall
D Door	SW Stone Wall
DH Door Height	SWS Surface Water Sewer
EC Electricity Cover	TJ Top of Joist
ESG Electrical Switch Gear	T TILE
EH Eave Height	TB Telephone Box
EP Electricity Pole	TRW Timber Retaining Wall
FB Flower Bed	UJ Underside of Joist
FC False Ceiling	UR Underside of Ridge Board
F/E Fire Escape	UMP Underside of Wall Plate
FH Fire Hydrant	V Vent
FL Floor Level	VP Vent Pipe
GY Gully	W Window
GV Gas Valve	WL Water Level
HA Hatch	WM Water Meter
IC Inspection Cover	WMF Wire Mesh Fence
IL Invert Level	WPF Wooden Panel Fence
IRF Iron Rolling Fence	WCL Window Cill Height
IWF Interwoven Fence	WHL Window Head Height
	WRW Wooden Retaining Wall

Top	Floor to Ceiling Height
Bottom	Gate
Fences	Survey Station
Change in Surface	+10.60 Floor Level
Edge of Vegetation	Tree
OS Data	

NOTES

- ALL LEVELS SHOWN ARE RELATED TO ORDNANCE SURVEY GPS DATUM.
- ALTHOUGH CARE HAS BEEN TAKEN, DUE TO ACCESS LIMITATIONS ALL HIGH LEVEL DETAIL HAS BEEN SURVEYED REMOTELY AND NOT CHECKED BY PHYSICAL MEASUREMENTS.
- ALL CRITICAL MEASUREMENTS MUST BE CHECKED / VERIFIED.

A. DRAINAGE INFORMATION ADDED. 27/05/22

REVISIONS DATE

SCALE: 1:100@A1
 DATE: OCTOBER 2018
 DRAWN: JL / GR
 JOB No:

TITLE:
GROUND FLOOR PLAN

JOB:
MONTAGUE PLACE, WORTHING

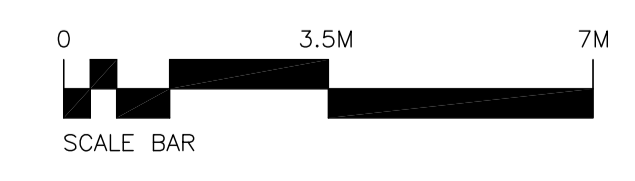
CLIENT:
WORTHING INVESTMENTS LTD.

DWG. No: **DAT / 9.2 A**



BRICKFIELD HOUSE
 HIGH ROAD
 THORNWOOD
 EPPING
 ESSEX
 CM16 6TH

T: 01992 566698
 M: 07977 112286
 M: 07977 111935



Appendix B



Rainfall runoff calculations

Design Settings

Rainfall Methodology	FEH-13	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)	0.600
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		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.025	5.00	4.900	20	514845.796	102424.678	0.750
2	0.031	5.00	4.900	20	514846.950	102427.089	0.750
3	0.000		4.900	20	514849.774	102424.256	0.825
4	0.005	5.00	4.900	20	514847.026	102412.251	0.750
5	0.036	5.00	4.900	20	514848.412	102411.807	0.750
6	0.000		4.900	20	514846.521	102408.283	0.825
7			4.900	20	514838.672	102405.700	1.450
8			4.900	600	514842.433	102402.648	1.550
9			4.600	450	514868.027	102430.123	0.990
9_OUT			4.600	20	514871.387	102430.999	1.040

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	1	3	4.000	0.600	4.150	4.075	0.075	53.3	150	5.05	50.0
2.000	2	3	4.000	0.600	4.150	4.075	0.075	53.3	150	5.05	50.0
1.001	3	7	21.624	0.600	4.075	3.725	0.350	61.8	150	5.33	50.0
3.000	4	6	4.000	0.600	4.150	4.075	0.075	53.3	150	5.05	50.0
4.000	5	6	3.999	0.600	4.150	4.075	0.075	53.3	150	5.05	50.0
3.001	6	7	8.263	0.600	4.075	3.725	0.350	23.6	150	5.11	50.0
1.002	7	8	4.844	0.600	3.450	3.350	0.100	48.4	150	5.39	50.0
1.003	8	9	37.549	0.600	3.810	3.610	0.200	187.7	150	6.24	50.0
1.004	9	9_OUT	3.472	0.600	3.610	3.560	0.050	69.4	150	6.29	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)
1.000	1.380	24.4	3.4	0.600	0.675	0.025	0.0
2.000	1.380	24.4	4.2	0.600	0.675	0.031	0.0
1.001	1.281	22.6	7.6	0.675	1.025	0.056	0.0
3.000	1.380	24.4	0.7	0.600	0.675	0.005	0.0
4.000	1.380	24.4	4.9	0.600	0.675	0.036	0.0
3.001	2.081	36.8	5.6	0.675	1.025	0.041	0.0
1.002	1.449	25.6	13.1	1.300	1.400	0.097	0.0
1.003	0.730	12.9	13.1	0.940	0.840	0.097	0.0
1.004	1.208	21.3	13.1	0.840	0.890	0.097	0.0

