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TOWER STREET, HEYWOOD

DRAINAGE STRATEGY

Final Report for:

March 2024

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1.0 INTRODUCTION

1.1 *Overview*

1.1.1 Cora IHT have been instructed by Klash Properties to prepare a Flood Risk Assessment and Sustainable Drainage Strategy (SDS) to support proposals for a new residential development off Tower Street, Heywood. Figure 1.1 illustrates the site location.

1.1.2 This report presents the findings of a drainage strategy that has been carried out in accordance with the Bury, Rochdale and Oldham strategic flood risk assessment volume III – Level 2 SFRA and the Greater Manchester SFRA Update March 2019.

1.1.3 This SDS considers the management of surface water run-off and outlines the proposed sustainable drainage strategy.

1.1.4 Consideration must also be given to minimising the risk of pollution to controlled waters and the site conditions prior to, during and after development.

Figure 1.1: Site Location

2.0 SITE DESCRIPTION AND EXISTING CONDITIONS

2.1 Site Description

2.1.1 The site was previously occupied by The Heywood Public House with an identified impermeable area of 2,051m^2 (0.20 hectares). The site is located approximately 5.25km to the south west of Rochdale Centre and 4.64km to the east of Bury. National Grid reference 385201 , 410705 is located at the central point of the proposed site area with the nearest postcode is identified as OL10 3AA.

2.1.2 A proposed site layout plan produced by Creative Architecture is shown in **Appendix A**.

2.1.3 The previous site use of a public house currently benefits from an existing connection to the offsite United Utilities public sewer network, prior to detailed design a site specific CCTV survey should be completed to confirm suitability for reuse.

2.1.4 The presence of underground culverts is not anticipated, should the detailed CCTV survey identify their presence the exact routes are to be confirmed.

2.2 Proposed Future Use

2.2.1 A new residential development is to be introduced with off carriageway parking bays, shown in **Appendix A**.

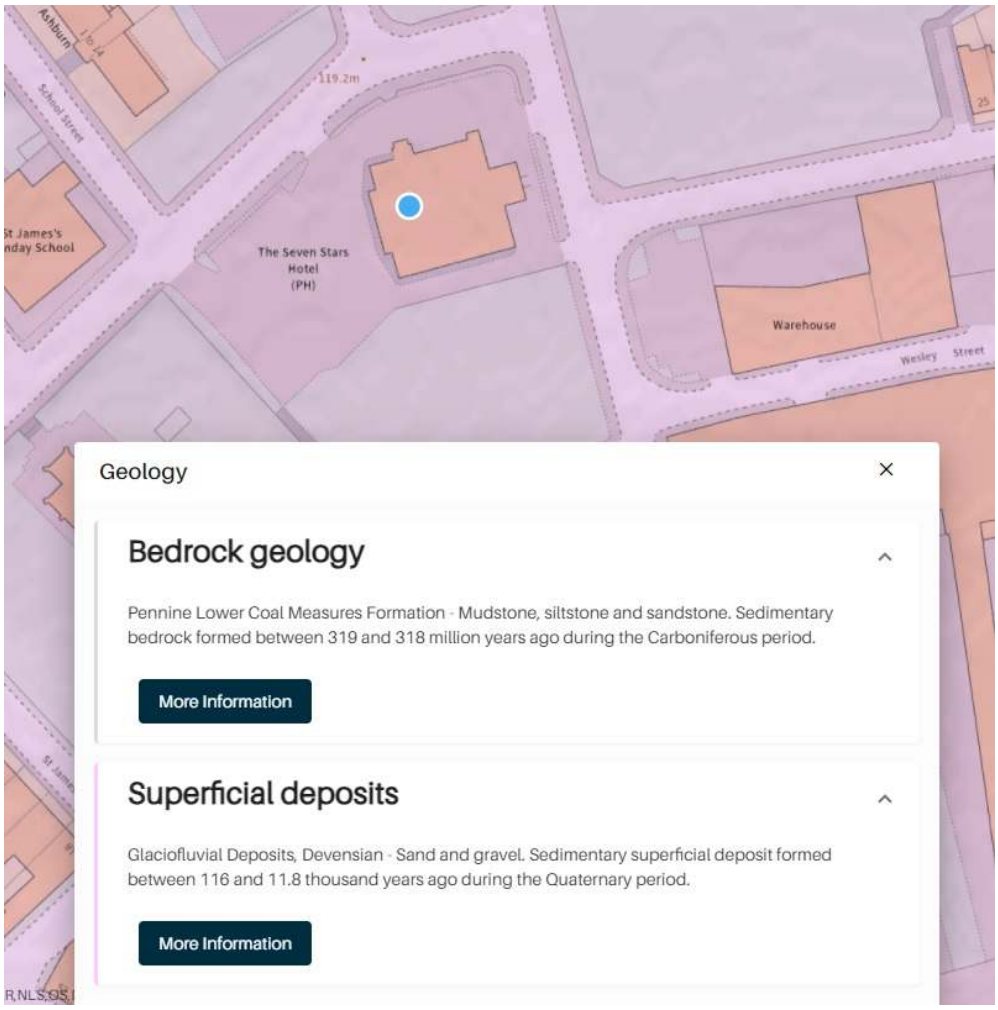
2.3 Site Levels

2.3.1 The site appears to be relatively flat with a nominal fall from east to west, the topographical survey is shown in **Appendix B**.

2.4 Underlying Ground

2.4.1 Review of the British Geological Survey (BGS) geology mapping records indicate the site would be underlain by Pennine Lower Coal Measures Formation - Mudstone, siltstone and sandstone. Sedimentary bedrock, with superficial deposits of Sand and Gravel Extract from the previous report is found below with the BGS information shown in **Figure 2.1** below.

Figure 2.1: BGS Information

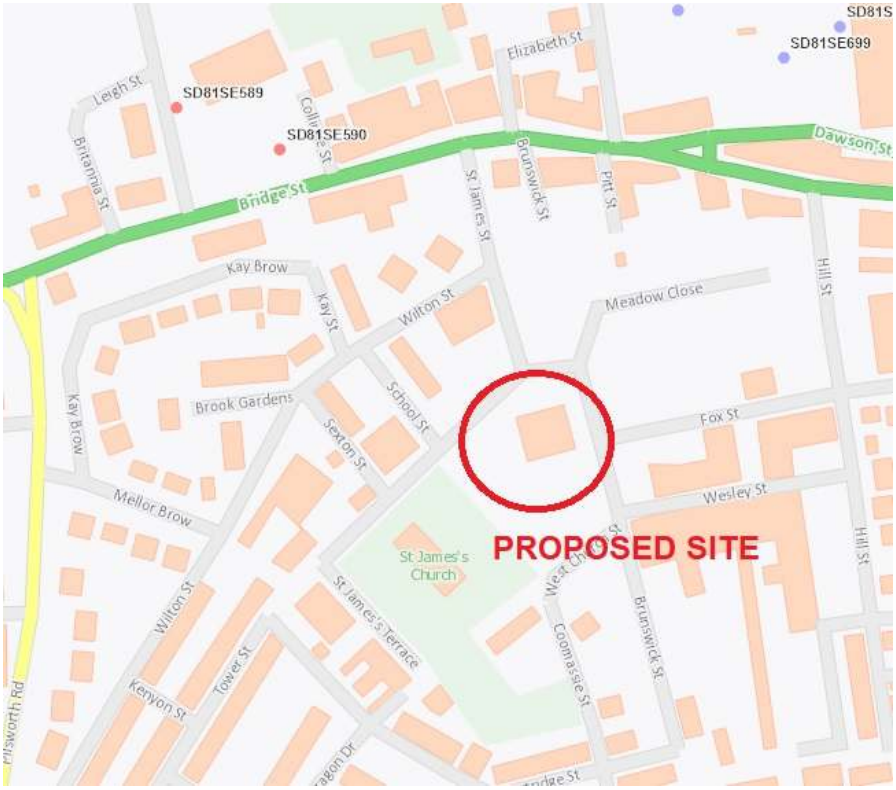


2.4.2 The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

- *Igneous rocks - are derived from molten magma in the Earth's crust. They may, for example, be extruded at the surface by volcanic activity to form lavas and tuffs (ash) or intruded into other rocks to form large masses of granite and gabbro at depth or minor, cross-cutting basalt dykes near the surface.*
- *Metamorphic rocks - such as schist and gneiss are those that have been changed from one rock type to another in the solid state by the recrystallisation of minerals, often at high temperatures and pressures when buried deep in the Earth's crust.*
- *Sedimentary rocks - are formed when grains and fragments of existing rocks are eroded away by ice, water and wind action, transported elsewhere and redeposited as a sediment. These sediments are often laid down in layers or strata of loose particles of gravel, sand, silt and clay. Over time they may be buried by later sediments and consolidated or cemented to form stratified or bedded rocks such as conglomerate, sandstone, siltstone and claystone. Other sedimentary rocks such as ironstone and limestone are created by chemical or biogenic (life) action.*

2.4.3 Following assessment of the British Geological Website, there are unfortunately no boreholes located within the immediate vicinity of the proposed site, with the nearest holes being located approximately 222m to the north west, although the associated logs would not be applicable to the proposed site, for reference we have included the log within **Appendix D**, the location plan is shown in **Figure 2.2** below.

