

Application for Approval of Details Reserved by Condition

Town and Country Planning Act 1990 (as amended); Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended)

Publication of applications on planning authority websites

Please note that the information provided on this application form and in supporting documents may be published on the Authority's website. If you require any further clarification, please contact the Authority's planning department.

Site Location

Disclaimer: We can only make recommendations based on the answers given in the questions.

If you cannot provide a postcode, the description of site location must be completed. Please provide the most accurate site description you can, to help locate the site - for example "field to the North of the Post Office".

Number

Suffix

Property Name

Land To The Of Rear 8-18 Badminton Road

Address Line 1

Badminton Road

Address Line 2

Address Line 3

Gloucestershire

Town/city

Gloucester

Postcode

GL4 6AX

Description of site location must be completed if postcode is not known:

Easting (x)

384758

Northing (y)

216112

Description

Applicant Details

Name/Company

Title

Mr

First name

Tim

Surname

Lane

Company Name

Lane Britton Jenkins on behalf of Gloucester City Homes

Address

Address line 1

21 Space Business Centre

Address line 2

Tewkesbury Road

Address line 3

Town/City

Cheltenham

Country

Postcode

GL51 9FL

Are you an agent acting on behalf of the applicant?

Yes

No

Contact Details

Primary number

Secondary number

Fax number

Email address

Agent Details

Name/Company

Title

First name

Surname

Company Name

Address

Address line 1

Address line 2

Address line 3

Town/City

Country

Postcode

Contact Details

Primary number

Secondary number

Fax number

Email address

Description of the Proposal

Please provide a description of the approved development as shown on the decision letter

Reference number

Date of decision (date must be pre-application submission)

Please state the condition number(s) to which this application relates

Condition number(s)

Has the development already started?

- Yes
 No

If Yes, please state when the development was started (date must be pre-application submission)

Has the development been completed?

- Yes
 No

Part Discharge of Conditions

Are you seeking to discharge only part of a condition?

- Yes
 No

Discharge of Conditions

Please provide a full description and/or list of the materials/details that are being submitted for approval

Site Visit

Can the site be seen from a public road, public footpath, bridleway or other public land?

- Yes
 No

If the planning authority needs to make an appointment to carry out a site visit, whom should they contact?

- The agent
 The applicant
 Other person

Pre-application Advice

Has assistance or prior advice been sought from the local authority about this application?

- Yes
 No

Declaration

I / We hereby apply for Approval of details reserved by a condition (discharge) as described in this form and accompanying plans/drawings and additional information. I / We confirm that, to the best of my/our knowledge, any facts stated are true and accurate and any opinions given are the genuine options of the persons giving them. I / We also accept that: Once submitted, this information will be transmitted to the Local Planning Authority and, once validated by them, be made available as part of a public register and on the authority's website; our system will automatically generate and send you emails in regard to the submission of this application.

I / We agree to the outlined declaration

Signed

Quattro Design Architects Ltd

Date

18/02/2022

NOTES

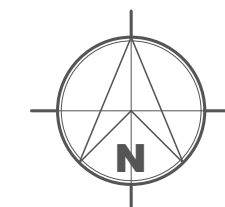
This drawing is the copyright of Quattro Design Architects Ltd and should not be reproduced in whole or in part without written permission. Only figured dimensions to be used for construction. Check all dimensions on site. Any discrepancies are to be reported to the Architect as soon as possible.

REVISIONS

REV: DATE - DRAWN - CHECKED: NOTES

-: 08.11.21 - HD - KDCG:
Drawing created.

- Boundary Treatment Key:**
- Site Boundary
 - 1800mm Close Boarded Timber Fence & Gates
Existing Boundary Treatments Retained. Close Board Timber Fence Infills Where Required - Client To Advise On Location.
- Hard Landscaping Key:**
- Tarmac Carriageway
 - Tarmac Footway
 - Private Parking - Block Paver Construction
 - Private Footpath - Flagstone Paver Construction



- Soft Landscaping Key:**
- Grass
 - Low Level Landscaped Planted Area:
 - Existing Tree Retained
 - Existing Hedgerow To Be Cut Back
 - Root Protection Area

- Sundry items:**
- Shed (2m x 1.25m Total Area 2.5m²)
 - Bin area & access (Hardstanding)
 - Rotary Washing Line



216120N
384760E

216100N

216080N

DRAWING TITLE

Site Plan

PROJECT

Badminton Road, Matson

CLIENT

Lane Britton Jenkins

SCALE

1:200@A2

DATE

Nov 2021



DRAWING NO.

6652/W/10

REV

-

APPLICATION NO: 21/00269/FUL
VALIDATED ON: 8th March 2021

TO

Gloucester City Homes
c/o Ms Emma Blunt
SF Planning Ltd
12 Royal Crescent
Cheltenham
GL50 3DA

TOWN AND COUNTRY PLANNING ACT 1990
TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE) (ENGLAND)
ORDER 2015

Location: Badminton Road Gloucester

Proposal: Demolition of garages and erection of 2no. dwellings and 1no. bungalow with associated parking and landscaping

In exercise of its powers under the above-mentioned Act and Order the City Council as the Local Planning Authority **GRANT PERMISSION** for the development described above in accordance with the terms of the application and the plan/s submitted therewith subject to the following conditions:

Condition 1

The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

Reason

Required to be imposed by Section 91 of the Town and Country Planning Act 1990 as amended by Section 51 of the Planning and Compulsory Purchase Act 2004.

Condition 2

The development hereby permitted shall be carried out in accordance with the application form, and drawing numbers

- 6393-P-01 Site Location Plan
- 6393-P-05A Existing Site Layout
- 6393-P-10L Proposed Site Layout
- 6393-P-15C Proposed Soft Landscaping Plan
- 6393-P-16C Proposed Hard Surfaces and Boundary Plan
- 6393-P-20A Proposed Floor Plans Plots 1-2
- 6393-P-21C Proposed Floor Plans Plot 3
- 6393-P-70C Proposed Elevations Plots 1-2
- 6393-P-71D Proposed Elevations Plot 3
- 6393-P-73 Proposed Elevations Car Port
- Arboricultural Impact Statement October 2021
- Drainage Strategy Drawing number 100 Rev D

except where these may be modified by any other conditions attached to this permission.

Reason

To ensure that the development is carried out in accordance with the approved plans.

Condition 3

No development other than demolition, site securing, archaeological works or that required to be carried out as part of an approved scheme of remediation shall commence until parts 1 to 4 below have been

complied. If unexpected contamination is found after development has begun, development must be halted on that part of the site affected by the unexpected contamination to the extent specified by the Local Planning Authority in writing until part 4 has been complied with in relation to that contamination.

1. Site Characterisation

An investigation and risk assessment, in addition to any assessment provided with the planning application, must be completed in accordance with a scheme to assess the nature and extent of any contamination on the site, whether or not it originates on the site, which has first been submitted to and approved in writing by the Local Planning Authority. The investigation and risk assessment must be undertaken by competent persons and a written report of the findings shall be submitted to and approved in writing by the Local Planning Authority. The report of the findings must include:

- i. a survey of the extent, scale and nature of contamination;
- ii. an assessment of the potential risks to:
 - o Human health,
 - o Property (existing or proposed) including buildings, crops, livestock, pets, woodland and service lines and pipes,
 - o Adjoining land,
 - o Groundwaters and surface waters,
 - o Ecological systems,
 - o Archaeological sites and ancient monuments;
- iii. an appraisal of remedial options, and proposal of the preferred option(s).

This must be conducted in accordance with DEFRA and the Environment Agency's 'Model Procedures for the Management of Land Contamination, CLR 11'.

2. Submission of Remediation Scheme

A detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, buildings and other property and the natural and historical environment must be submitted to and approved in writing by the Local Planning Authority. The scheme must include all works to be undertaken, proposed remediation objectives and remediation criteria, timetable of works and site management procedures. The scheme must accord with the provisions of the Environmental Protection Act 1990 in relation to the intended use of the land after remediation.

Where undertaken on a phased basis the Remediation Scheme must specify measures to ensure that remediated phases continue to be protected from impacts from un-remediated phases.

3. Implementation of Approved Remediation Scheme

The approved remediation scheme must be carried out in accordance with its terms prior to the commencement of development other than demolition, site securing, or that required to be carried out as part of an approved scheme of remediation, unless otherwise agreed in writing by the Local Planning Authority. The Local Planning Authority must be given two weeks written notification of commencement of the remediation scheme works.

Following completion of measures identified in the approved remediation scheme, a verification report (elsewhere referred to as a validation report) that demonstrates the effectiveness of the remediation carried out must be submitted to and approved in writing by the Local Planning Authority.

4. Reporting of Unexpected Contamination

In the event that contamination is found at any time when carrying out the approved development that was not previously identified it must be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment must be undertaken in accordance with the requirements of part 1 of this condition, and where remediation is necessary a remediation scheme must be prepared in accordance with the requirements of part 2 above, and submitted to and approved in writing by the Local Planning Authority.

Following completion of measures identified in the approved remediation scheme a verification report must be prepared and submitted to and approved in writing by the Local Planning Authority in accordance with part 3 above.

5. Long Term Monitoring and Maintenance

A monitoring and maintenance scheme to include monitoring the long-term effectiveness of the proposed remediation over an appropriate time period, and the provision of reports on the same, shall be submitted to and approved in writing by the Local Planning Authority.

Following completion of the measures identified in that scheme and when the remediation objectives have been achieved, reports that demonstrate the effectiveness of the monitoring and maintenance carried out must be submitted to and approved in writing by the Local Planning Authority.

This must be conducted in accordance with DEFRA and the Environment Agency's 'Model Procedures for the Management of Land Contamination, CLR 11'.

Reason

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors.

This condition is required as a pre-commencement condition because there is potential for contamination to exist on the site.

Condition 4

The development shall be carried out in accordance with the submitted Drainage Strategy has been submitted to and approved in writing by the Local Planning Authority. The scheme for the surface water drainage shall be implemented in accordance with the approved details and timetable and shall be fully operational before the development is first put in to use/occupied.

Reason

To ensure the development is provided with a satisfactory means of drainage and thereby reducing the risk of flooding. It is important that these details are agreed prior to the commencement of development as any works on site could have implications for drainage, flood risk and water quality in the locality.

Condition 5

The development hereby permitted shall not be brought in to use/occupied until a SuDS management and maintenance plan for the lifetime of the development, which shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime, has been submitted to and approved in writing by the Local Planning Authority. The approved SuDS maintenance plan shall be implemented in full in accordance with the approved details for the lifetime of the development.

Reason

To provide for the continued operation and maintenance of sustainable drainage features serving the site and to ensure that the development does not result in pollution or flooding, to improve water quality at point of discharge.

Condition 6

No building or use hereby permitted shall be occupied or use commenced until the car/vehicle parking area and turning spaces shown on the approved plans have been completed and thereafter the areas shall be kept free of obstruction and available for the parking of vehicles associated with the development.

Reason

To ensure that there are adequate parking facilities to serve the development constructed to an acceptable standard.