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Detailed	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Skip Steady State	✓	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

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

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

Node 1 Design Modifiers (Hydrograph)

Overrides Design Area	✓	Depression Storage Depth (mm)	10
Overrides Design Additional Inflow	x	Evapo-transpiration (mm/day)	1
Depression Storage Area (m ²)	250	Applies to All storms	

Node 4 Design Modifiers (Hydrograph)

Overrides Design Area	✓	Depression Storage Area (m ²)	50	Evapo-transpiration (mm/day)	1
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	10	Applies to All storms	

Node 8 Online Pump Control

Flap Valve	x	Invert Level (m)	3.350	Switch off depth (m)	0.000
Replaces Downstream Link	✓	Switch on depth (m)	0.001		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	19.600	6.000	19.600

Node 7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	3.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	46

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	28.0	0.0	0.800	28.0	0.0	0.801	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	1	1	4.150	0.000	0.0	0.0000	0.0000	OK
15 minute winter	2	10	4.194	0.044	4.5	0.0360	0.0000	OK
15 minute winter	3	10	4.120	0.045	4.5	0.0000	0.0000	OK
15 minute summer	4	1	4.150	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5	10	4.198	0.048	5.3	0.0458	0.0000	OK
15 minute winter	6	10	4.113	0.038	5.3	0.0000	0.0000	OK
15 minute winter	7	14	3.539	0.089	9.6	2.3602	0.0000	OK
60 minute summer	8	35	3.351	0.001	6.4	0.0003	0.0000	OK
15 minute summer	9	14	3.667	0.057	7.1	0.0091	0.0000	OK
15 minute summer	9_OUT	14	3.614	0.054	5.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	1	1.000	3	0.0	0.000	0.000	0.0085	
15 minute winter	2	2.000	3	4.5	1.036	0.184	0.0173	
15 minute winter	3	1.001	7	4.4	0.998	0.194	0.0952	
15 minute summer	4	3.000	6	0.0	0.000	0.000	0.0068	
15 minute winter	5	4.000	6	5.3	1.265	0.216	0.0167	
15 minute winter	6	3.001	7	5.2	1.477	0.142	0.0292	
15 minute winter	7	1.002	8	6.3	2.217	0.246	0.0263	
60 minute summer	8	Pump	9	6.2				
15 minute summer	9	1.004	9_OUT	5.9	0.996	0.277	0.0206	4.2

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	1	11	4.153	0.003	0.1	0.0000	0.0000	OK
15 minute winter	2	10	4.225	0.075	12.2	0.0621	0.0000	OK
15 minute winter	3	10	4.152	0.077	12.1	0.0000	0.0000	OK
15 minute summer	4	1	4.150	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5	10	4.232	0.082	14.2	0.0786	0.0000	OK
15 minute winter	6	10	4.139	0.064	14.1	0.0000	0.0000	OK
30 minute winter	7	27	3.818	0.368	20.7	9.7841	0.0000	SURCHARGED
180 minute winter	8	124	3.353	0.003	9.0	0.0008	0.0000	OK
60 minute winter	9	35	3.673	0.063	8.5	0.0100	0.0000	OK
60 minute winter	9_OUT	35	3.618	0.058	6.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	1	1.000	3	-0.1	-0.018	-0.003	0.0184	
15 minute winter	2	2.000	3	12.1	1.354	0.498	0.0359	
15 minute winter	3	1.001	7	11.8	1.304	0.523	0.1969	
15 minute summer	4	3.000	6	0.0	0.000	0.000	0.0139	
15 minute winter	5	4.000	6	14.1	1.658	0.579	0.0341	
15 minute winter	6	3.001	7	14.0	1.945	0.381	0.0596	
30 minute winter	7	1.002	8	9.9	2.249	0.385	0.0428	
180 minute winter	8	Pump	9	7.5				
60 minute winter	9	1.004	9_OUT	6.8	1.025	0.319	0.0231	20.6