Figure 2.2: BGS Borehole Locations



3.0 FLOOD RISK and FLOOD ZONES

3.1 Brief

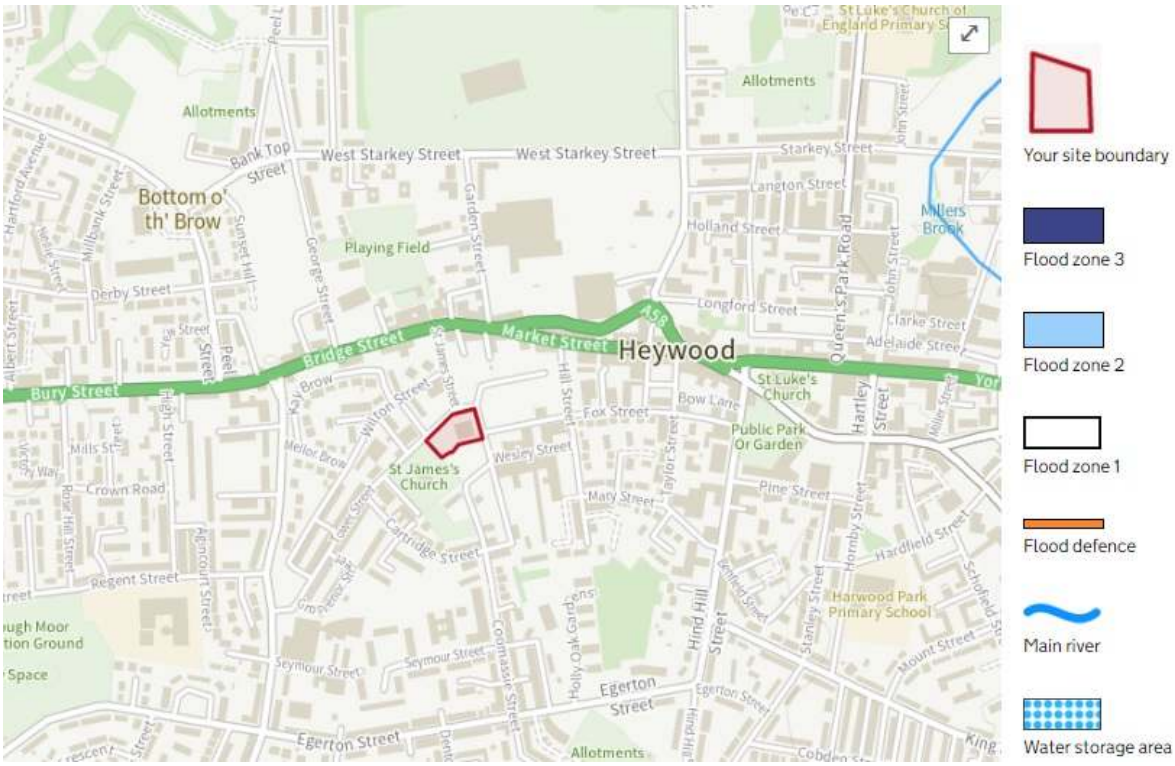
3.1.1 The vulnerability of the site to flooding from rivers, sea and other sources has been considered, along with the potential to increase flooding elsewhere through the addition of impermeable areas and the effect on surface water run-off. Typical sources of flooding include fluvial, tidal, surface water, groundwater, sewers and anthropogenic sources; these are considered below

3.2 Fluvial, Tidal

3.2.1 Flood maps are produced by the EA for the whole of the UK to highlight areas at particular risk of flooding by categorising them into different Zones. These maps are based on a broad assessment of areas using digital mapping techniques and extracts from the EA flood maps for the site and its surroundings are included in the figures below.

3.2.2 The EA flood map for planning shows river and sea flooding data only, extract in **Figure 3.1**, below full report provided in **Appendix C**, shows that the development area and its immediate surroundings are wholly located within EA Flood Zone 1 (unshaded areas).

Figure 3.1: Flood Map for Planning Extract



Zone 1 areas are defined in NPPF Table 1 as "land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%)" .

3.2.3 Annex 3 within the National Planning Policy Framework Technical Guidance (NPPF) indicates that the proposed development is designated as More Vulnerable see **Figure 3.2** below.

Figure 3.2 – Annex 3: Flood Risk Vulnerability Classification

More vulnerable

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

3.2.4 Table 2 within paragraph 079 of the Flood Risk and Coastal Change Guidance shown in **Figure 3.3** below, indicates that more vulnerable uses are acceptable within flood zone 1.

Figure 3.3: **Table 2 Flood Risk Vulnerability and Flood Zone 'Incompatibility'**

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

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

Key:

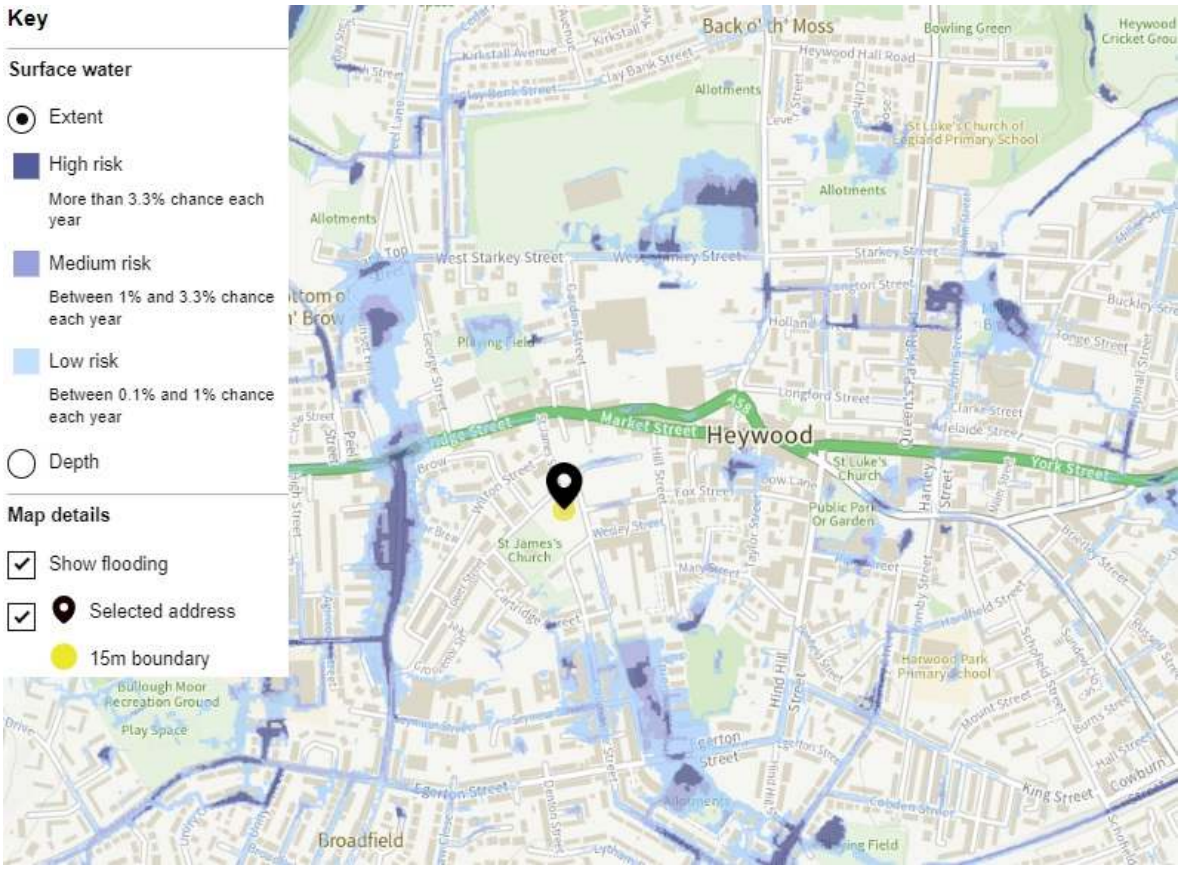
✔ Exception test is not required

X Development should not be permitted

3.3 Surface Water

3.3.1 The EA's surface water flood map shown in **Figures 3.4** below, identifies the surface water flood risk for the proposed site. The surface water flood zone for the site has been identified as being very low.

Figure 3.4 Surface Water flood Map – Extents



3.3.2 Surface water flooding occurs when rainwater does not drain away through normal drainage systems or soak into the ground but lies on or flows over the ground instead.

3.3.3 Post development the introduction of the proposed development will provide the opportunity for the introduction of more vegetated spaces which can be used to incorporate sustainable technologies that were not a requirement when the previous development was constructed.

3.3.4 Management of surface water is being considered as part of the development proposals and a preliminary drainage strategy is outlined within Section 6 of this strategy report.

3.4 Other Sources

3.4.1 The EA's other flood risks guidance shown in **Figures 3.5** identifies the potential extents of both reservoir and groundwater flooding. The extract below indicates that the site is not at risk from either flood source.

Figure 3.5 Reservoir flood Map – Extents

Other flood risks

Groundwater	Flooding from groundwater is unlikely in this area. ▼ What groundwater is and how we check an area's risk Groundwater is the water that is usually held in rocks and soil underground. Groundwater flooding happens when this water rises and flows above the surface. We use flood alert data to check the risk of flooding from groundwater.
Reservoirs	Flooding from reservoirs is unlikely in this area. ▼ What a reservoir is and how we check an area's risk A reservoir is a large natural or artificial lake that is designed to collect and store water. We use predicted scenarios to understand the risk of flooding from reservoirs. Flooding from reservoirs is extremely unlikely. An area is considered at risk if people's lives could be threatened in the event of a dam or reservoir failure.

3.5 Ground Water

3.5.1 Groundwater flooding typically results from heavy/prolonged rainfall causing the level of the groundwater table to rise, which may lead to emergence of groundwater at the surface or into underground features such as basements. Low lying areas of land with permeable underlying strata may be particularly susceptible.