Condition 7

The development hereby permitted shall not be occupied until details of secure and covered cycle storage facilities for a minimum of 2 bicycles per dwelling has been made available in accordance with details to be submitted to and approved in writing by the LPA.

Reason

To give priority to cycle movements by ensuring that adequate cycle parking is provided, to promote cycle use and to ensure that the appropriate opportunities for sustainable transport modes have been taken up in accordance with paragraph 108 of the National Planning Policy Framework.

Condition 8

The development hereby permitted shall not be first occupied until the proposed dwellings have been fitted with an electric vehicle charging point. The charging points shall comply with BS EN 62196 Mode 3 or 4 charging and BS EN 61851. The electric vehicle charging points shall be retained for the lifetime of the development unless they need to be replaced in which case the replacement charging point shall be of the same specification or a higher specification in terms of charging performance.

Reason

To promote sustainable travel and healthy communities.

Condition 9

No development shall take place, including any demolition works, until a construction management plan or construction method statement has been submitted to and approved in writing by the Local Planning Authority. The approved plan/statement shall be adhered to throughout the demolition/construction period. The plan/statement shall provide for:

- 24 hour emergency contact number;
- Hours of operation;
- Parking of vehicle of site operatives and visitors (including measures taken to ensure satisfactory access and movement for existing occupiers of neighbouring properties during construction);
- Routes for construction traffic;
- Locations for loading/unloading and storage of plant, waste and construction materials;
- Method of preventing mud being carried onto the highway;
- Measures to protect vulnerable road users (cyclists and pedestrians)
- Any necessary temporary traffic management measures;
- Arrangements for turning vehicles;
- Arrangements to receive abnormal loads or unusually large vehicles;
- Methods of communicating the Construction Management Plan to staff, visitors and neighbouring residents and businesses.

Reason

In the interests of safe operation of the adopted highway in the lead into development both during the demolition and construction phase of the development.

Condition 10

Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) (England) Order 2015 (or any Order revoking or re-enacting that Order, with or without modification), no windows on the side elevation above first floor level; neither extensions, outbuildings dormers or rooflights shall be added and constructed within approved residential plots without the prior consent of the Local Planning Authority.

Reason

In order to protect the residential amenity of the existing and proposed residents in accordance with policy SD14 of the Gloucester, Cheltenham and Tewkesbury Joint Core Strategy (2017).

Condition 11

During the construction phase (including demolition and preparatory groundworks), no machinery shall be operated, no process shall be carried out and no deliveries shall be taken at or dispatched from the site outside the following times: Monday-Friday 8.00 am-6.00pm, Saturday 8.00 am-1.00 pm nor at any time on Sundays, Bank or Public Holidays.

Reason

To protect the noise climate and amenity of local residents.

Note 1

Your attention is drawn to the requirements of the Building Regulations, which must be obtained as a separate consent to this planning decision. You are advised to contact the Gloucestershire Building Control Partnership on 01453 754871 for further information.

Note 2

Your attention is drawn to the Party Wall Act 1996. The Act will apply where work is to be carried out on the following:

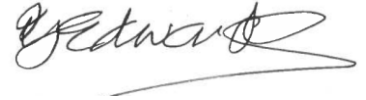
- Work on an existing wall or structure shared with another property.
- Building a free standing wall or a wall of a building up to or astride the boundary with a neighbouring property.
- Excavating near a neighbouring building.

The legal requirements of this Act lies with the building/ site owner, they must find out whether the works subject of this planning permission falls within the terms of the Party Wall Act. There are no requirements or duty on the part of the local authority in such matters. Further information can be obtained from the DETR publication The Party Wall Act 1996 - explanatory booklet.

Note 3

In accordance with the requirements of the NPPF the Local Planning Authority has sought to determine the application in a positive and proactive manner by offering pre-application advice, publishing guidance to assist the applicant, and publishing to the council's website relevant information received during the consideration of the application thus enabling the applicant to be kept informed as to how the case was proceeding.

Date: 26th October 2021



Head of Place

PLEASE SEE NOTES SET OUT IN THE ENCLOSED LEAFLET

Discharge of Conditions 05 and 07
Information Provided Supporting
Application Ref No. 21/00269/FUL
PP-11013675



Condition 05: Please refer to the attached SuDS Maintenance and Management Plan prepared by DavidsonWalsh
Ref: Drainage and Maintainance Strategy Rev D

Condition 07: Please refer to the attached site plan prepared by Quattro Design Architects showing the location of the secure sheds which are proposed to be used as the cycle provisions, located in the rear private and secure amenity for each plot.
Ref: 6652-W-10 Site Plan

Drainage & Maintenance Strategy
For

Badminton Road
Matson
Gloucester

Project Ref: 21019

July 2021

Revision - D



davidsonwalsh

37 Prestbury Road | Cheltenham | GL52 2PT

| Registered in England No.05711218

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1 Introduction

This document has been prepared to summarise the design considerations that have been made as part of the detailed design of the proposed development in order to provide supporting information to the planning application for the site.

2 Proposed Development

The proposed development is to comprise the demolition of the existing garages and removal of the positively drained existing hardstanding to allow the construction of 3 new houses with associated carparking and access road. The site has a total plan area of **801m²**. The proposed houses have been positioned to take account of the existing Oak tree which is present on the site which is protected with a tree preservation Order. The Root Protection zone allocated to the tree within the supporting arboriculture report is **12m** and therefore excavation in this area will need to be minimal. Consideration will also need to be given to the wayleaves associated with the adoptable drainage passing through the centre of the site.

3 Drainage

3.1 Flooding

The flood maps available from the Environment Agency¹ indicate that the site lies outside the areas which are affected by flooding from Seas and Rivers as it is located within Flood Zone 1. When considering flooding as a result of surface water runoff there appears to be a risk of surface water flooding based on the existing site but this is believed to be as a result of insufficient existing surface water drainage provisions and excess water entering the site as a result of runoff from Badminton Road. To allow excessive flows to be accommodated a dropped kerb has been proposed to the rear of the site to allow the excessive water flow path to remain and continue on to the existing pathway through to the Sud Brook. As a precaution the finished floor levels of the houses will be raised a minimum of 300mm above the lowest turning head level.

3.2 Existing Drainage Arrangement

The existing site consists of garages and tarmac hardstanding equating to **98%** impermeable surfacing. The general surface water regime is believed to incorporate water from the existing hardstanding being directed towards gully's which are connected to the main sewer system.

¹ See Annex A – Flood Maps

3.3 Proposed Drainage Strategy for the control of surface water runoff²

From initial trial pits investigation the subsoils on the site comprise made ground overlying heavy clays which are associated with the area, making the site not suitable for soakaways and that an attenuation system is considered to be the most appropriate solution for water management on the site. Flows off the site will be controlled with a flow control chamber/orifice plate allowing water to be released from the site at a flow rate as close to the proposed impermeable area **QBar rate of 0.13 l/s** as practicably possible given the site constraints.

3.4 Contamination Control

For the draining of the access road water flows through gully's and into the granular storage trench before entering the crate storage tank below the running surface allowing initial silt deposits to be caught in the gully's before entering the system. Water flowing through the permeable pavement transfers its water through the aggregate and into the perimeter trench. The level of hydrocarbon contamination associated with a site of this nature is minimal and the stone distribution trench surrounding the tank has been specified to allow hydrocarbons be captured at the earliest opportunity.

4 Rainfall Assessment

4.1 Rainfall

Detailed calculations for rainfall estimation have been completed using the UK Centre for Ecology and Hydrology flood estimation Handbook web service FEH 2013³ for surface water storage to assess the viability of using attenuation on the site given the restrictions previously noted.

The associated surface allocations are as follows:-

Total site area	=	801m ²
Area of Hardstanding	=	315m ²
Area of roof	=	152m ²
Total new impermeable area	=	467m ²
Total permeable area	=	334m ²

When considering water volumes in relation to the 1:100 year + 40% for climate change, it is proposed that areas of public open space are not suitable for the storage of this water for

² See Annex B – Drainage Strategy Plan

³ See Annex C – QBar, Rainfall Estimation & Attenuation

aesthetic reasons and therefore attenuation will be increased to accommodate the additional volume. Therefore a total attenuated volume of 49.10m^3 would be required if the original site were not positively drained.

However, as the existing hardstanding is drained by a series of road gullies, a 40% betterment will be the focus of this strategy.

From the data output, based on a 1 in 100 year 6 hour event the flow rate from the site is estimated to be 1.52l/s which when considering a 40% improvement offers a flow rate of 0.91l/s flow from the site, as a result the estimated storage volume from the proposed development equates to **13.15m^3** with exceedance events reaching **18.65m^3** . Factoring 40% increase for climate change results in an attenuated volume requirement of **29.27m^3** .

When considering the area available to construct attenuation tanks. due to the protected tree and the adoptable drainage within the road, the gardens to the rear of Plots 1 & 2 present the only opportunity to store water and the plan area available for a tank is approximately **57m^2** allowing the following attenuated storage to be installed to meet the criteria.

The available storage volume, governed by the connecting invert levels are as follows:-

Tanks

Crate Storage – Gardens Plot 1 & 2

Storage Tank plan area	=	57m ²
Storage Tank depth	=	0.40m
Crate Void Ratio	=	95%
Crate storage	=	21.66m ³

Perimeter drainage Trench to Plot 1 & 2 tank

Length	=	35m
Width	=	0.5m
Depth	=	0.5m
Void Ratio	=	0.3%
Stone storage	=	2.625m ³

Stone over Plot 1 & 2 tank

Storage Tank plan area	=	57m ²
Storage Tank depth	=	0.1m
Crate Void Ratio	=	0.3%
Crate storage	=	1.71m ³

Permeable paving in road

Storage Tank plan area	=	56m ²
Storage Tank depth	=	0.39m
Crate Void Ratio	=	0.3%
Crate storage	=	6.55m ³

Total Storage = 32.545m³

4.2 Exceedance Events

Exceedance events, water will exit the site via the dropped kerb to the North of the carpark thus preventing houses in the vicinity from flooding.

5 Maintenance Strategy

The maintenance of the surface water drainage system will be the responsibility of Gloucester City Homes and will follow the schedule as set out below.