Results for 100 year Critical Storm Duration. Lowest mass balance: 98.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	1	10	4.164	0.014	0.2	0.0000	0.0000	OK
15 minute winter	2	10	4.237	0.087	15.4	0.0718	0.0000	OK
15 minute winter	3	10	4.164	0.089	15.3	0.0000	0.0000	OK
15 minute summer	4	1	4.150	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5	10	4.245	0.095	17.9	0.0913	0.0000	OK
15 minute winter	6	10	4.149	0.074	17.8	0.0000	0.0000	OK
60 minute winter	7	46	3.949	0.499	18.1	13.2780	0.0000	SURCHARGED
240 minute summer	8	128	3.353	0.003	10.0	0.0008	0.0000	OK
180 minute summer	9	100	3.674	0.064	7.9	0.0102	0.0000	OK
180 minute summer	9_OUT	100	3.619	0.059	7.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	1	1.000	3	-0.2	-0.041	-0.008	0.0235	
15 minute winter	2	2.000	3	15.3	1.428	0.628	0.0429	
15 minute winter	3	1.001	7	15.0	1.379	0.661	0.2387	
15 minute summer	4	3.000	6	0.0	0.000	0.000	0.0166	
15 minute winter	5	4.000	6	17.8	1.749	0.731	0.0407	
15 minute winter	6	3.001	7	17.7	2.066	0.482	0.0863	
60 minute winter	7	1.002	8	9.9	2.288	0.386	0.0428	
240 minute summer	8	Pump	9	9.8				
180 minute summer	9	1.004	9_OUT	7.1	1.035	0.333	0.0238	32.4

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	1	50	4.252	0.102	2.8	0.0000	0.0000	OK
15 minute winter	2	10	4.261	0.111	21.6	0.0915	0.0000	OK
60 minute winter	3	54	4.243	0.168	11.7	0.0000	0.0000	SURCHARGED
60 minute winter	4	53	4.244	0.094	1.8	0.0000	0.0000	OK
15 minute winter	5	10	4.276	0.126	25.1	0.1207	0.0000	OK
60 minute winter	6	49	4.241	0.166	13.6	0.0000	0.0000	SURCHARGED
60 minute winter	7	53	4.237	0.787	25.3	20.9319	0.0000	SURCHARGED
30 minute summer	8	15	3.353	0.003	11.2	0.0008	0.0000	OK
360 minute summer	9	200	3.674	0.064	7.9	0.0102	0.0000	OK
360 minute summer	9_OUT	200	3.620	0.060	7.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
60 minute winter	1	1.000	3	-2.8	0.183	-0.115	0.0607	
15 minute winter	2	2.000	3	21.5	1.528	0.881	0.0565	
60 minute winter	3	1.001	7	11.7	1.274	0.517	0.3807	
60 minute winter	4	3.000	6	-1.8	0.161	-0.073	0.0584	
15 minute winter	5	4.000	6	24.9	1.837	1.021	0.0536	
60 minute winter	6	3.001	7	13.6	1.867	0.370	0.1455	
60 minute winter	7	1.002	8	11.6	2.364	0.454	0.0428	
30 minute summer	8	Pump	9	11.4				
360 minute summer	9	1.004	9_OUT	7.1	1.044	0.333	0.0237	51.1

Design Settings

Frequency of use (kDU)	0.50	Minimum Velocity (m/s)	0.75
Flow per dwelling per day (l/day)	4000	Connection Type	Level Soffits
Domestic Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.200
Industrial Flow (l/s/ha)	0.0	Preferred Cover Depth (m)	1.200
Additional Flow (%)	0	Include Intermediate Ground	✓

Nodes

Name	Units	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
1	98.0	4.940	Adoptable	514851.136	102425.394	1.630
2		4.560	Adoptable	514857.986	102427.476	1.300
3	15.0	4.610	Adoptable	514869.507	102430.856	1.530
4		4.700	Adoptable	514878.307	102433.554	1.750

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	1	2	7.159	1.500	3.310	3.260	0.050	143.2	150
1.001	2	3	12.007	1.500	3.260	3.080	0.180	66.7	150
1.002	3	4	9.204	1.500	3.080	2.950	0.130	70.8	150