3.5.2 Although current ground water levels under the proposed site are unknown the nearest borehole indicates water being struck at a depth of 17.7m.

4.0 SUMMARY

4.1.1 The site is considered to be at very low risk from all sources of flooding.

4.1.2 Minor instances of surface water flooding have been noted in the wider area, this is assumed to be linked to the unrestricted discharge from wider extents of impermeable area. As the proposed development will restrict the flows generated by the development using sustainable technologies surface water flooding should not preclude safe site development.

4.1.3 A preliminary drainage strategy is discussed in Section 6 which shows that post-development flood risks will not be increased due to the development plans.

4.1.4 Considering the above, overall flood risks to and from the site are considered to be very low.

5.0 MANAGING SURFACE WATER

5.1.1 In accordance with the NPPF and SFRA, consideration should be given to natural water flows at the site. The development should not adversely affect flow or increase flood risk elsewhere, including increasing run-off rates. The disposal of surface water should be dealt with in a sustainable way and climate change should also be accounted for. The site drainage strategy is discussed in Section 6.

5.2 Previous Situation and Development Proposals

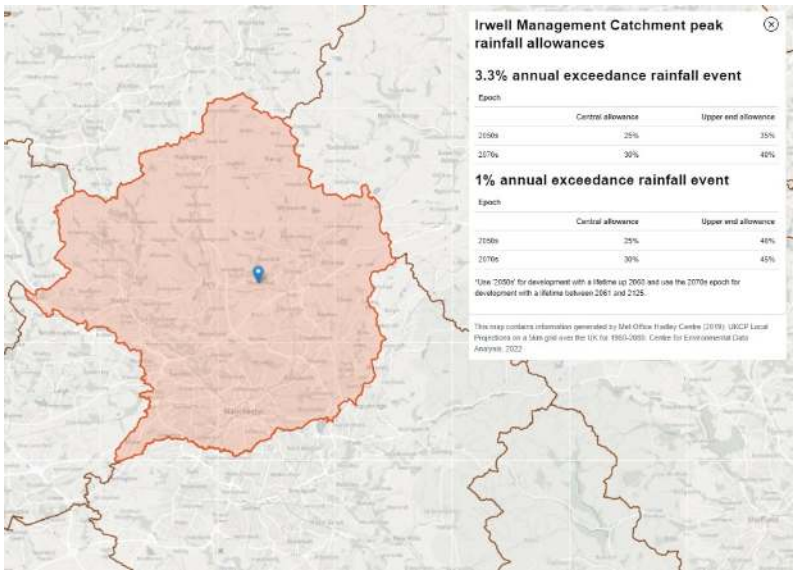
5.2.1 The site is currently occupied by the remnants of the Heywood Public House and is noted as being approximately 100% impermeable. The proposed development will introduce a number of additional opportunities for sustainable technologies and significantly increase the level of permeable area. Although the existing site appears to discharge unrestricted to the offsite adopted network, the proposed development proposes to reuse the existing connection at a significantly reduced rate of flow, once a comprehensive CCTV survey has been completed. The proposed drainage strategy is included in Section 6.

5.3 Climate Change

5.3.1 There is evidence to suggest that the climate is changing with sea levels predicted to continue to rise along with more frequent short-duration, high-intensity rainfall and more frequent periods of long-duration rainfall. The NPPF recommends that the effects of climate change be accounted for within any proposed drainage strategy or flood risk assessment (FRA), with consideration of the EA flood maps and local authority SFRA.

5.3.2 Increased rainfall or higher intensity short-duration rainfall may increase as a result of climate change. The .GOV website states that for the *Irwell Management Catchment* which includes upper end climate change allowances of 40% for the 1 in 30-year storm (3.3%) and 45% for the 1 in 100-year event (1%), are therefore being allowed for within the new surface water drainage design to take account of climate change as discussed in Section 6.

Figure 5.3 Climate Change Allowances



5.4 Sustainable Drainage Systems (SUDS)

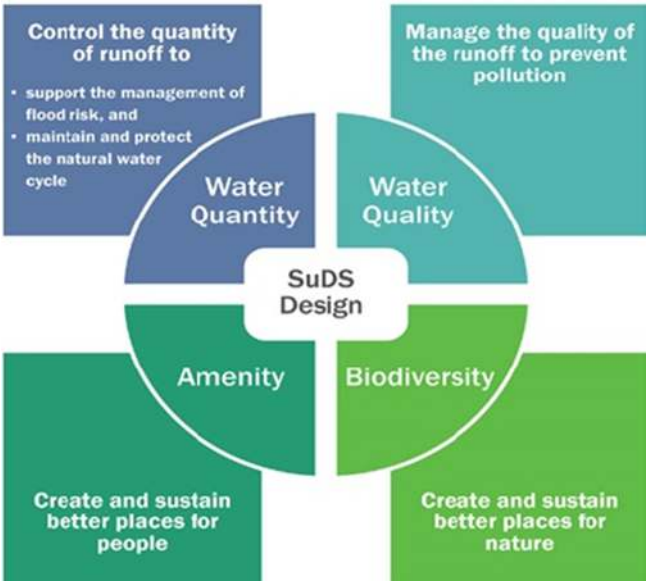
5.4.1 SUDS are a desirable way to manage surface water disposal within new developments and SUDS methods for surface water drainage management are discussed further within the SUDS Manual. When designing surface water drainage strategies priority should be given to disposal of surface water via infiltration drainage systems over (first) discharge to watercourses (second) prior to identifying a possible discharge to sewers.

SuDS hierarchy

- Into the ground (infiltration)
- To a surface water body (rivers, watercourses, lakes, ponds, canals etc.)
- Into a surface water sewer, highway drain, or another drainage system
- Into a combined sewer

5.4.2 Although the possibility for infiltration has not yet been established, the presence of clay within the nearest borehole could significantly reduce potential infiltration rates, as such although surface water flows will be provided with the opportunity to recharge the existing ground, infiltration will not be relied upon as a standalone discharge method discussed in Section 6.

Figure 5.4 Four Pillars of SuDS



5.4.3 The proposed development will address the above 4 pillars of SuDS design criteria with the inclusion of a range of sustainable features through a comprehensive treatment train.

- **Water Quantity** will be strictly controlled to Brownfield run off rates minus 50% reduction for the 1 in 100-year critical storm plus the upper end climate change allowance of 45%.

  Using Microdrainage hydraulic modelling software a 2 pipe network has been produced in line with industry good practice see **figure 5.5** below, which has identified the unrestricted flow from the predevelopment use to be 68.8 l/s for the 1 in 100 year 6 hour storm with an assumed pipe diameter based on the level of impermeable area of 225mm.

Figure 5.5 Brownfield Flow 2 Pipe Network

Page 1

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.259
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	MH1	15 Winter	100	+0%	100/15 Summer				118.356
1.001	MH2	15 Winter	100	+0%	30/15 Summer				118.263

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	MH1	0.061	0.000	0.67			34.8	SURCHARGED	
1.001	MH2	0.192	0.000	1.29			68.8	SURCHARGED	

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5.4.4 With the above in mind the proposed site will restrict surface water flows to a maximum of 34.4 l/s for the 1 in 100 year critical storm plus 45% allowance for climate change.

5.4.5 The 50% reduction in brownfield flows has been applied in line with the critical drainage areas policy shown in Table 4-3 (**Figure 5.6 below**) of the Greater Manchester SFRA Update March 2019

Figure 5.6 Table 4-3 Greater Manchester SFRA – Update March 2019

Authority	CDA Policy Brownfield sites	Greenfield sites	Other
Bolton	50% less than pre-development	No worse than existing	Policy applies on a borough-wide scale and not just to development within a CDA
Bury	50% less than pre-development	Current runoff up to 1 in 100 AEP event + climate change	Development should be designed so that there is no flooding to the development in a 1 in 30 AEP event and no property flooding in a 1 in 100 year plus climate change event
Manchester	50% less than pre-development	Current runoff up to 1 in 100 AEP event + climate change	FRAs required for all development over 0.5 ha in CDAs and to have regard to recommended runoff rates; development should be designed so that there is no flooding to the development in a 1 in 30 AEP event and no property

- **Water Quality** will be provided through the construction of a comprehensive treatment train across the site, including areas of permeable paving within the proposed driveways providing the opportunity for both attenuation and infiltration to take place, any flows remaining will be passed through a bioretention / rain garden area further cleaning and attenuating the proposed flows.

  The simple index approach tool has been used shown in **Appendix E**, the spreadsheets have bene included to confirm that the proposed treatment train is sufficient to achieve pollution mitigation indices for the selected SuDS components.

  The proposed treatment train has been deemed sufficient to achieve an acceptable level of water quality prior to discharge from the site.

- **Biodiversity** will be provided through the introduction of a bioretention / rain garden facility which when established will create a better environment for nature to thrive.

- **Amenity** The introduction of the rain garden areas presents the opportunity to create a visually attractive area within the proposed site, which can connect the residents to water. Such features have been shown to improve the well-being of people that take up residence on the proposed development.

5.4.6 Although infiltration will not be relied upon as single method of discharge in the proposed drainage methodology, all flows will be provided the opportunity to recharge the existing ground at the specified rate once further information is available post planning.

5.4.7 It is proposed to apply all the surface water flows generated by the development, at an attenuated rate via a new hydrobrake chamber constructed prior to communication to the existing network.