1	Attenuation Storage	Frequency
<i>Routine Maintenance</i>		
1.1	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually.
1.2	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
1.3	Remove sediment from pre-treatment structures	Annually
Remedial Actions		
1.4	Repair/rehabilitate inlets, outlets, overflows and vents.	As required
<i>Monitoring</i>		
1.5	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
1.6	Survey inside of tank for sediment build-up and remove if necessary.	Every 5 years

2	Flow Control	
<i>Routine Maintenance</i>		
2.1	Check water can flow freely	Monthly/as required
2.2	Remove any debris/litter	Monthly/as required
<i>Occasional Maintenance</i>		
2.3	Remove Sediment	6 months
2.4	Repair as a result of damage	As required
Monitoring		
2.5	General Inspection	6 Months

3	Inspection Chambers	
<i>Routine Maintenance</i>		
3.1	General Inspection	Quarterly
3.2	Check water can flow freely	Monthly/as required
3.3	Remove any debris/litter	Monthly/as required
<i>Occasional Maintenance</i>		
3.4	Remove Sediment	6 months
<i>Remedial Maintenance</i>		
3.5	Repair as a result of damage	As Required

4	Drain Pipes	
<i>Routine Maintenance</i>		
4.1	Check water can flow freely	6 months
<i>Occasional Maintenance</i>		
4.2	Repair as a result of damage highlighted in CCTV report	As Required
<i>Monitoring</i>		
4.3	CCTV survey to confirm pipe is in good working order	Every 5 years

5	Exit Point to Manhole	
<i>Routine Maintenance</i>		
5.1	Check water can flow freely from pipe	6 months
5.2	Remove debris & litter	6 months
<i>Occasional Maintenance</i>		
5.3	Repair as a result of damage	As Required
<i>Monitoring</i>		
5.4	Remove covers and survey manhole condition	Every 5 years

Drainage & Maintenance Strategy
For

Badminton Road
Matson
Gloucester

Project Ref: 21019

Annex A – Flood Maps



davidsonwalsh

37 Prestbury Road | Cheltenham | GL52 2PT

T: +44 (0) 1242 256495 | Registered in England No.05711218

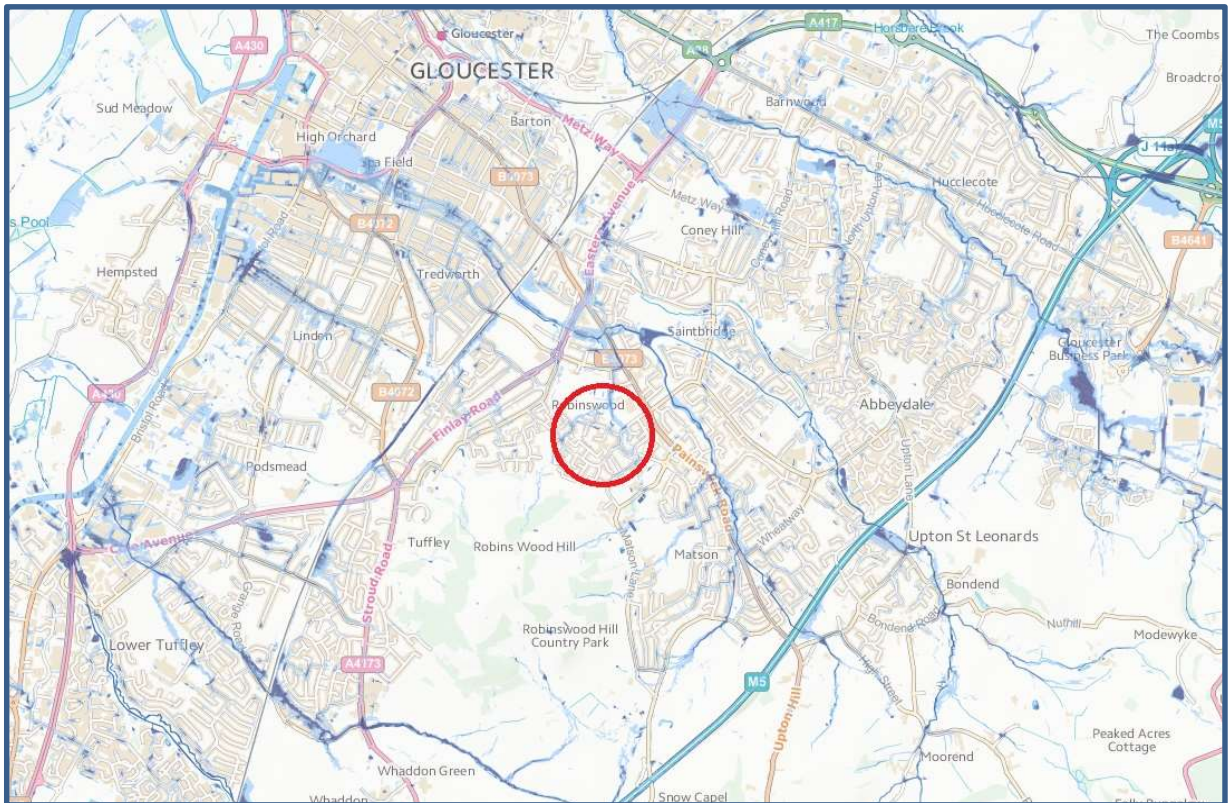


Figure 1:- Surface Water Flooding

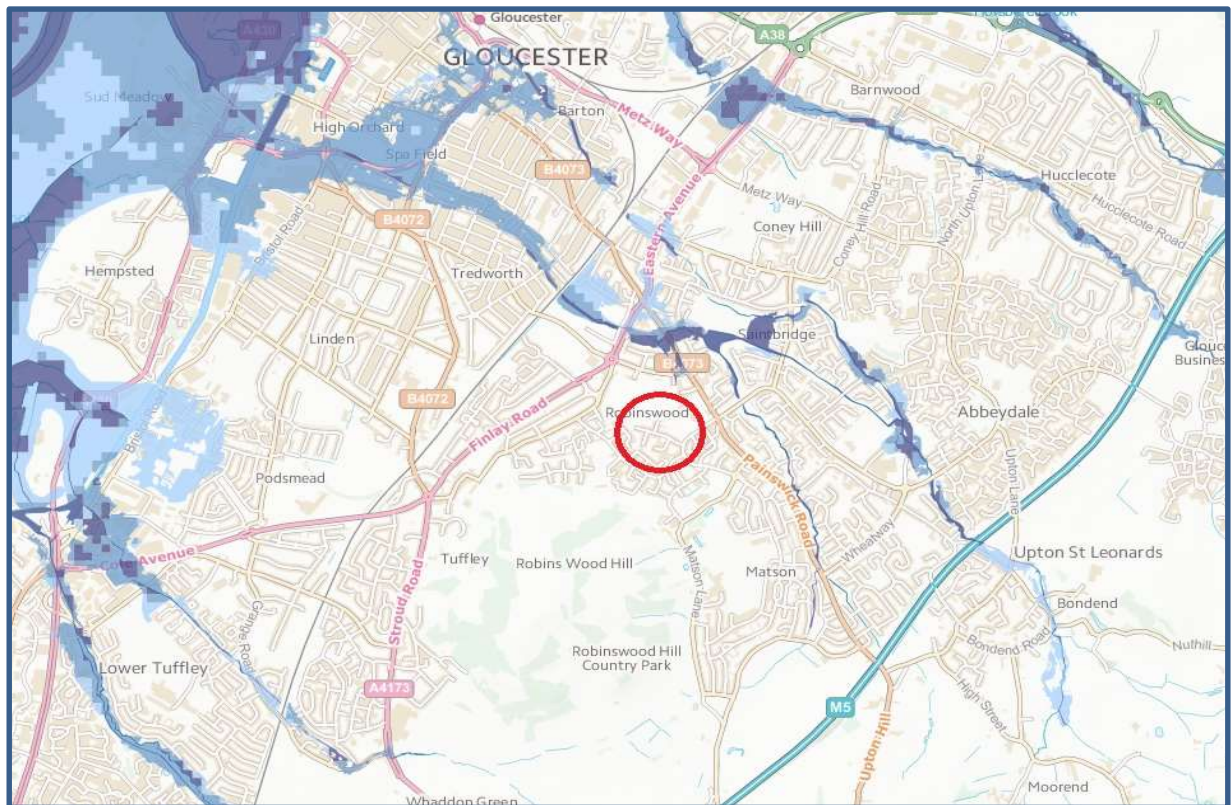


Figure 2:- Flooding From Rivers

Drainage & Maintenance Strategy

For

Badminton Road

Matson

Gloucester

Project Ref: 21019

Annex B – Drainage Strategy Plan

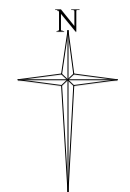


davidsonwalsh

37 Prestbury Road | Cheltenham | GL52 2PT

T: +44 (0) 1242 256495 | Registered in England No.05711218

PROPOSED LEVELS SHOWN THUS: 75.600 +
 EXISTING LEVELS SHOWN THUS: 75.60 ×

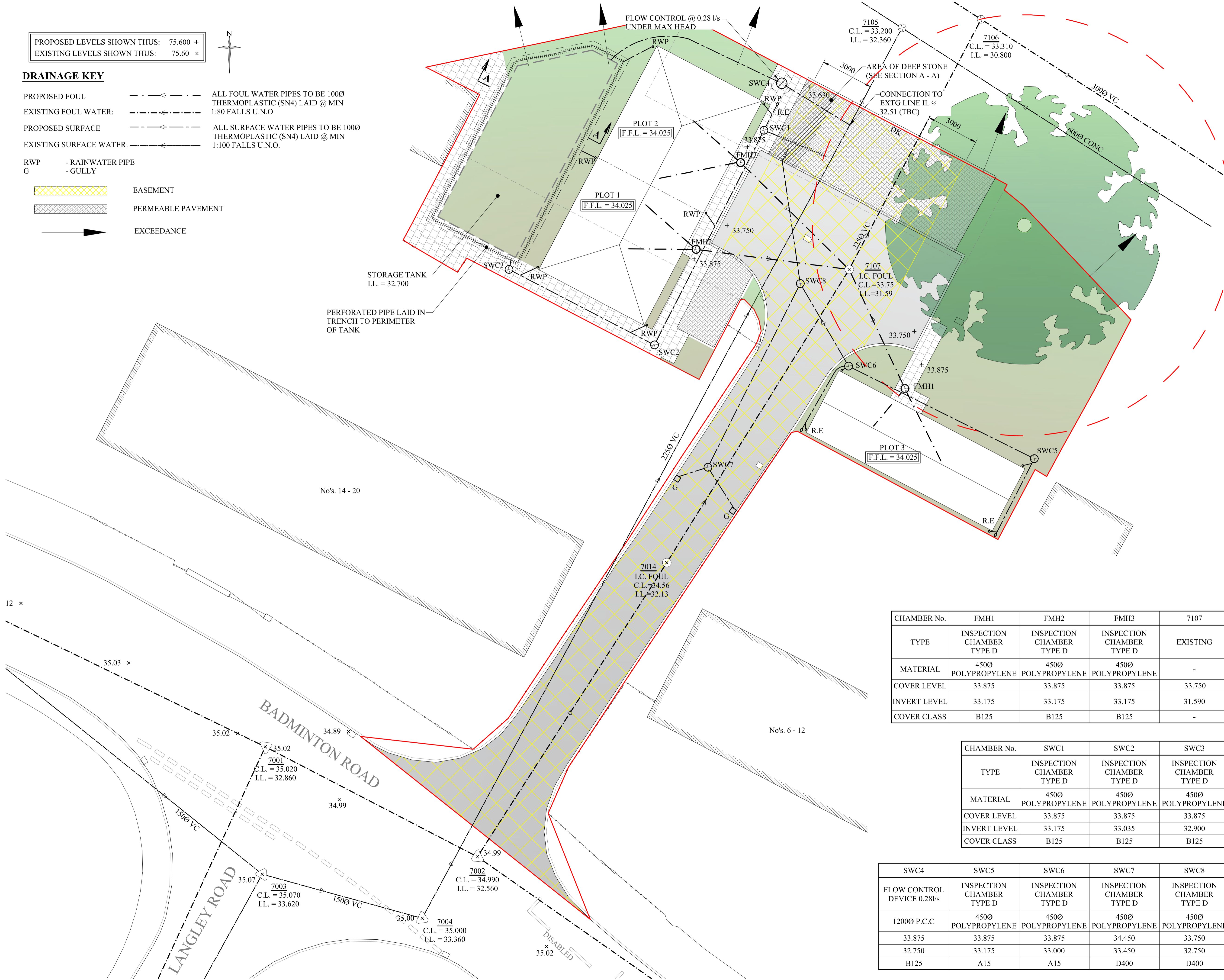


DRAINAGE KEY

- PROPOSED FOUL: - - - - - ALL FOUL WATER PIPES TO BE 1000 THERMOPLASTIC (SN4) LAID @ MIN 1:80 FALLS U.N.O
- EXISTING FOUL WATER: - - - - - ALL SURFACE WATER PIPES TO BE 1000 THERMOPLASTIC (SN4) LAID @ MIN 1:100 FALLS U.N.O.
- PROPOSED SURFACE: - - - - -
- EXISTING SURFACE WATER: - - - - -