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.501	0.731	12.9	4.9	1.480	1.150	0.000	0	98.0	0.0	64	0.681
1.001	0.654	1.073	19.0	4.9	1.150	1.380	0.000	0	98.0	0.0	52	0.902
1.002	0.650	1.042	18.4	5.3	1.380	1.600	0.000	0	113.0	0.0	55	0.901

Results for Foul Event Critical Storm Duration. Lowest mass balance: 98.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
Foul Event	1	16	4.332	1.022	4.9	1.1559	0.0000	SURCHARGED
Foul Event	2	16	4.334	1.074	4.9	1.2148	0.0000	FLOOD RISK
Foul Event	3	16	4.336	1.256	8.0	1.4203	0.0000	FLOOD RISK
Foul Event	4	16	4.337	1.387	4.5	1.5687	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
Foul Event	1	1.000	2	4.9	0.760	0.382	0.1260	
Foul Event	2	1.001	3	5.0	0.778	0.261	0.2114	
Foul Event	3	1.002	4	4.5	0.798	0.244	0.1620	0.0

Design Settings

Frequency of use (kDU)	0.50	Minimum Velocity (m/s)	0.75
Flow per dwelling per day (l/day)	4000	Connection Type	Level Soffits
Domestic Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.200
Industrial Flow (l/s/ha)	0.0	Preferred Cover Depth (m)	1.200
Additional Flow (%)	0	Include Intermediate Ground	✓

Nodes

Name	Units	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
5	28.0	4.900	Adoptable	514846.334	102408.233	1.300
6		4.800	Adoptable	514865.181	102413.614	1.691

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
2.000	5	6	19.600	1.500	3.600	3.109	0.491	39.9	100

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
2.000	0.678	1.055	8.3	2.6	1.200	1.591	0.000	0	28.0	0.0	39	0.932

Results for Foul Event Critical Storm Duration. Lowest mass balance: 91.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
Foul Event	5	16	4.199	0.599	2.6	0.6779	0.0000	SURCHARGED
Foul Event	6	16	4.209	1.100	2.8	1.2441	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
Foul Event	5	2.000	6	2.8	0.870	0.342	0.1534	0.0

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
RWP 1	0.056	5.00	4.800	1.300
RWP 1 out			4.800	1.469

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	RWP 1	RWP 1 out	10.000	0.600	3.500	3.331	0.169	59.2	100	5.17	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	1.003	7.9	7.6	1.200	1.369	0.056	0.0	79	1.141

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	RWP 1	10	3.585	0.085	8.2	0.0733	0.0000	OK
15 minute winter	RWP 1 out	10	3.420	0.089	8.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	RWP 1	1.000	RWP 1 out	8.1	1.139	1.023	0.0724	3.8

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	RWP 1	11	4.529	1.029	21.9	0.8872	0.0000	FLOOD RISK
15 minute summer	RWP 1 out	8	3.426	0.095	19.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	RWP 1	1.000	RWP 1 out	19.8	2.529	2.511	0.0775	10.1

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	RWP 1	11	4.800	1.300	26.5	1.2494	0.0000	FLOOD RISK
15 minute summer	RWP 1 out	8	3.426	0.095	23.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	RWP 1	1.000	RWP 1 out	23.2	2.970	2.950	0.0775	11.4

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
RWP 2	0.035	5.00	4.900	1.300
RWP 2 out			4.900	1.469

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	RWP 2	RWP 2 out	10.000	0.600	3.600	3.431	0.169	59.2	100	5.17	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	1.003	7.9	4.7	1.200	1.369	0.035	0.0	56	1.048

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

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

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

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	RWP 2	10	3.658	0.058	5.1	0.0314	0.0000	OK
15 minute winter	RWP 2 out	10	3.489	0.058	5.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	RWP 2	1.000	RWP 2 out	5.0	1.066	0.641	0.0473	2.4

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	RWP 2	11	4.001	0.401	13.8	0.2156	0.0000	SURCHARGED
15 minute summer	RWP 2 out	9	3.526	0.095	12.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	RWP 2	1.000	RWP 2 out	13.0	1.660	1.649	0.0775	6.4

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	RWP 2	11	4.254	0.654	17.4	0.3517	0.0000	SURCHARGED
15 minute summer	RWP 2 out	9	3.526	0.095	15.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	RWP 2	1.000	RWP 2 out	16.1	2.054	2.040	0.0775	8.0

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
RWP 2	0.051	5.00	4.900	1.300
RWP 2 out			4.900	1.469