6.0 DRAINAGE STRATEGY

6.1 Surface Water Drainage Strategy

6.1.1 Following completion of the development with the inclusion of significant areas of vegetation and permeable surfacing within the parking bays, the level of post development impermeable area has been estimated to have been reduced to 0.1 hectares (1,064m^2)

6.1.2 The proposed site is currently classified as brownfield, and has previously been assumed to discharge into the offsite adopted network at an unrestricted rate. When existing drainage information is available the most accurate way to understand pre development discharge rates from the existing site, is to produce a hydraulic model usually referred to as a 2-pipe system.

6.1.3 The result of the above Brownfield calculation for a range of critical storm return periods is shown in **Figure 5.5** above, with the flow for the 1 in 100-year critical storm being established as **68.6 l/s**

6.1.4 With a 50% reduction to be applied to the pre development flow, the maximum flow from the site is to be 34.4 l/s for the 1 in 100 year critical storm plus 45% allowance for climate change.

6.1.5 Attenuation will be provided on the site to ensure that the calculated brownfield run off rate for the 1 in 100-year storm event plus a climate change allowance of 45% does not exceed more than 34.4 l/s.

6.1.6 It is proposed that the areas of permeable surfacing and Rain Gardens will act as inline storage structures for the flows generated by the all-external areas.

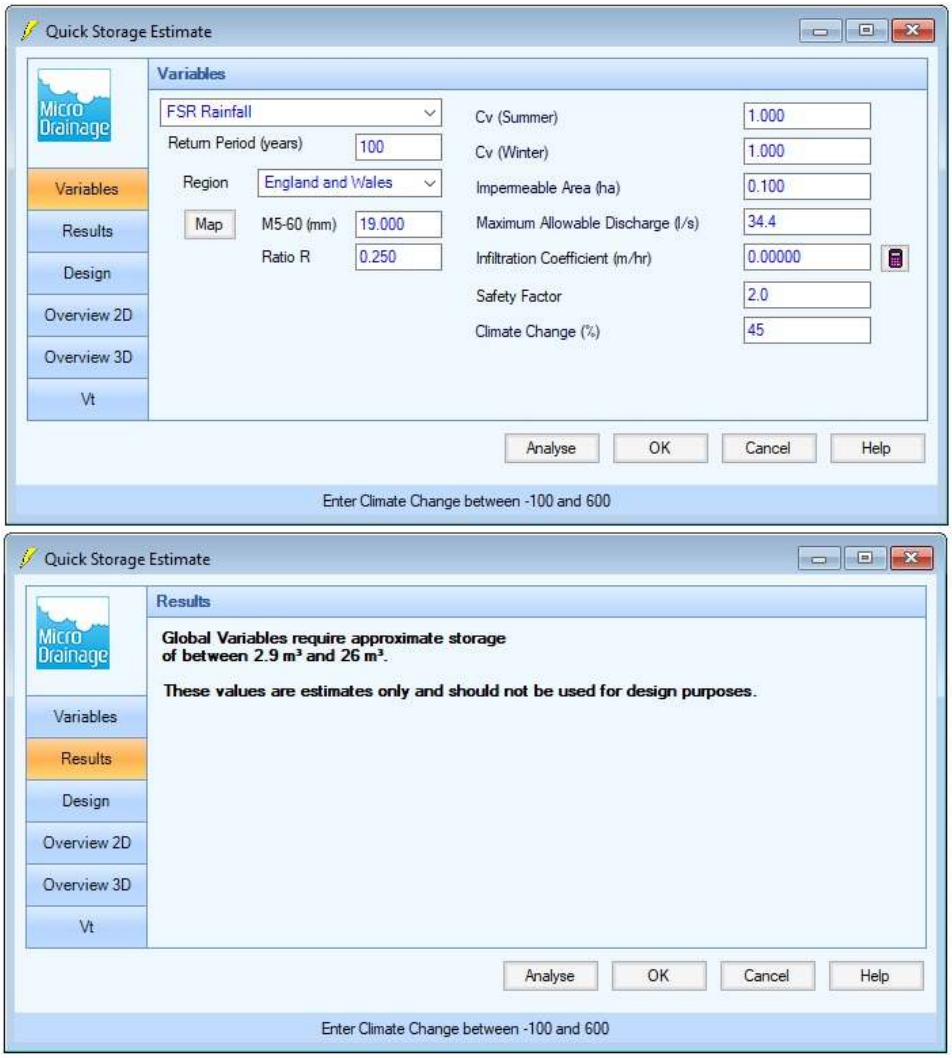
6.1.7 Microdrainage modelling software has been used to identify the necessary storage volumes inclusive of 45% allowance for climate change and a safety factor of 2 shown in **Figure 6.1** below

6.1.8 The maximum storage volume of 26m^3 will be applied to the indicative drainage arrangement shown in **Appendix F**

6.1.9 The permeable parking areas will provide an approximate volume of storage currently estimated as 75m^3 for an anticipated construction depth of 350mm with the rain garden area providing an additional volume of storage 33.6m^3 providing a total of 108.6m^3

6.1.10 The available void ratio throughout the SuDS treatment train is understood to be a maximum of only 35%, as such the actual available volume within the storage layers have been reduced to 38m^3 which is still in excess of the maximum estimated storage volume required.

Figure 6.1 - storage volume calculations



6.1.11 At detailed design stage, The site drainage network will be designed in accordance with current best practice to have sufficient capacity not to flood during the critical 1 in 30-year storm (plus 40% allowance for climate change) and also to constrain within the site the flood water generated for the critical 1 in 100-year storm event (plus 45% allowance for climate change). In this way the risk of off-site flooding, which could result in damage to other buildings and essential services, will be minimised and the risk of flooding elsewhere should not be increased as a result of the development proposals.

6.1.12 Using Sustainable drainage techniques it will be possible to avoid any exceedance occurring at the site for all storms up to and significantly beyond the 1 n 100-year storm plus 45% climate change allowance.

6.2 Foul Flows

6.2.1 Foul flows will be collected by a network of pipes and inspection chambers before communicating with the United Utilities public sewer network off site, potentially via the existing connection.

6.2.2 All pipes to be set with a minimum gradient of 1 in 80 to allow flexibility in pipe diameters in line with Table 6 of Building Regulations Part H.

7.0 Maintenance Strategy

7.1.1 SuDS components require good maintenance including inspections to identify performance issues and plan appropriate maintenance needs, checks on the operation and maintenance of the drainage system and landscape management. Therefore, it is intended that those responsible for the drainage within a development will be provided with an Operation and Maintenance Manual as part of the documentation provided under the Construction (Design and Management) regulations 2015 at the end of the construction works. Maintenance requirements that would be appropriate for this development, to be included in the document are outlined below.

7.1.2 All maintenance necessary will be undertaken, appointed and/or suitably managed by the developer.

7.1.3 The Drainage network and inherent SuDS have been designed with minimal maintenance in mind. The maintenance is generally of a 'common sense' approach and is to comprise:

7.1.4 Regular day to day care: - litter collection, grass cutting and checking the inlets and outlets where water enters or leaves a drainage feature.

7.1.5 Occasional tasks: - managing vegetation in wet areas (ponds, swales, etc.) and removing any silt that builds up in the drainage features.

7.1.6 Remedial work: -repairing damage when, and where, necessary.

7.1.7 Specific recommendations for each feature are provided in the following sections, and should be referred to in the first instance if there are any issues

Permeable Surfacing

7.1.8 The drainage scheme utilises permeable construction for the parking bays as in line storage structures, at the base of the stone build-up is a perforated pipe, which slowly collects the water and conveys it to the attenuation tank and Bioretention area, via a network of catchpit PPIC's and manholes.

Maintenance schedule	Required action	Frequency
Regular maintenance	Litter and debris removal from permeable surface and access	Monthly (or as required).
	Remove weeds within joints of any permeable paving.	Monthly (at start, then as required).
	Trimming of any roots that may be causing blockages.	Annual (6monthly for the first year).
Occasional maintenance	Removal of sediment from catchpit.	Six monthly (or following significant rainfall event).
Remedial actions	Inspect inlets, outlets and inspection points for blockages, clogging, standing water and structural damage.	Monthly.
	Clear perforated pipework of blockages.	As required.
	Replace geotextiles and clean and replace filter media, if clogging occurs.	As required.
Monitoring	Inspect inlets, surfaces and perforated pipework for silt accumulation. Establish appropriate silt removal frequencies.	6 monthly.

Piped System

7.1.9 All pipes will be laid to the specified falls and installed along with the manufacturers' instructions and recommended ancillaries

Regular maintenance	Clean catch pits and manholes and the associated pipes system to remove sediments and debris accumulated during the summer	Annually (6monthly for the first year).
Monitoring	Inspect catch pits and manholes for signs of silt build up within the piped system.	6 monthly

Manholes and PPICs

7.1.10 Manholes are typically sized in accordance with Sewers for Adoption, which relates to the incoming and outgoing pipe diameters. However, as the system is not Adopted, PPICs have been used where manufacturer's limitations permit. Typically PPICs can be used for depths up to 3m and for pipe diameters up to 150mm.

7.1.11 Personnel access into PPIC chambers is not possible, and therefore rodding/jetting should be carried out from ground level. This is generally accepted as good practice and in accordance with good health and safety procedures. Where larger manholes, which could accommodate man access, have been included maintenance should also take place from ground level. Man access should be resisted and only used as a last resort.

Maintenance schedule	Required action	Frequency
Occasional Maintenance and Monitoring	Covers should be lifted and inspected for litter and debris to ensure that the runs are free-flowing.	3 Monthly (or as required).

Flow Control Device

7.1.12 The surface water flow off site is limited to Greenfield run-off rate of no more than 34.4 l/s. The flow is limited by a Hydrobrake Optimum. This is a proprietary system and will be installed in line with the manufacturers written instructions. Operation and Maintenance guidance is provided within the manufacturers' standard documentation.