RWP - RAINWATER PIPE
 G - GULLY

- EASEMENT
- PERMEABLE PAVEMENT
- EXCEEDANCE



- NOTES**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTS DRAWINGS AND SPECIFICATION.
 2. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY WORKS AND SHORING TO ENSURE THE STABILITY OF ADJACENT STRUCTURES DURING THE COURSE OF THE WORKS.
 3. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY EARTHWORKS SUPPORT TO EXPOSED EXCAVATIONS.
 4. THE DESIGN, INSTALLATION AND MAINTENANCE OF TEMPORARY WORKS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS DETAILED IN THE TENDER DRAWINGS.
 5. ALL CONCRETE TO BE MINIMUM GRADE RC28/35, PLACED IN ACCORDANCE WITH THE SPECIFICATION AND BS EN 1992-1-1. ALL CONCRETE MUST MEET DESIGN CHEMICAL CLASS DS-5 & ACEC-5.
 6. FOR FIRE PROTECTION AND FINISHES REFER TO ARCHITECTS DETAILS.
 7. FOR DAMP PROOFING AND TANKING REFER TO ARCHITECTS DETAILS.
 8. ALL MASONRY TO BS EN 1996-1-1 AND BUILDING REGULATIONS PART A WITH A MAXIMUM UNIT WEIGHT OF 20kg.

D	UPDATED PLOT 3 POSITION TO SUIT ARCHITECTS INFORMATION	J.T.	23.07.21
C	UPDATED POSITION OF PLOT 3 TO SUIT ARCHITECTS INFORMATION	J.T.	02.06.21
B	DROP KERB AND LEVEL TO THE NORTH ADDED	J.T.	07.05.21
A	TREE ROOT PROTECTION INDICATED	GPS	25.02.21
REV	DESCRIPTION	BY	DATE
		CHKD	DATE

DESIGNERS CDM NOTES

ALL WORKS TO BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING TO AN APPROVED SAFE SYSTEM OF WORK, INCLUDING A DETAILED RAMS DOCUMENT

RESIDUAL RISK REGISTER

IN ADDITION TO THE HAZARDS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING:

DESCRIPTION	IDENTIFIED RISK / HAZARD

CHAMBER No.	FMH1	FMH2	FMH3	7107
TYPE	INSPECTION CHAMBER TYPE D	INSPECTION CHAMBER TYPE D	INSPECTION CHAMBER TYPE D	EXISTING
MATERIAL	4500 POLYPROPYLENE	4500 POLYPROPYLENE	4500 POLYPROPYLENE	-
COVER LEVEL	33.875	33.875	33.875	33.750
INVERT LEVEL	33.175	33.175	33.175	31.590
COVER CLASS	B125	B125	B125	-

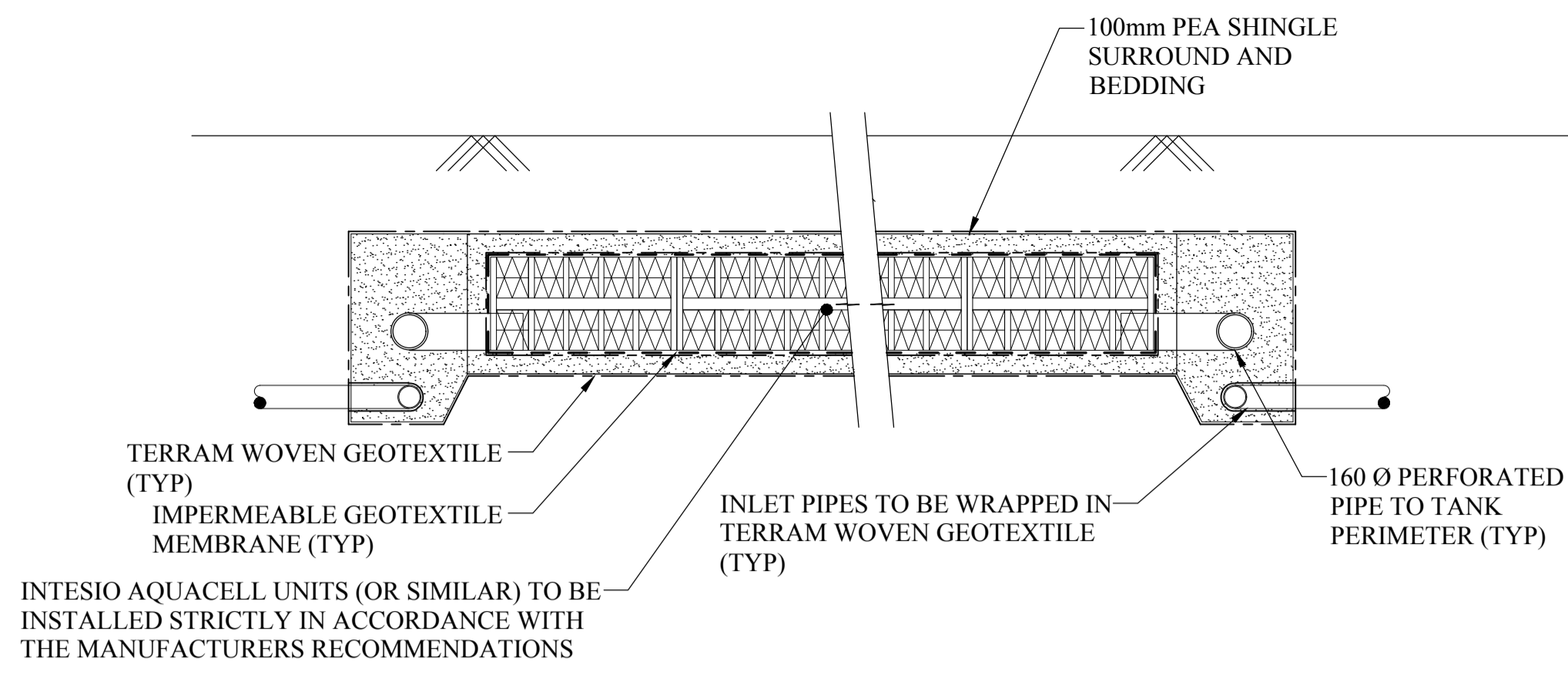
CHAMBER No.	SWC1	SWC2	SWC3
TYPE	INSPECTION CHAMBER TYPE D	INSPECTION CHAMBER TYPE D	INSPECTION CHAMBER TYPE D
MATERIAL	4500 POLYPROPYLENE	4500 POLYPROPYLENE	4500 POLYPROPYLENE
COVER LEVEL	33.875	33.875	33.875
INVERT LEVEL	33.175	33.035	32.900
COVER CLASS	B125	B125	B125

SWC4	SWC5	SWC6	SWC7	SWC8
FLOW CONTROL DEVICE 0.28l/s	INSPECTION CHAMBER TYPE D	INSPECTION CHAMBER TYPE D	INSPECTION CHAMBER TYPE D	INSPECTION CHAMBER TYPE D
12000 P.C.C	4500 POLYPROPYLENE	4500 POLYPROPYLENE	4500 POLYPROPYLENE	4500 POLYPROPYLENE
33.875	33.875	33.875	34.450	33.750
32.750	33.175	33.000	33.450	32.750
B125	A15	A15	D400	D400

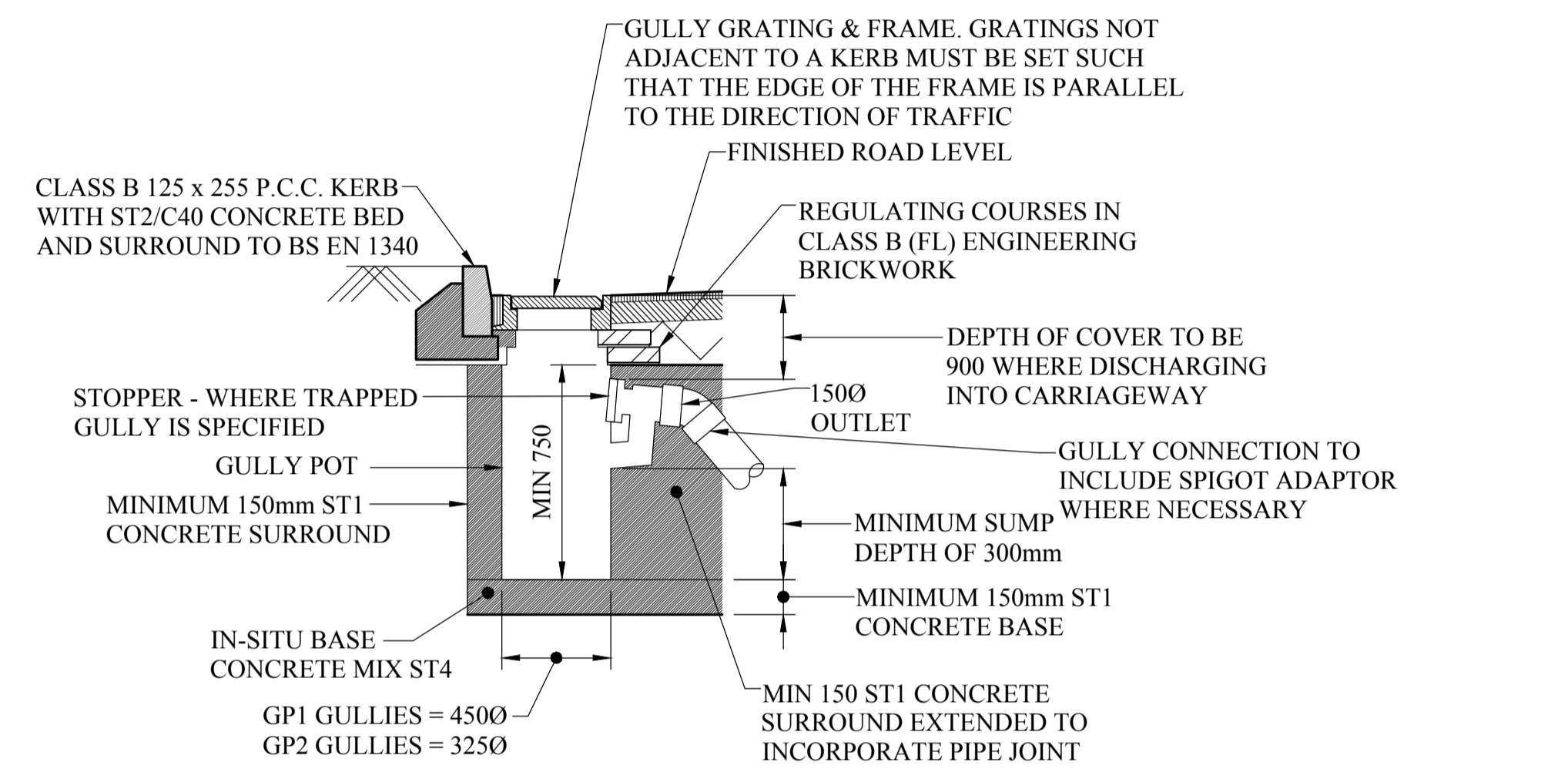


Client: **GLOUCESTER CITY HOMES**
 Project: **BADMINTON ROAD MATSON**
 Drawing: **DRAINAGE STRATEGY**