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	RWP 2	RWP 2 out	10.000	0.600	3.600	3.431	0.169	59.2	100	5.17	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	1.003	7.9	6.9	1.200	1.369	0.051	0.0	73	1.131

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

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

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

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	RWP 2	10	3.677	0.077	7.5	0.0607	0.0000	OK
15 minute winter	RWP 2 out	10	3.508	0.077	7.4	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 winter	RWP 2	1.000	RWP 2 out	7.4	1.141	0.938	0.0648	3.4

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	RWP 2	11	4.466	0.866	20.1	0.6800	0.0000	SURCHARGED
15 minute summer	RWP 2 out	8	3.526	0.095	17.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	RWP 2	1.000	RWP 2 out	18.3	2.335	2.319	0.0775	9.3

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	RWP 2	11	4.900	1.300	25.4	1.0524	0.0000	FLOOD RISK
15 minute summer	RWP 2 out	8	3.526	0.095	21.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	RWP 2	1.000	RWP 2 out	22.4	2.863	2.843	0.0775	11.7

Design Settings

Rainfall Methodology	FEH-13	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)	0.600
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Simulation Settings

Rainfall Methodology	FEH-13	Skip Steady State	x	2 year (l/s)	0.2
Summer CV	0.750	Drain Down Time (mins)	240	30 year (l/s)	0.4
Winter CV	0.840	Additional Storage (m ³ /ha)	20.0	100 year (l/s)	0.6
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	x

Storm Durations

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

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.097	Betterment (%)	0
SAAR (mm)	695	QBar	0.6
Soil Index	5	Q 2 year (l/s)	0.5
SPR	0.53	Q 30 year (l/s)	1.2
Region	7	Q 100 year (l/s)	1.5
Growth Factor 2 year	0.88		

Design Settings

Rainfall Methodology	FEH-13	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)	0.600
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Simulation Settings

Rainfall Methodology	FEH-13	Skip Steady State	x	2 year (l/s)	0.2
Summer CV	0.750	Drain Down Time (mins)	240	30 year (l/s)	0.4
Winter CV	0.840	Additional Storage (m ³ /ha)	20.0	100 year (l/s)	0.6
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	x

Storm Durations

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

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.097	Betterment (%)	0
SAAR (mm)	695	QBar	0.6
Soil Index	5	Q 2 year (l/s)	0.5
SPR	0.53	Q 30 year (l/s)	1.2
Region	7	Q 100 year (l/s)	1.5
Growth Factor 2 year	0.88		

Appendix C



Wessex Water asset location plan

Disclaimer

This report has been prepared by GeoSmart in its professional capacity as soil, groundwater, flood risk and drainage specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client and is provided by GeoSmart solely for the internal use of its client.

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Further information

Information on confidence levels and ways to improve this report can be provided for any location on written request to info@geosmart.co.uk or via our website. Updates to our model are ongoing and additional information is being collated from several sources to improve the database and allow increased confidence in the findings. Further information on groundwater levels and flooding are being incorporated in the model to enable improved accuracy to be achieved in future versions of the map. Please contact us if you would like to join our User Group and help with feedback on infiltration SuDS and mapping suggestion.

Important consumer protection information

This search has been produced by GeoSmart Information Limited, Suite 9-11, 1st Floor, Old Bank Buildings, Bellstone, Shrewsbury, SY1 1HU.

Tel: 01743 298 100

Email: info@geosmartinfo.co.uk

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The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom.
- sets out minimum standards which firms compiling and selling search reports have to meet.
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals.
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.
- By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

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Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports.
- act with integrity and carry out work with due skill, care and diligence.
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- conduct business in an honest, fair and professional manner.
- handle complaints speedily and fairly.
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Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs contact details:

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk.

Please ask your search provider if you would like a copy of the search code

Complaints procedure

GeoSmart Information Limited is registered with the Property Codes Compliance Board as a subscriber to the Search Code. A key commitment under the Code is that firms will handle any complaints both speedily and fairly. If you want to make a complaint, we will:

- Acknowledge it within 5 working days of receipt.
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk.

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision. Complaints should be sent to:

Martin Lucass

Commercial Director

GeoSmart Information Limited

Suite 9-11, 1st Floor,

Old Bank Buildings,

Bellstone, Shrewsbury, SY1 1HU

Tel: 01743 298 100

martinlucass@geosmartinfo.co.uk

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