7.2 Rain Garden / Bioretention areas

7.2.1 The drainage scheme utilises permeable construction within parking bays which will provide surface water flows the opportunity to recharge the existing ground, although infiltration will be provided to minimise the opportunity for flooding during significant storm events a perforated pipe will be provided at the base of the stone build-up.

Maintenance schedule	Required action	Frequency
Regular maintenance	Litter and debris removal from planted areas.	Every 3 months
	Montor performance after heavy rain	Every 3 months
Occasional maintenance Every 6 Months	Litter and debris removal from permeable surface and access	Six monthly (or following significant rainfall event).
	Inspection of inlets and outlets and for sediment in external chambers	
	Montor performance after heavy rain	
	Inspection of surface for settlement	
Remedial actions When Required	Full structure rehabilitation	As required
	Infiltration surface reconditioning	As required.

Appendix A

Proposed Site Plan

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- CHECK ALL DIMENSIONS ON SITE
- DRAWING TO BE READ IN CONJUNCTION WITH THE HEALTH AND SAFETY PLAN AND ALL RELEVANT RISK ASSESSMENTS

Schedule of Accommodation

6 No.	3b6p	Townhouse	135m²
5 No.	3b6p	Townhouse	135m²

Materials Key

- Grass
- Driveways - Tobermore Pedesta permeable block paving, colour dark grey
- Paving to front of houses - Tobermore Pedesta permeable block paving, colour light grey
- Rear paths and patios - Concrete flags, 600 x 600 x 50mm, colour grey
- 1000mm High brick wall with 600mm boarded fence on top
- 1000mm High brick wall
- Hedging to front driveways
- 1800mm High timber close boarded fence
- Proposed Trees

REV.	DATE	DRN.	CHKD.

PROJECT
Former Heywood Pub, Tower Steet, Heywood

CLIENT
Klash Properties Ltd

DRAWING
Proposed Site Plan

SCALE	SHEET SIZE	DRAWN	CHECKED	DATE
1 : 200	@ A1	AH	CA	04.09.23

CREATIVE **ARCHITECTURE**

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W: www.creativearchitectureltd.co.uk

JOB No	DRAWING No	REVISION
23-033	1004	

STATUS
Planning

1:5 1:50 1m 2 3 4 5 6 7m

1:1 1:100 1m 2 3 4 5 6 7 8 9 10 11 12 13 14 15

C:\Users\44778\CreativeArchitecture Dropbox\CreativeArchitecture Team Folder\2023\23-033 Former Heywood Pub, Tower Street\Drawings\planning\arch\a-site proposed.rvt

Appendix B

N

Site Notes:

Survey Legend:

Buildings	Fl	Flood light	IFL	Internal floor level
Canopy	Lp	Lamp post	THL	Threshold level
Hedge / Wall	Tp	Telegraph post	Sp	Sign post
Line marking	Ep	Electricity post	TH	Trafdrok
Centre line	Tl	Traffic light	BH	Bollard
Kerb line	Bus	Bus stop	ELC	Electric
Drop kerb	Sv	Stop valve	BT	Britten Telecom
Overhead Cable	St	Stop tap	CTBX	Control box
	Er	Earth rod	TT	Tactile
	Wm	Water meter	BP	Brick paved
	Gas	Gas valve	CPS	Concrete paving slab
	Av	Air valve	CVR	Cover
Mh Manhole	ICU	Unidentified Inspection	IC	Inspection chamber
IC Inspection Chamber	Wu	Wash out	RWall	Retaining wall
CVR Cover	Re	Rodding eye	U/IL	Unable to lift
CL Cover level	BB	Beleha beacon	100.000	Station and Name / Station Level
IL Invert level	CTV	Cable tv		
Phv Pipe invert	Mkr	Marker post		
Gy Gully	Gmkr	Gas marker post		
Bg Back gully	Sc	Scaffo		Tree / Bush / Sapling
Dp Down pipe	Bol	Bollard		Area of Vegetation
Fpav Pipe above ground	IB	Illuminated bollard	TCL	Tree canopy level
WL Water level	Bin	Rubbish bin	D	Tree Trunk Diameter
Ridge Ridge Level	Vp	Vent pipe	MS	Multi girth
Eaves Eaves Level	Grl	Ground light	MB	Multi Bole
Flat Flat Roof Level	Lline	Leftie line	Stump	Tree Stump
	Ldr	Ladder	TW	Top of Wall
	Sly	Stile	Trh	Top of Hedge
			TF	Top of Fence

Station	Easting (m)	Northing (m)	Level (m)
F1	385194.082	410664.974	119.590
F2	385169.254	410714.786	119.272
F3	385219.617	410741.858	119.190

Rev:	Date:	Description:	Surveyed:	Quality Ref:

FOSSE SURVEYING
Fosse Surveying Limited
The Old Vicarage, Market St, Castle Donington, DE74 2JB
Tel: 0116 2325169
Mobile: 07940 347244
Email: mail@fossesurveying.co.uk Website: www.fossesurveying.co.uk

Client: Creative Architecture

Project: Former Heywood Pub
Tower Street, Heywood
OL10 3AA

Title: Topographical Survey

Surveyed: LS | Date: 28/08/2023

Quality Ref: 2271 | Scale: 1:200@A0

Level Datum: OS GNSS | Grid: OS GNSS

Job No. 2271 | Rev.

Comments:
The survey has been orientated to the Ordnance Survey (OS) National Grid (OSGB36) via a GPS and the OS active network.
No Scale factor has been applied to the survey therefore the coordinates shown are arbitrary and not true OS which has a scale factor applied.
Trees are positioned accurately unless stated, Boles & Canopys are indicative unless otherwise stated where possible.
Some services may have been omitted due to dense vegetation, parked vehicles or site access issues.
All critical dimensions to be verified on site before design - construction takes place. All dimensions shown are in meters.
No liability will be taken for this drawing if passed onto a third party without written permission of Fosse Surveying.

Appendix C

Flood map for planning

Your reference	Location (easting/northing)
<Unspecified>	**385195/410699**

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger that 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

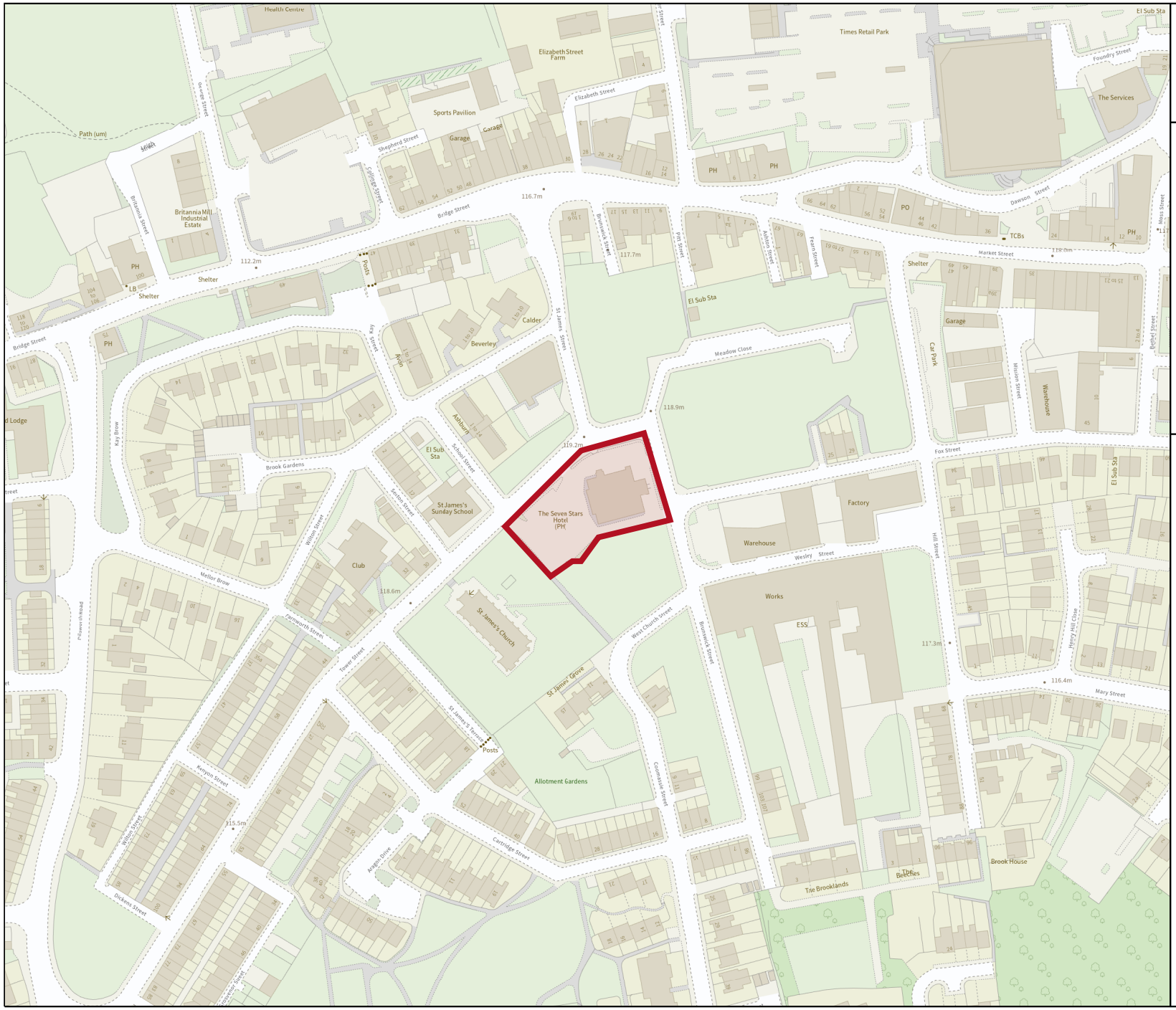
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. https://flood-map-for-planning.service.gov.uk/os-terms