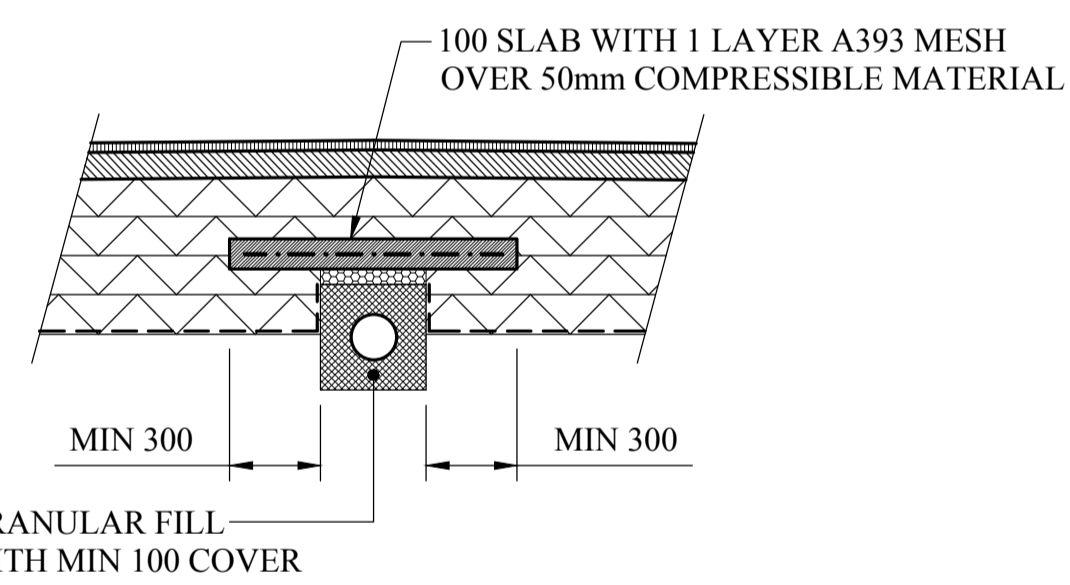
Status: **TENDER**
 Scale: 1:100 UNO Leaf: A1
 Drawn: H.G. Date: 19.02.21
 Checked: Date:
 Project No: **21019**
 Drawing No: **100** Revision: **D**