Environment Agency

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
385195/410699

Scale
1:2500

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m

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Appendix D

British Geological Survey

BGS ID: 30316 : BGS Reference: SD81SE590
British National Grid (27700) : 385080,410840

SD 81 SE

⊙ Sited on 1:10k Bh map

Individual NGRs on Bh logs

Site OD ca + 118 m

REPORT NO. 6293

HORNBY STREET
HEYWOOD

34073

SD81SE

for

ANCHOR HOUSING ASSOCIATION
6th Floor
Station House
Stamford New Road
Altrincham
WA14 1EP

requested by

BRIAN MOOREHEAD AND PARTNERS
Consulting Engineers
Halecroft
253 Hale Road
Altrincham
Cheshire
WA15 8RE

compiled by

A. McKENNA
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STRATA SURVEYS LIMITED
Holmes Chapel Road
Middlewich
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CW10 0JB

Tel:0606-84-4637 Fax:0606-84-6657
14th February 1992

1992

Contact BGS: ngdc@bgs.ac.uk

SD 81SE 85081084 590

STRATA SURVEYS LIMITED

ROTARY OPEN HOLE RECORD SHEET

Location George Street-Bridge Street Heywood
Client: Lidl UK Properties GmbH Project Ref.:

Borehole No. RB
Sheet 1 of 2.

Job No.: 8297

Equipment and methods rotary open hole air flush
Casing Diameter (mm) 120
Casing Depth (m) 7.20

Drilled by GD
Ground level m AOD
Co-ordinates
Date 25/07/95

Casing Depth (m)	Water Depth (m)	Field Records	Depth (m) from	Depth (m) to	Description	Depth & Thickness (m)	Reduced Level (m AOD)	Strata Legend
		B 1	0.05	0.40	MADE GROUND (50mm of tarmac over ash brick and stone)	(0.40) 0.40		
		D 1	0.60	1.00	MADE GROUND (Blck clay)	(0.20) 0.60 (0.40) 1.00		
		D 2	1.00	3.10	Soft brown CLAY			
					Soft red brown CLAY	(1.50) 2.50		
		D 3	3.10	3.70	Firm brown sandy CLAY with gravel	(1.20) 3.70		
		D 4	3.70	4.45	Brown SAND	(0.75) 4.45		
		D 5	4.45	6.10	Dark brown SAND and GRAVEL	(1.35) 5.80		
		D 6	6.10	7.50	Grey weathered MUDSTONE	(1.90) 7.70		
		D 7	7.50	8.80	Grey MUDSTONE with sandstone bands	(0.55) 8.25		
		D 8	8.80	11.80	Grey MUDSTONE	(5.55) 13.80		
		D 9	11.80	14.80	Grey SANDSTONE	(0.20) 14.00		
					Grey MUDSTONE	(0.90) 14.90		
		D 10	14.80	17.80	Grey MUDSTONE with sandstone bands	(2.80) 17.70		
		D 11	17.80	20.80	Grey SANDSTONE with water	(0.30) 18.00		
					Grey MUDSTONE			
					(Continued.....)			

Remarks
1) Water inflow noted at 17.70m becoming steady inflow at 26.80m
2) 100kg bit weight during drilling with no voids or loss of flush

Logged by driller
Date 21/07
Checked by
Approved by
FIG No.

Scale 1:100

SD81SE 590

STRATA SURVEYS LIMITED

ROTARY OPEN HOLE RECORD SHEET

Location George Street-Bridge Street Heywood
Client: Lidl UK Properties GmbH Project Ref.:

Borehole No. RB
Sheet 2 of 2.

Job No.: 8297

Equipment and methods rotary open hole air flush
Casing Diameter (mm) 120
Casing Depth (m) 7.20

Drilled by GD
Ground level m AOD
Co-ordinates
Date 25/07/95

Casing Depth (m)	Water Depth (m)	Field Records	Depth (m) from	Depth (m) to	Description	Depth & Thickness (m)	Reduced Level (m AOD)	Strata Legend
					(....cont.)			
		D 12	20.80	23.80				
						(8.80)		
		D 13	23.80	25.40				
		D 14	25.40	26.80				
		D 15	26.80	29.80		26.80		
					Grey shaley MUDSTONE			
		D 16	29.80	32.80				
		D 17	32.80	35.80				
						(12.6)		
		D 18	35.80	39.40				
		D 19	39.40	40.00		39.40		
					Dark grey black SHALE	(0.60)		
		-(25/07)- W@	40.00	40.00		40.00		
					borehole complete			

Remarks

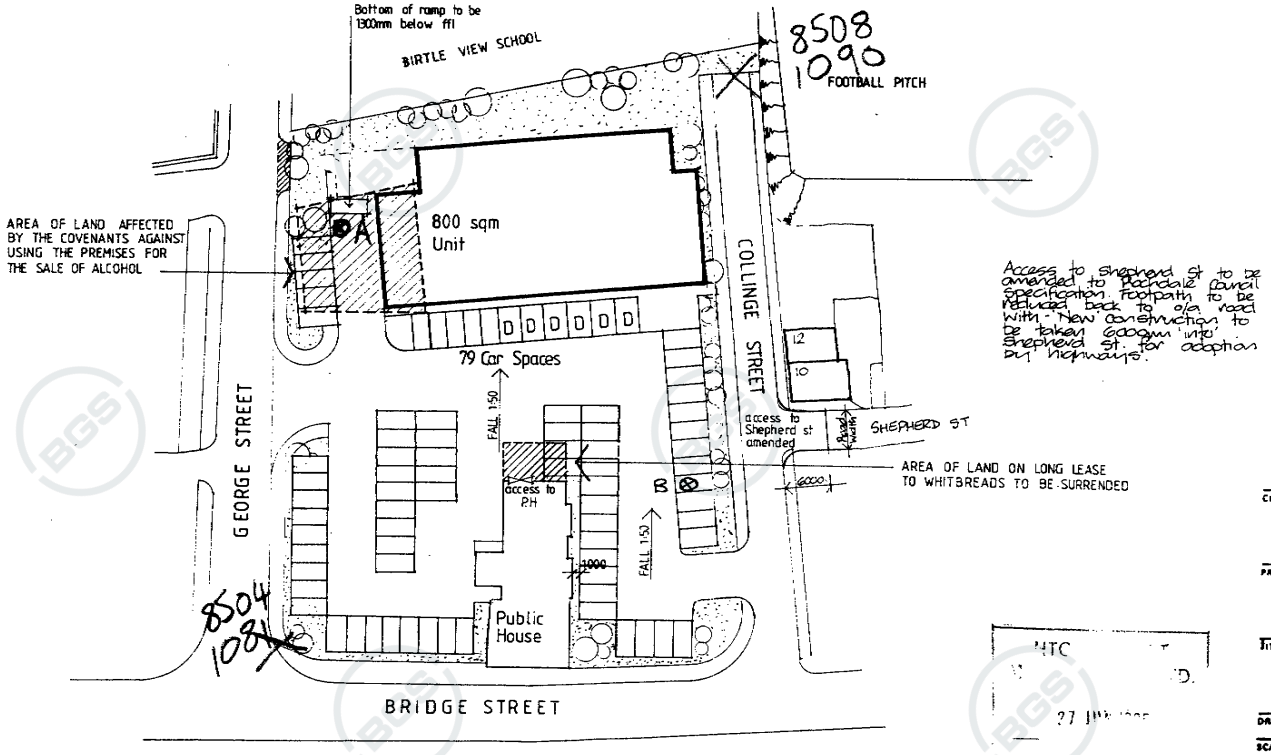
Logged by driller Date 24/07
Checked by
Approved by

Scale 1:100

FIG No.

⊗ Proposed Positions of 40m Drill Holes

8503 1086
8508 1084



Access to Shepherd St to be amended to Rochdale Council specification. Footpath to be reduced back to o/a road width - New construction to be taken 600mm into Shepherd St. for adoption by highways.

CLIENT
DRANSFIELD PROPERTIES LTD

PROJECT
BRIDGE STREET HEYWOOD

TITLE
SITE PLAN

DRAWN GW
SCALE 1:500
DATE MAR '95
NUMBER 95/013/01

w·c·e·c ARCHITECTS

SD81SE.
2
Nº 589/590

w·c·e·c ARCHITECTS

Appendix E

SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type	Residential roofing				
Pollution Hazard Level	Very low				
Pollution Hazard Indices					
TSS	0.2				
Metals	0.2				
Hydrocarbons	0.05				
SuDS components proposed					
Component 1	Pervious pavement (where the pavement is not designed as an infiltration component)	SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B			
Component 2	Bioretention system (where the system is not designed as an infiltration component)	SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B			
Component 3	None				
SuDS Pollution Mitigation Indices					
TSS	>0.95				
Metals	>0.95				
Hydrocarbons	>0.95				
Groundwater protection type	Bioretention component underlain by 300 mm minimum depth of soils with good contamination attenuation potential	All designs must include a minimum of 1 m unsaturated depth of subsoil or aquifer material between the infiltration surface and the maximum likely groundwater level. Infiltration components should always be preceded by upstream component(s) that trap(s) silt, or designed specifically to retain sediment in a separate lined zone, easily accessible for maintenance, such that the sediment will not be re-suspended in subsequent events	The underlying soils must provide good contaminant attenuation potential (eg as recommended in Sniffer 2008 (a) and (b) / Scott Wilson (2010) or other appropriate guidance). Alternative depth and soil combinations must provide equivalent protection to the underlying groundwater		
Groundwater protection Pollution Mitigation Indices					
TSS	0.8				
Metals	0.8				
Hydrocarbons	0.8				
Combined Pollution Mitigation Indices					
TSS	>0.95	Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England			
Metals	>0.95				
Hydrocarbons	>0.95				
Acceptability of Pollution Mitigation					
TSS	Sufficient				
Metals	Sufficient				
Hydrocarbons	Sufficient				

Appendix F

ALL COVER LEVELS INTERPOLATED FROM EXISTING TOPOGRAPHICAL SURVEY, INVERT LEVELS HAVE BEEN PROVIDED BASED ON INDICATIVE INFORMATION, BOTH LEVELS ARE TO BE CONFIRMED AT DETAILED DESIGN ONCE THE PROPOSED FFL LEVELS HAVE BEEN SET AND THE CCTV SURVEY HAS BEEN COMPLETED

PROPOSED RWP AND SVP LOCATIONS SHOWN INDICATIVELY

Tower Street

Brunswick Street

SPPIC1 CL 119.303 IL 118.853
SPPIC2 CL 119.638 IL 118.839
SPPIC3 CL 119.484 IL 118.825
SPPIC4 CL 119.535 IL 118.809
SPPIC5 CL 119.744 IL 118.673
SPPIC6 CL 119.748 IL 118.751
SPPIC7 CL 119.682 IL 118.838
SPPIC8 CL 119.625 IL 118.838
SPPIC9 Rain Garden CL 119.613 IL 118.589
SPPIC10 Rain Garden CL 119.651 IL 118.583
SPPIC11 CL 119.698 IL 118.550
SPPIC12 CL 119.729 IL 118.531
SPPIC13 CL 119.568 IL 118.517
SPPIC14 CL 119.715 IL 118.572
SPPIC15 CL 119.653 IL 118.659
SPPIC16 CL 119.561 IL 118.746
SPPIC17 CL 119.400 IL 118.623
SPPIC18 CL 119.496 IL 118.612
SPPIC19 CL 119.664 IL 118.596

FPPIC1 CL 119.632 IL 118.253
FPPIC2 CL 119.672 IL 118.302
FPPIC3 CL 119.617 IL 118.369
FPPIC4 CL 119.727 IL 118.500
FPPIC5 CL 119.705 IL 118.630
FPPIC6 CL 119.680 IL 118.738
FPPIC7 CL 119.677 IL 118.670
FPPIC8 CL 119.697 IL 118.589
FPPIC9 CL 119.669 IL 118.641
FPPIC10 CL 119.662 IL 118.707
FPPIC11 CL 119.584 IL 118.771
FPPIC12 CL 119.584 IL 118.480

150mmØ PIPE 16.240m LONG @ 1 in 120
150mmØ PIPE 10.074m LONG @ 1 in 120
150mmØ PIPE 10.133m LONG @ 1 in 120
150mmØ PIPE 9.082m LONG @ 1 in 120
150mmØ PIPE 10.463m LONG @ 1 in 120
150mmØ PIPE 14.288m LONG @ 1 in 80
150mmØ PIPE 14.873m LONG @ 1 in 120
150mmØ PIPE 8.759m LONG @ 1 in 80
150mmØ PIPE 10.462m LONG @ 1 in 120
150mmØ PIPE 10.462m LONG @ 1 in 120
150mmØ PIPE 9.794m LONG @ 1 in 750
150mmØ PIPE 12.431m LONG @ 1 in 750
150mmØ PIPE 8.779m LONG @ 1 in 750
150mmØ PERFORATED PIPE 11.351m LONG @ 1 in 750
150mmØ PERFORATED PIPE 10.442m LONG @ 1 in 750
150mmØ PERFORATED PIPE 10.401m LONG @ 1 in 750
150mmØ FIPE 10.452m LONG @ 1 in 80
150mmØ FIPE 10.530m LONG @ 1 in 80

Spot Levels And Observations Obtained Where Possible Due To Rubble

EXISTING OUTFALL (EXACT DEPTH TBC)
CL 119.540
SW IL 118.393
FW IL 118.233
SW INLET SET AT 150mm HIGHER THAN FOUL INVERT

KEY

- PROPOSED 150mmØ SURFACE WATER SEWER
- PROPOSED 150mmØ FOUL WATER SEWER
- PROPOSED PERFORATED PIPE WRAPPED IN PERMEABLE MEMBRANE
- NEW FOUL WATER INSPECTION CHAMBER 300mm DIAMETER
- NEW SURFACE WATER CATCHPIT INSPECTION CHAMBER 600mm DIAMETER
- PROPOSED AREAS OF PERMEABLE SURFACING
- PROPOSED AREAS OF BIO RETENTION AREA / RAIN GARDEN
- EXISTING CHAMBERS TO BE INVESTIGATED DURING CCTV SURVEY

Rev	Date	Revision Details	By	Chk	App
P1	Mar 24	FIRST ISSUE	GRE		

Cora iHt

Client: KLASH PROPERTIES LIMITED

Project: FORMER PUBLIC HOUSE, TOWER STREET, HEYWOOD

Title: PROPOSED DRAINAGE ARRANGEMENT SHEET 1 of 2

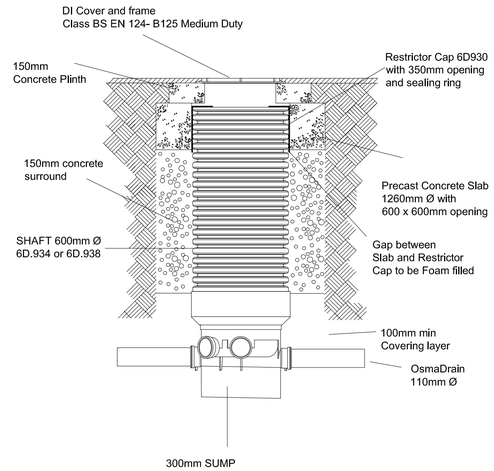
Drawing No. 16-2229-001 | Revision P1

Scale 1:100 @ A1 | Date MARCH 2024

Drawn GRE | Chk | App

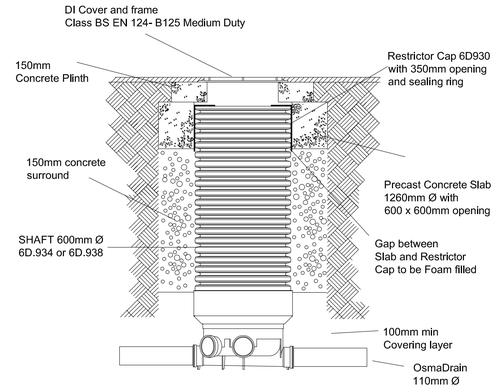
Common name	Scientific name	Habit	Sunlight and Aspect	Origin
Guelder rose	Viburnum opulus	Perennial shrub	Any	Native. Flowers attract insects and berries are eaten by birds.
Dogwood	Cornus sanguinea	Perennial shrub	Any	Native. Leaves are larval food for vase bearer moth and berries eaten by birds. Often planted for attractive winter stems.
Culvers root	Veronicastrum virginicum	Herbaceous perennial	Full sun or partial shade	Non-native. Tall with long terminal blue flower spikes. On the RHS 'plants for pollinators' list.
Aster	Aster spp.	Herbaceous perennial	Full sun or partial shade	Non-native. Often late flowering. Clump forming. Several species on the RHS 'plants for pollinators' list.
Black eyed susan	Rudbeckia birta	Herbaceous annual or biennial	Full sun or partial shade	Non-native. Spectacular yellow and black flowers. On RHS 'plants for pollinators' list.
Stinking hellebore	Helleborus foetidus	Herbaceous perennial	Full sun or partial shade	Native. Winter flowers.
Montbretia	Crocosmia spp.	Deciduous rhizomatous perennial	Partial shade	Naturalised. Red flowers. Thrives in most conditions.
Bugle	Ajuga reptans	Rhizomatous perennial	Partial shade	Native. Low growing and will form a mat.
Columbine	Aquilegia spp.	Herbaceous perennial	Full sun or partial shade	Non-native. Clump forming with tall flower spikes. On RHS 'plants for pollinators' list.
Inula	Inula hookeri	Herbaceous perennial	Partial shade	Tall clump forming with yellow flowers. On RHS 'plants for pollinators' list.
Hemp agrimony	Eupatorium cannabinum	Herbaceous perennial	Full sun or partial shade	Native. Sub-shrubs with pink flowers.
Bellflower	Campanula glomerata	Herbaceous perennial	Full sun or partial shade	Native. Clumps bearing violet-blue bell shaped flowers.
Sneezeweed	Helenium sp.	Herbaceous perennial	Full sun	Non-native. Clump forming with red flowers. On RHS 'plants for pollinators' list.
Lesser periwinkle	Vinca minor	Perennial sub-shrub	Any	Non-native. Ground cover with blue flowers.
Elephants ear	Bergenia sp.	Rhizomatous perennial	Full sun or partial shade	Non-native. Large leaves and pink flowers.
Plantain lilies	Hosta spp.	Herbaceous perennial	Part shade	Non-native. Attractive light coloured flowers.
Yellow flag	Iris pseudocorus	Rhizomatous perennial	Full sun or partial shade	Native. Likely to prefer wetter areas near inlet.
Siberian flag	Iris sibirica	Rhizomatous perennial	Full sun or partial shade	Non-native. Blue flowers. Prefers moist but well drained soil.
Garlic and onions	Allium spp.	Bulbous perennials	Full sun	Non-native. On RHS 'plants for pollinators' list.
Soft rush	Juncus effusus	Evergreen perennial	Full sun or partial shade	Native. Form tussocks – likely to prefer wetter areas.
Pendulous sedge	Carex pendula	Rhizomatous perennial	Full sun or partial shade	Native. Nodding flower spikes. Likely to prefer wetter areas near inlet.
Zebra grass	Miscanthis sinensis	Perennial, deciduous grass	Full sun	Non-native. Tussock forming ornamental grass with silky flowers.
Switch grass	Panicum virgatum	Deciduous perennial grass	Full sun	Non-native. Tussock forming ornamental grass.
Royal fern	Osmunda regalis	Deciduous fern	Any	Native. Large clump-forming plants.
Male fern	Dryopteris felix-mas	Deciduous or evergreen fern	Partial shade or full shade	Native. Large shuttlecock-like form.
	Broad buckler fern	Dryopteris dilatata	Deciduous or evergreen fern	Partial shade or full shade Native. Large shuttlecock-like form.