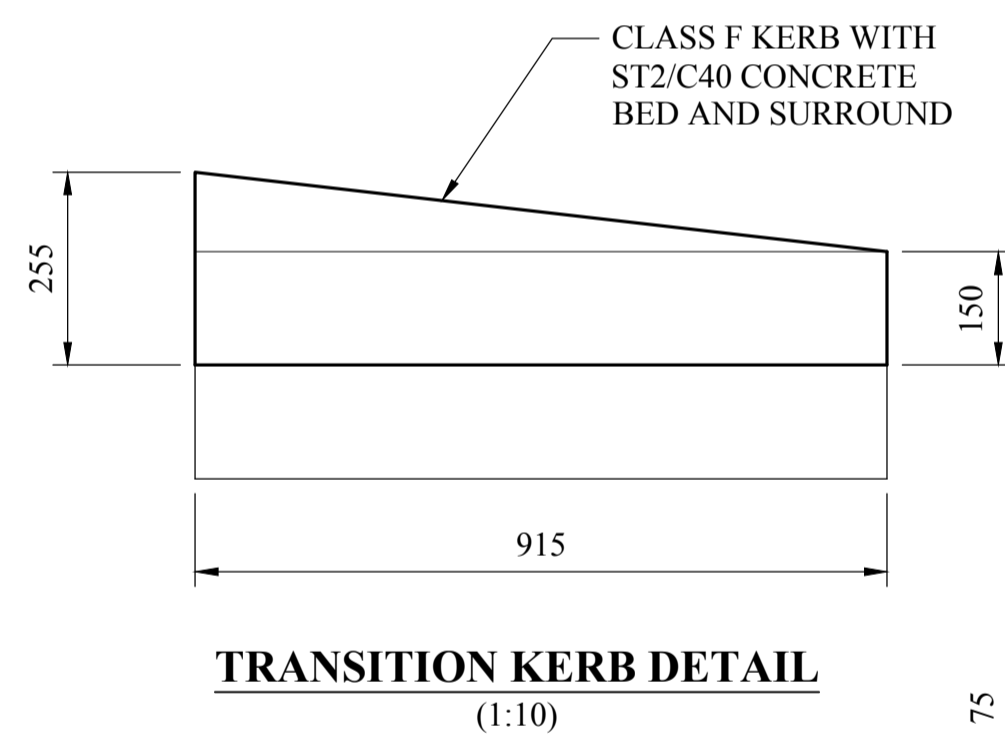
A - A



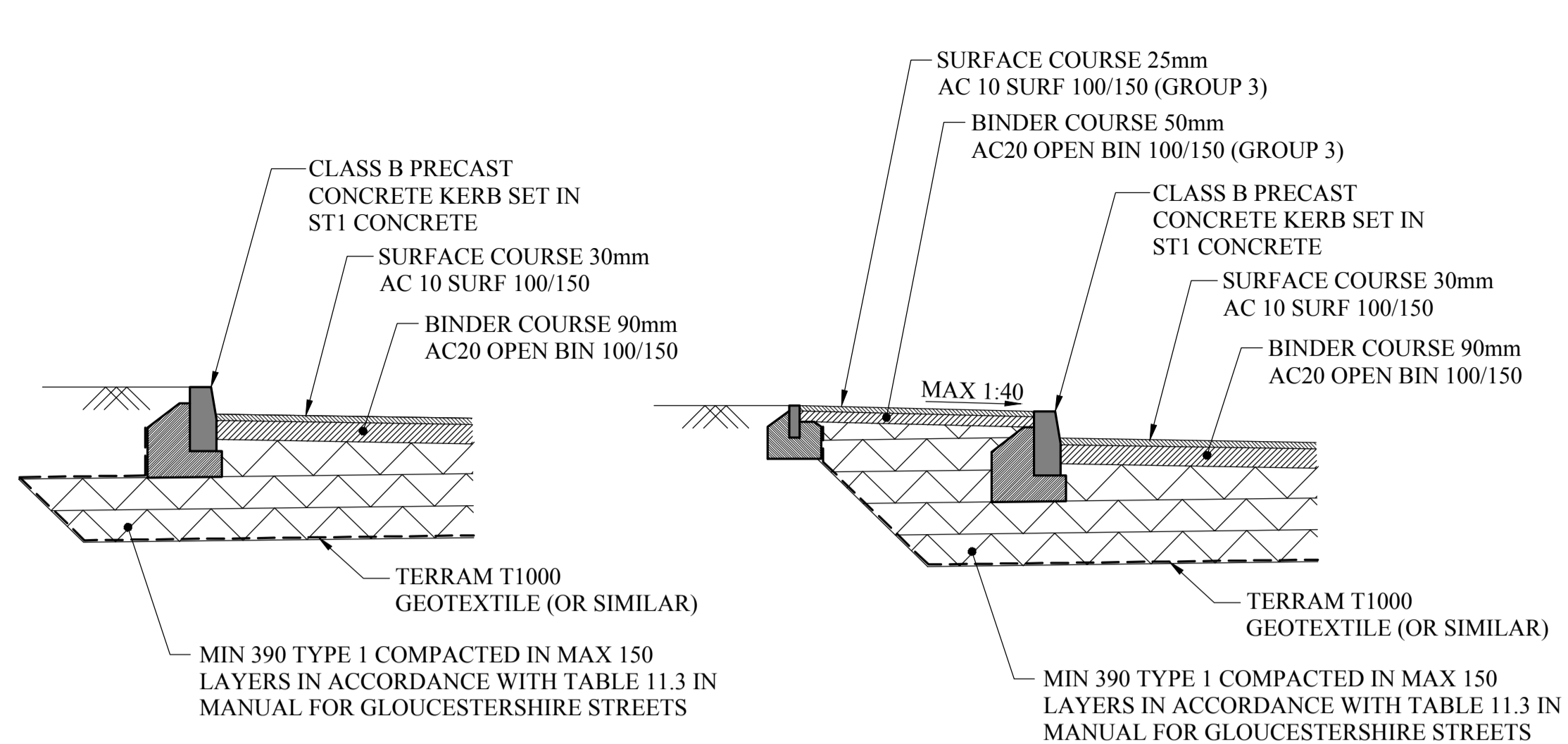
TYPICAL ROAD GULLY DETAIL



TYPICAL SERVICE PROTECTION DETAIL

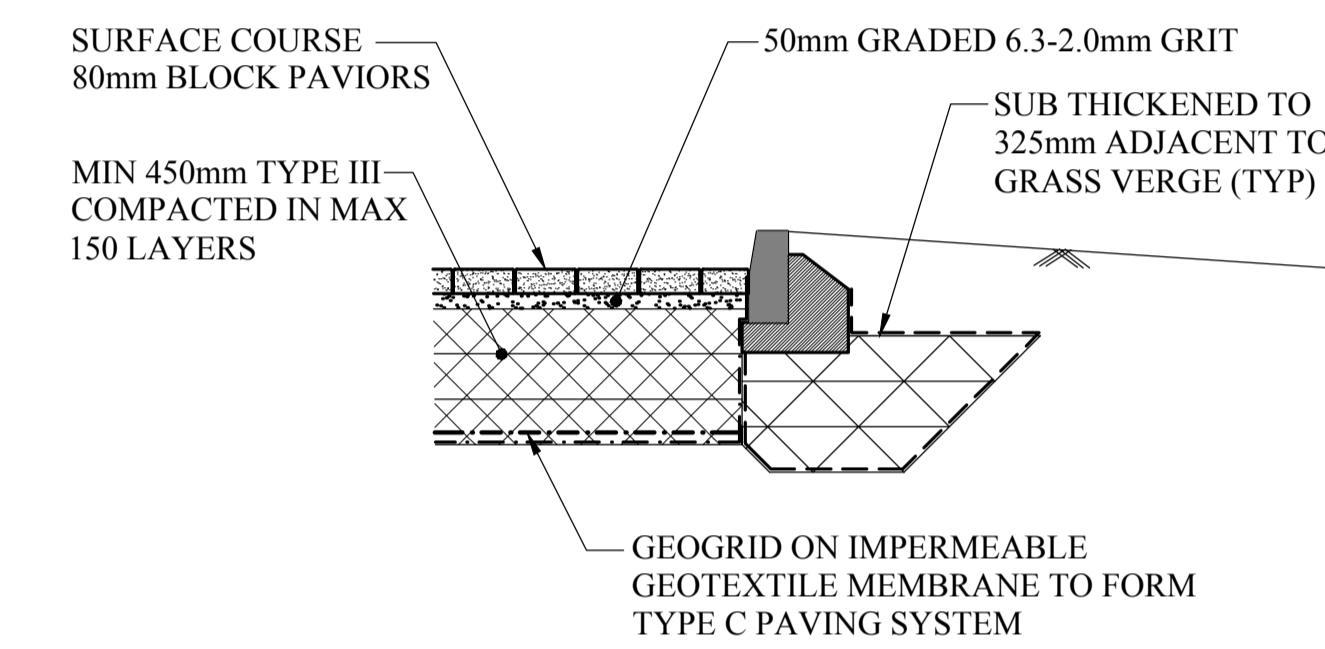


TRANSITION KERB DETAIL (1:10)

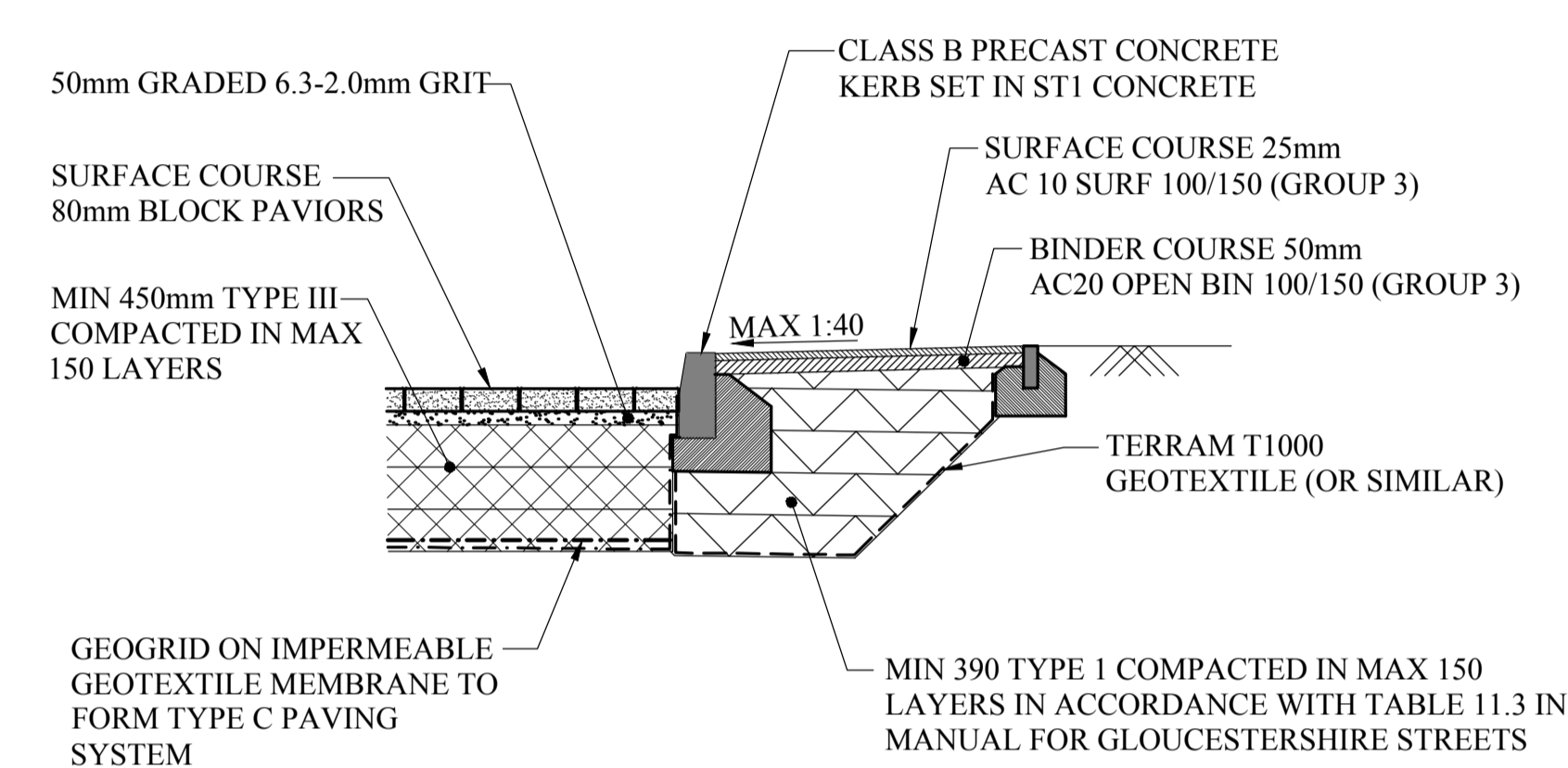


TYPICAL EDGE DETAIL

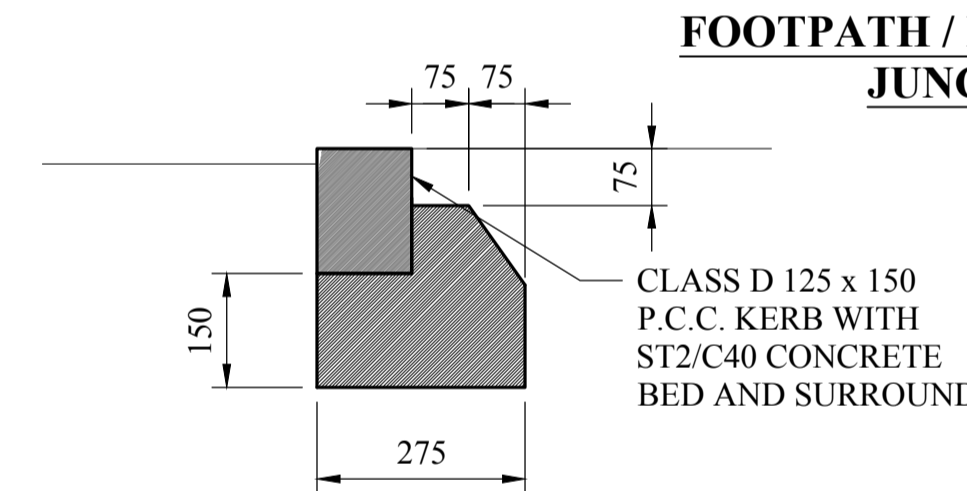
FOOTPATH DETAIL



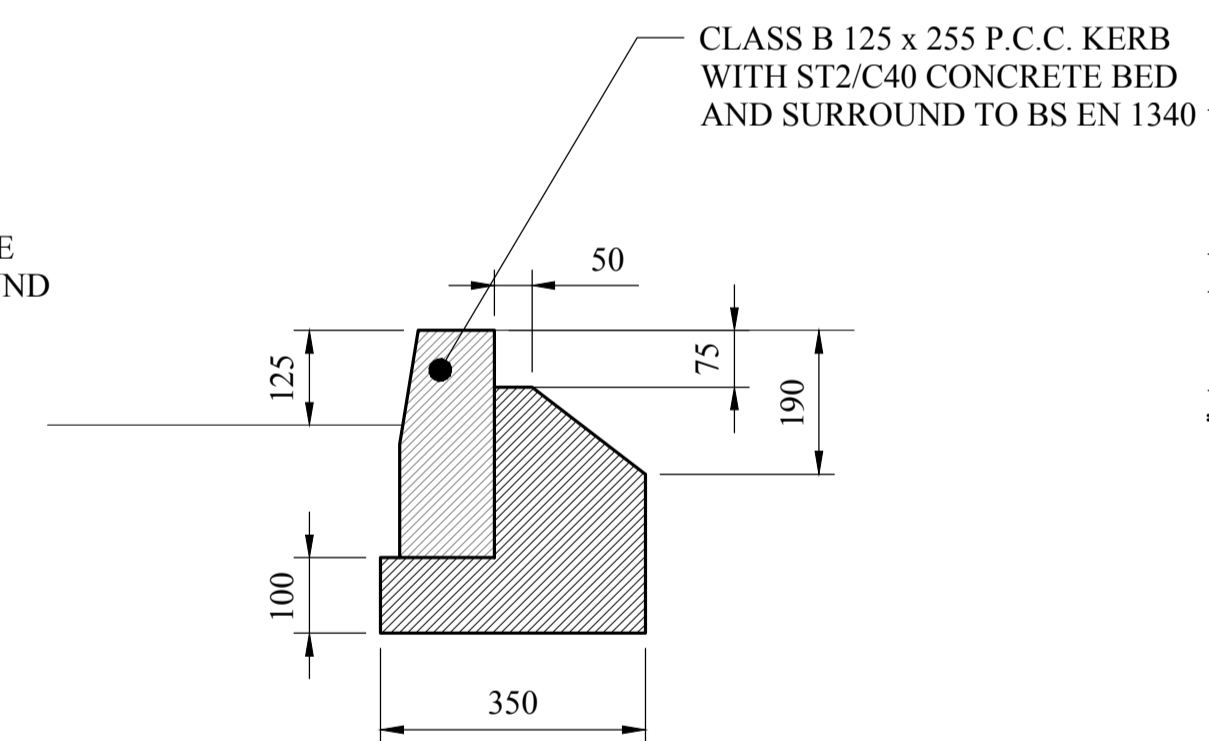
EDGE / PERMEABLE SURFACE JUNCTION DETAIL



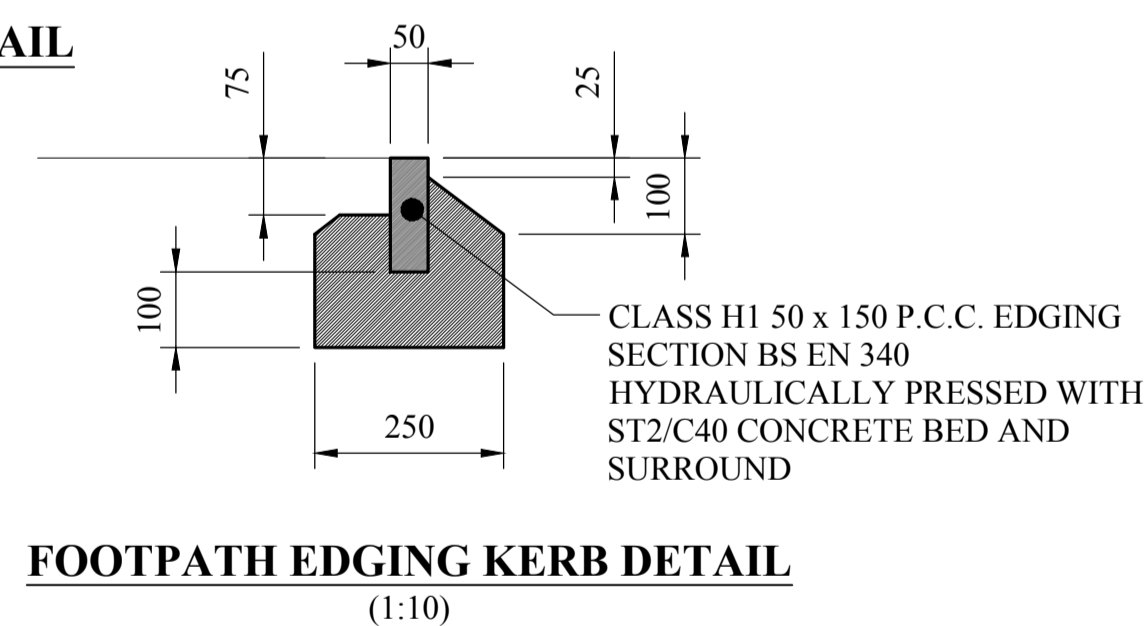
FOOTPATH / PERMEABLE SURFACE JUNCTION DETAIL



DROPPED KERB DETAIL (1:10)

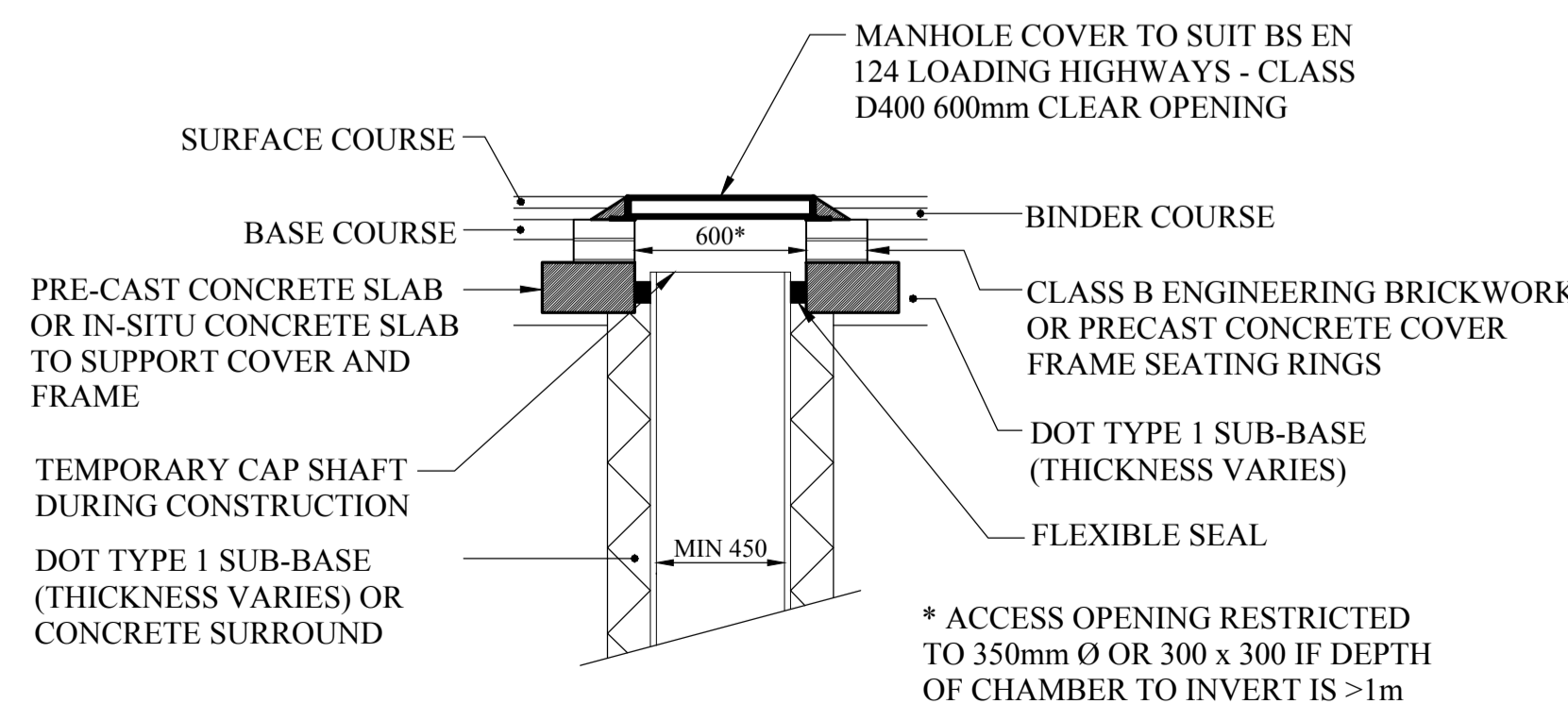


HALF BATTERED KERB DETAIL (1:10)

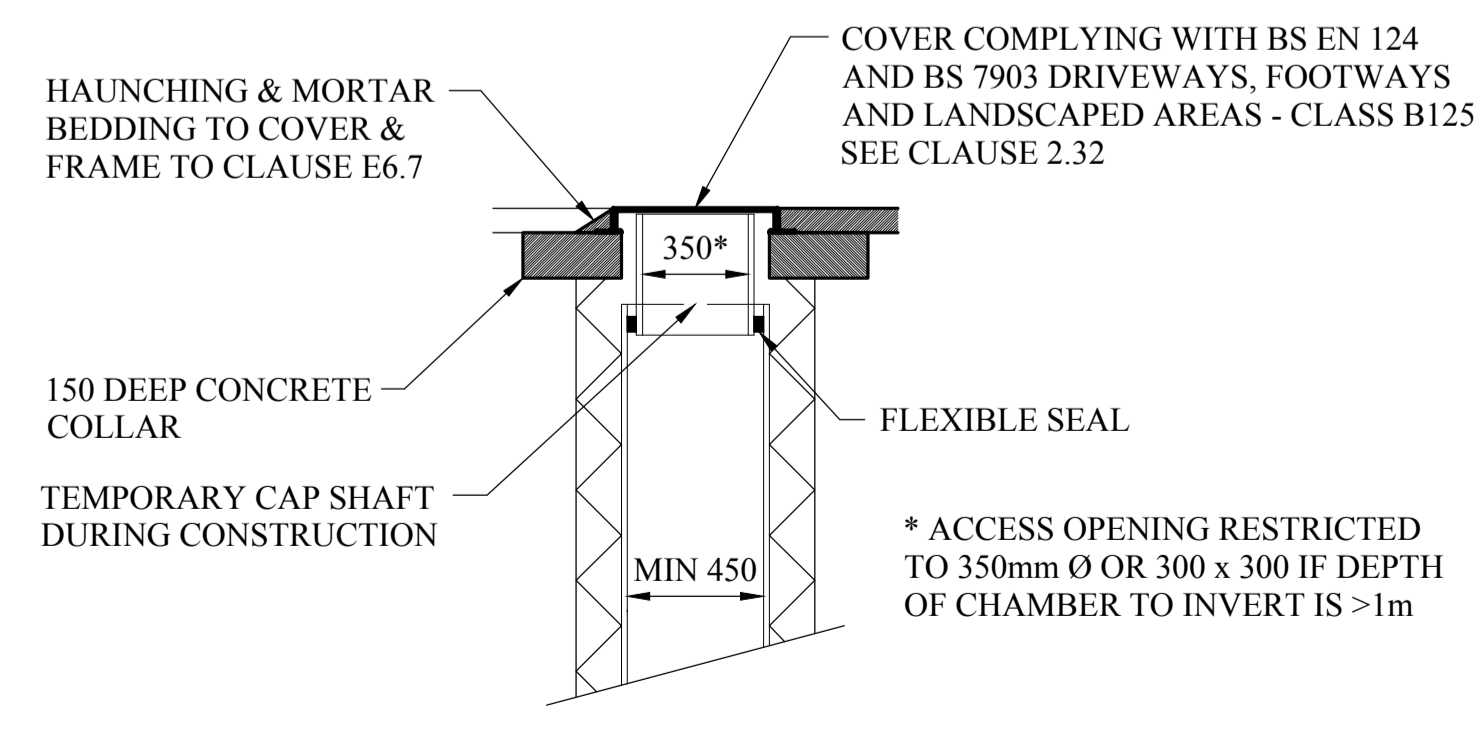


FOOTPATH EDGING KERB DETAIL (1:10)

PLASTIC CHAMBERS AND RINGS SHALL COMPLY WITH BS EN 13598-1 AND BS EN 13598-2 OR HAVE EQUIVALENT INDEPENDENT APPROVAL

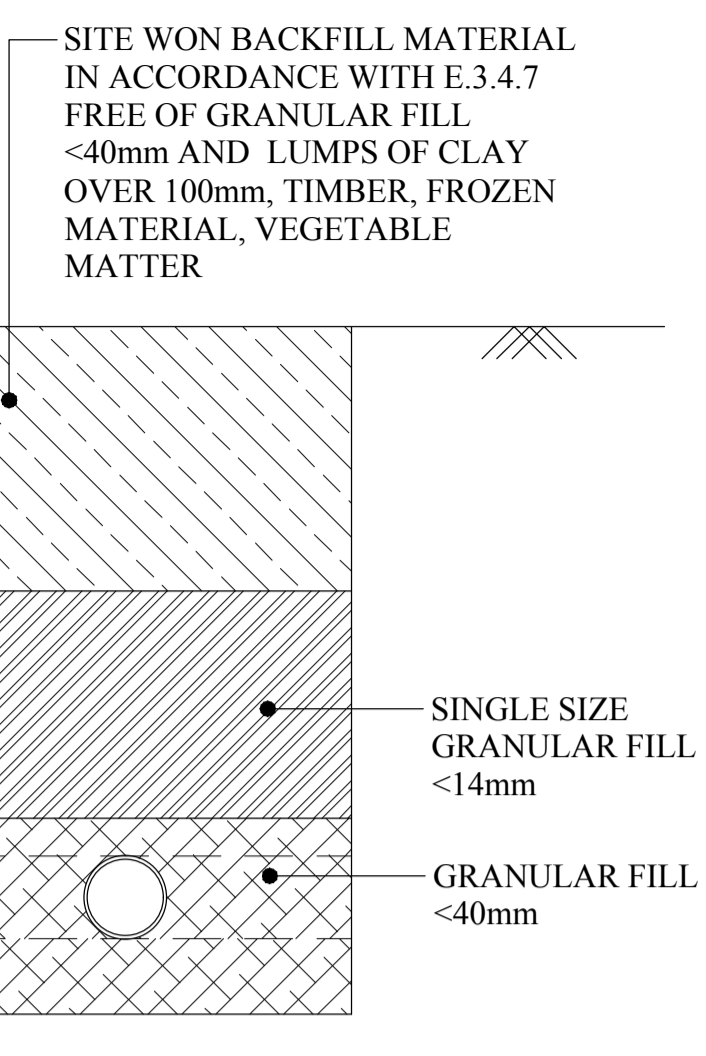


MANHOLE COVER DETAIL SITED IN ROADS/HIGHWAYS (CLASS D400)



MANHOLE COVER DETAIL SITED IN DRIVEWAYS/FOOTWAYS (CLASS B125)

ALL SURFACING MATERIALS ARE TO BE IN ACCORDANCE WITH GLOUCESTERSHIRE TECHNICAL SPECIFICATION FOR NEW STREETS



CLASS 'S' PIPE BEDDING & SURROUND (1:10)

B	DETAILS ADDED	J.T.	07.05.21
A	SECTIONS ADJUSTED	G.P.S	25.02.21
REV	DESCRIPTION	BY	DATE
		CHKD	DATE

DESIGNERS CDM NOTES

ALL WORKS TO BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING TO AN APPROVED SAFE SYSTEM OF WORK, INCLUDING A DETAILED RAMS DOCUMENT

RESIDUAL RISK REGISTER

IN ADDITION TO THE HAZARDS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING:

DESCRIPTION	IDENTIFIED RISK / HAZARD



Client **GLOUCESTER CITY HOMES**

Project **BADMINTON ROAD MATSON**

Drawing **EXTERNAL WORKS & DRAINAGE DETAILS**

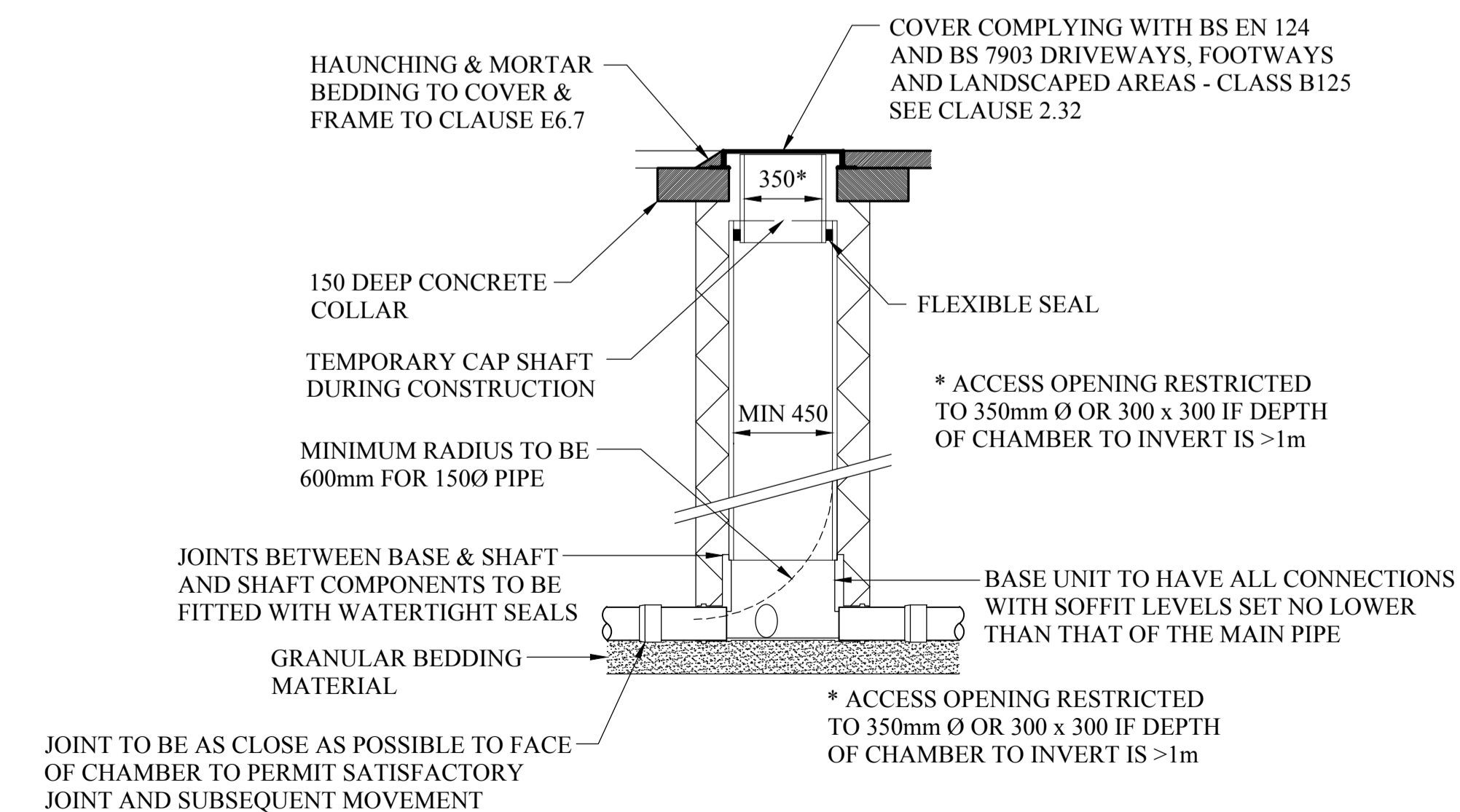
APPROVAL

Scale	1:25 UNO	Leaf	A1
Drawn	J.T.	Date	19.02.21
Checked		Date	

Project No. **21019**

Drawing No. **101** Revision **B**

TYPE D - TYPICAL POLYPROPYLENE INSPECTION CHAMBER (IN ACCORDANCE WITH SEWER SECTOR GUIDANCE APP.C)



Drainage & Maintenance Strategy
For

Badminton Road
Matson
Gloucester

Project Ref: 21019

Annex C – QBar, Rainfall Estimation & Attenuation



davidsonwalsh

37 Prestbury Road | Cheltenham | GL52 2PT

T: +44 (0) 1242 256495 | Registered in England No.05711218

Calculated by:

Site name:

Site location:

Site Details

Latitude:

Longitude:

Reference:

Date:

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

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):

Methodology

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
SOIL type:	3	3
HOST class:	N/A	N/A
SPR/SPRHOST:	0.37	0.37

Hydrological characteristics

	Default	Edited
SAAR (mm):	662	662
Hydrological region:	4	4
Growth curve factor 1 year:	0.83	0.83
Growth curve factor 30 years:	2	2
Growth curve factor 100 years:	2.57	2.57
Growth curve factor 200 years:	3.04	3.04

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):	0.27	0.27
1 in 1 year (l/s):	0.22	0.22
1 in 30 years (l/s):	0.54	0.54
1 in 100 year (l/s):	0.69	0.69
1 in 200 years (l/s):	0.82	0.82

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Proposed Site Storage (Qbar)

Summary of FEH 2013 Calculations

Duration hours	2 year rainfall (mm)	30 year rainfall (mm)	100 year rainfall (mm)	200 year rainfall (mm)	500 year rainfall (mm)	1000 year rainfall (mm)
0.25	7.4	19.22	25.8	30.67	38.09	44.27
0.5	9.62	25.54	34.7	41.52	52	60.6
1	12.12	32.57	44.77	53.65	67.55	79.15
2	16.19	39.41	53.75	63.95	79.03	91.24
3	18.84	43.91	59.55	70.34	85.97	98.44
4	20.84	47.35	63.85	74.98	90.91	103.55
6	23.83	52.49	70.06	81.57	97.76	110.67
24	35.36	71.48	91.29	103.57	120.31	133.23

Total Site Area	=	0.0801 ha
Plot 1 Roof Area	=	0.005 ha
Plot 2 Roof Area	=	0.005 ha
Plot 3 Roof Area	=	0.0054 ha
Road Hardstanding	=	0.0315 ha
Total Impermeable area	=	0.0469 ha
Flow Control Rate (Qbar) Full site @ 0.0801	=	0.216 l/s
Flow Control Rate (Qbar)Impermeable Area @ 0.0469	=	0.126 l/s
PIMP	=	58.55 %
SPR	=	0.37
SOIL	=	3

2 year event

Storm Event	Rain	Intensity	Maximum surface runoff	Throttle Rate	Total Storage
(min)	(mm)	(mm/h)	(l/s)	(l/s)	(m³)
15.00	7.40	29.60	3.86	0.13	3.36
30.00	9.62	19.24	2.51	0.13	4.29
60.00	12.12	12.12	1.58	0.13	5.24
120.00	16.19	8.10	1.06	0.13	6.69
180.00	18.84	6.28	0.82	0.13	7.48
240.00	20.84	5.21	0.68	0.13	7.97
360.00	23.83	3.97	0.52	0.13	8.46
1440.00	35.36	1.47	0.19	0.13	0.00

30 year event

Storm Event	Rain	Intensity	Maximum surface runoff	Throttle Rate	Storage
(min)	(mm)	(mm/h)	(l/s)	(l/s)	(m³)
15	19.22	76.88	10.02	0.13	8.91
30	25.54	51.08	6.66	0.13	11.76
60	32.57	32.57	4.25	0.13	14.83
120	39.41	19.71	2.57	0.13	17.59
180	43.91	14.64	1.91	0.13	19.25
240	47.35	11.84	1.54	0.13	20.41
360	52.49	8.75	1.14	0.13	21.92
1440	71.48	2.98	0.39	0.13	22.66

100 year event

Storm Event	Rain	Intensity	Maximum surface runoff	Throttle Rate	Storage	
(min)	(mm)	(mm/h)	(l/s)	(l/s)	(m ³)	
15	25.80	103.20	13.46	0.13	12.00	
30	34.70	69.40	9.05	0.13	16.06	
60	44.77	44.77	5.84	0.13	20.56	
120	53.75	26.88	3.50	0.13	24.32	
180	59.55	19.85	2.59	0.13	26.59	
240	63.85	15.96	2.08	0.13	28.16	
360	70.06	11.68	1.52	0.13	30.16	40% imp.t reqd
1440	91.29	3.80	0.50	0.13	31.96	

100 year event + 40%

Storm Event	Rain	Intensity	Maximum surface runoff	Throttle Rate	Storage	
(min)	(mm)	(mm/h)	(l/s)	(l/s)	(m ³)	
15	36.12	144.48	18.84	0.13	16.84	
30	48.58	97.16	12.67	0.13	22.58	
60	62.68	62.68	8.17	0.13	28.97	
120	75.25	37.63	4.91	0.13	34.41	
180	83.37	27.79	3.62	0.13	37.77	
240	89.39	22.35	2.91	0.13	40.14	
360	98.08	16.35	2.13	0.13	43.32	
1440	127.81	5.33	0.69	0.13	49.10	Exceedance