WATER COMPATIBLE PLANT SPECIES FOR BIO-RETENTION AREA



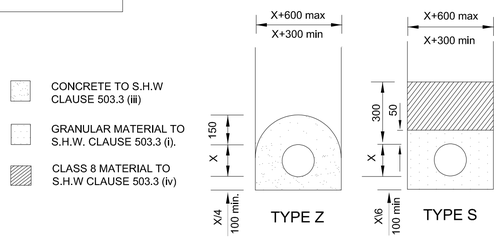
TYPICAL CATCHPIT CHAMBER DETAIL

non entry

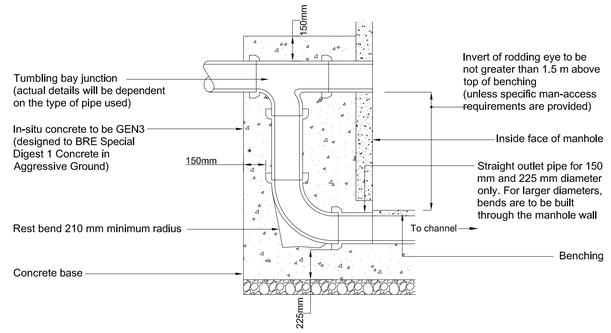


TYPICAL INSPECTION CHAMBER DETAIL

non entry



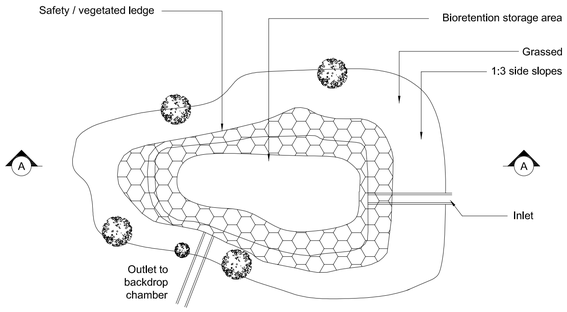
TYPICAL PIPE BED AND SURROUND DETAIL



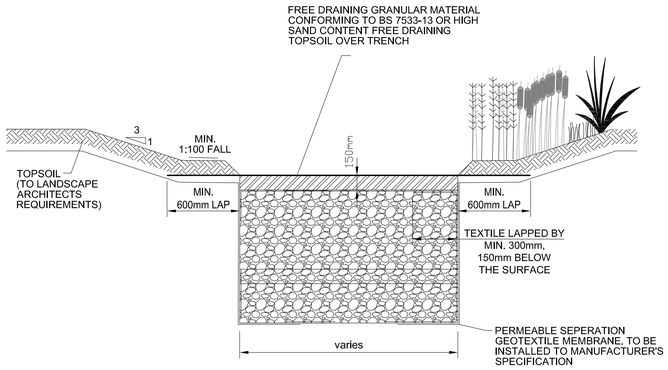
VERTICAL BACKDROP DETIAL

DRAINAGE NOTES

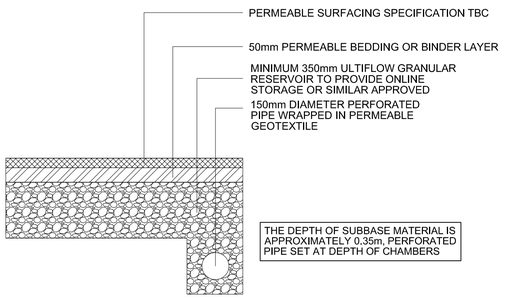
1. ALL NON ADOPTABLE DRAINS UP TO 150 Dia. TO BE 'POLYPIPE uPVC UNDERGROUND DRAIN' MANUFACTURED IN ACCORDANCE WITH BS EN 1401-1OR EQUAL APPROVED.
2. ALL NON ADOPTABLE DRAINS WITH A PIPE Dia of 225 or 300 TO BE EITHER A PLAIN WALLED PLASTIC PIPE TO BS 1401-1 (POLYSEWER) OR A STRUCTURED WALL PLASTIC PIPE TO WIS-04-35-01 'POLYSEWER'. OR EQUAL APPROVED
3. ALL ADOPTABLE DRAINS UP TO 300 Dia. TO BE 'POLYSEWER' BY 'POLYPIPE' AND MANUFACTURED IN ACCORDANCE WITH THE WATER INDUSTRY SPECIFICATION WIS-4-35-01.
4. DRAINAGE PIPEWORK 400mm to 600mm DIA TO BE 'RIDGIDRAIN' HDPE BY POLYPIPE OR EQUAL APPROVED.
5. ALL PIPE LENGTHS NOT TO EXCEED 3m.
6. DRAINS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. NEW INSPECTION CHAMBERS (IC) TO BE A MINIMUM OF 450MM DIA. EXCEPT FOR MINI ACCESS CHAMBERS WHICH MAY BE SMALLER, REFER TO M.H. SCHEDULE FOR ACTUAL SIZES.
8. ALL EXTERNAL RAINWATER PIPES (RWP) TO BE TERMINATED AT RODDABLE GULLIES. INTERNAL RWP's TO ARCHITECTS DETAILS BUT SHOULD ALLOW FOR RODDABLE ACCESS.
9. FOR ALL DRAINAGE ABOVE GROUND FLOOR SLAB INCLUDING SETTING OUT FOR PENETRATIONS THROUGH THE GROUND FLOOR SLAB REFER TO ARCHITECTS DRAWING & SPECIFICATIONS
10. ANY DRAINS PASSING THROUGH SUBSTRUCTURE WALLS TO HAVE A MINIMUM 50mm CLEAR SPACE, RC LINTEL SUPPORT ABOVE & CEMENT FIBRE COLLARS EITHER SIDE TO PREVENT VERMIN ENTRY
11. ANY DRAINS CAST IN & PASSING THROUGH CONCRETE GROUND BEAMS TO HAVE A FLEXIBLE JOINT NOT MORE THAN 150mm FROM THE FACE OF THE GROUND BEAM. (FLEXIBLE JOINT TO MANUFACTURERS DETAILS) AND A MAXIMUM 600mm LONG ROCKER PIPER EITHER SIDE
12. ANY ALTERATIONS TO DRAINAGE PROPOSED BY CONTRACTOR TO BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK ON SITE. ANY REVISIONS ARE ALSO SUBJECT TO THE APPROVAL OF THE LOCAL BUILDING INSPECTOR.
13. ALL DRAINS RUNNING UNDER BUILDINGS TO HAVE A MINIMUM FALL OF 1:40 TOWARDS THE BUILDING EXTERIOR. PIPE TO BE ENCASED IN 100MM GRANULAR FILL.
14. COVER LEVELS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE ALTERED TO SUIT FINISHED SURFACE LEVELS.
15. THE BEDDING SPECIFICATION FOR ALL ADOPTABLE DRAINS WHERE COVER IS GREATER THAN 1200mm SHALL BE TYPE 'S'....WHERE COVER IS LESS THAN 1200mm TYPE 'Z' SHALL BE USED
16. THE DEVELOPER/CONTRACTOR MUST SELF VET AND CERTIFY THAT THE DESIGN CRITERIA, MATERIAL STANDARDS AND WORKMANSHIP SPECIFICATIONS FOR THE PROPOSED SEWERS ARE IN ACCORDANCE WITH THOSE SET OUT IN 'SEWERS FOR ADOPTION 7TH EDITION'
17. PROPOSED COVER AND INVERT LEVELS TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO ANY WORKS COMMENCING ONSITE
18. ALL PPIC'S LOCATED WITHIN VEHICLE AREAS TO RECEIVE A MINIMUM 150mm CONCRETE BED AND SURROUND



TYPICAL BIO RETENTION AREA



CROSS SECTION A-A THROUGH BIO RETENTION AREA



TYPICAL PERMEABLE SURFACING (PARTIAL INFILTRATION) DETAIL INCLUDING ONLINE STORAGE

Rev	Date	Revision Details	By	Chk	App
P1	Mar 24	FIRST ISSUE	GRE		

Cora iHt

Client: KLASH PROPERTIES LIMITED

Project: FORMER PUBLIC HOUSE, TOWER STREET, HEYWOOD

Title: PROPOSED DRAINAGE ARRANGEMENT SHEET 2 of 2

Drawing No.: 16-2229-001 | Revision: P1

Scale: NTS | Date: MARCH 2024

Drawn: GRE | Chk: | App: