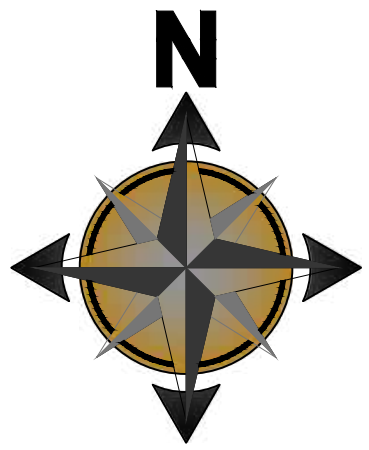


Appendix A – Topographical Survey





LEGEND

	Building Line
	Bottom of Bank
	Edge Of Concrete
	Canopy
	Fence
	Gate
	Edge Of Hedge
	Overhead Cable
	Top of Bank
	Wall
	Invert level
	Tree
	Set Out Point

Background Data

All "grey coloured" background data belongs to Castle Surveys, not JW Geomatics and is only used as a visualisation tool to contrast between both companies' Topographical Survey Datasets.

Survey Details:

Survey Grid: This survey has been orientated to the Ordnance Survey (O.S.) National Grid (OSGB36) via a Global Position System (GPS) and the O.S. Active Network (OS Net).

All JW Geomatics' survey data is GNSS data, i.e. true OS coordinates and is related to OS National Grid North using a point of origin central to the survey.

Coordinate System: This was calculated using the OSTN15 transformation model on the 09.06.25 using Leica Smartnet.

Survey Level Datum: Calculated from GPS derived heights using the OSBM15 Transformation Geoid Model in relation to Ordnance Survey Newlyn using Leica Smartnet.

General Notes:

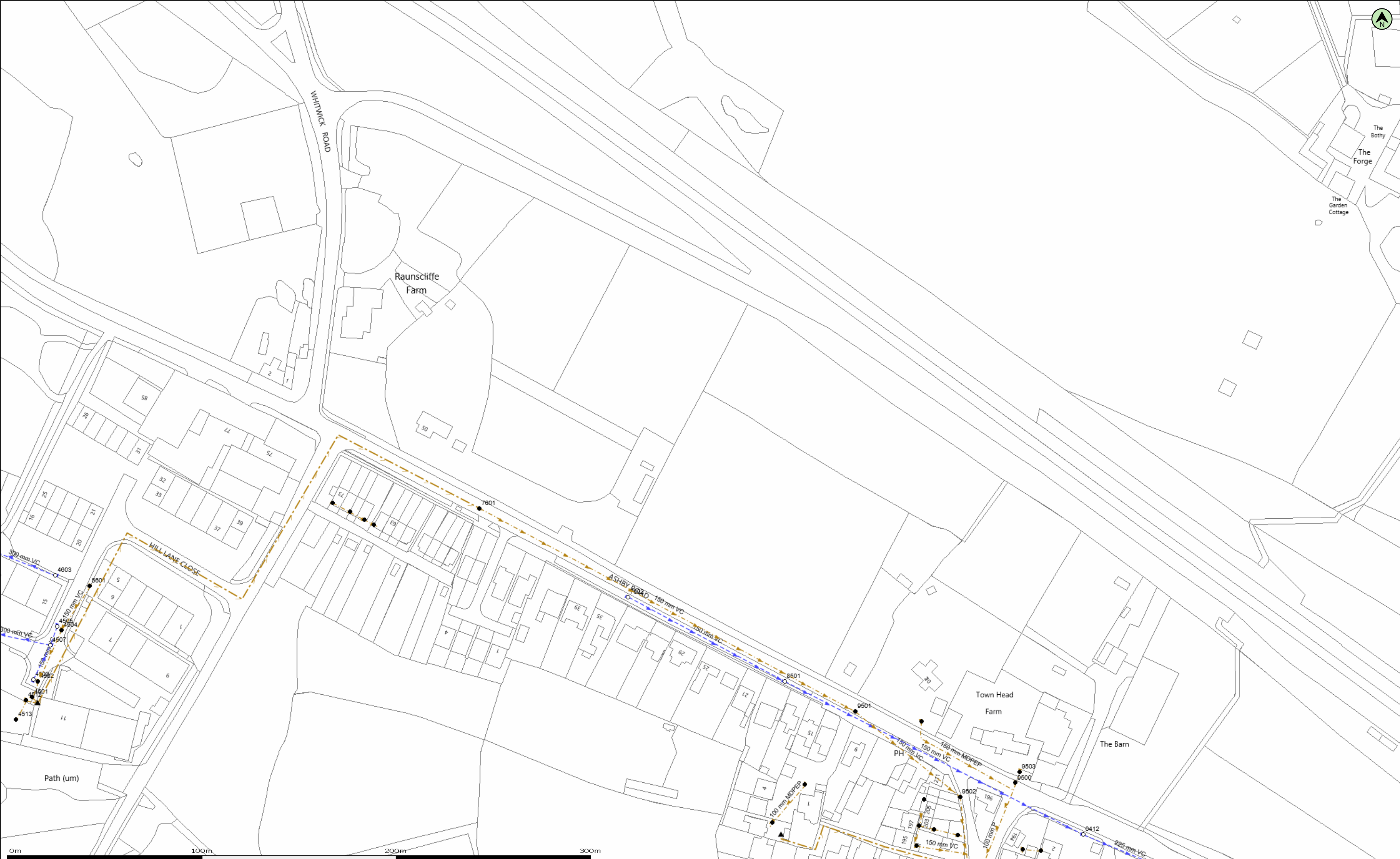
- Physical features present in the vicinity of boundaries may not represent legally conveyed ownership.
- Some features may have been obscured at the time of survey (Parked cars, Dense Vegetation, etc.)
- The background OS Tils & The Existing Topo By Castle Surveys may be inaccurate and incomplete - JW Geomatics are not responsible for this data.
- The plan should only be used for its original intentions - JW Geomatics are not responsible for any mistakes arising from the supply of this plan to third parties.
- All critical dimensions should be checked on site prior to construction.
- Unless otherwise specified, features such as road line markings & hedge centrelines are indicative only.
- Unless specified in the preliminary deliverables, level heights, trunk diameters, fence heights and wall heights are not measured.
- Canopy spread is measured at ground level where possible - The "Tree" legend detail denotes an approximate spread.
- Only trees over 3m in height are surveyed with a "trunk" however large hedges may also have multiple trunks - canopy spread surveyed instead.
- The "Top Of Kerb" is not shown as a poly-line observations taken on all differently sized kerbs, please use the 3D DXF for level data.



JW GEOMATICS
Surveying & Site Engineering Solutions

status: For Information	
project: Markfield, Leicester	
site: Topographical Survey & Setting Out Locations	
drawn: JW	date: 09.06.25
checked: JW	scale: @ A1: 1:500
job no: JWG-AH6	dig no: JWG-AH6-001

Appendix B – Severn Trent Sewer Records and MAC Technical Note



(c) Crown copyright and database rights 2023 Ordnance Survey 100031673

Date: 23/06/23

Scale: 1:1250

Map Centre: 448825,310698

Data updated: 14/06/23

Our Ref: 1209028 - 19

Wastewater Plan A2

Do not scale off this map. The plan and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this plan and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of SEVERN TRENT WATER assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems. Reproduction by permission of Ordnance Survey on behalf of HMSO. ©Crown Copyright and database rights 2023. All rights reserved. Ordnance Survey licence number 100031673. Document users other than SEVERN TRENT WATER business users are advised that this document is provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it.

Public Foul Gravity/Lateral Drain		Highway Drain		Manhole Foul	
Public Combined Gravity/Lateral Drain		Overflow Pipe		Manhole Surface	
Public Surface Water Gravity/Lateral Drain		Disposal Pipe		Abandoned Pipe	
Pressure Foul		Culverted Water Course		Chamber	
Pressure Combined		Pumping Station		Section 104 sewers are shown in green	
Pressure Surface Water		Fitting		Private sewers are shown in magenta	

duncan@cornerstoneprojects.co.uk

Penland Es





GENERAL CONDITIONS AND PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ADJACENT TO SEVERN TRENT WATER'S APPARATUS

Please ensure that a copy of these conditions is passed to your representative and/or your contractor on site. If any damage is caused to Severn Trent Water Limited (STW) apparatus (defined below), the person, contractor or subcontractor responsible must inform STW immediately on:
0800 783 4444 (24 hours)

- a) These general conditions and precautions apply to the public sewerage, water distribution and cables in ducts including (but not limited to) sewers which are the subject of an Agreement under Section 104 of the Water Industry Act 1991(a legal agreement between a developer and STW, where a developer agrees to build sewers to an agreed standard, which STW will then adopt); mains installed in accordance with an agreement for the self-construction of water mains entered into with STW and the assets described at condition b) of these general conditions and precautions. Such apparatus is referred to as "STW Apparatus" in these general conditions and precautions.
- b) Please be aware that due to The Private Sewers Transfer Regulations June 2011, the number of public sewers has increased, but many of these are not shown on the public sewer record. However, some idea of their positions may be obtained from the position of inspection covers and their existence must be anticipated.
- c) On request, STW will issue a copy of the plan showing the approximate locations of STW Apparatus although in certain instances a charge will be made. The position of private drains, private sewers and water service pipes to properties are not normally shown but their presence must be anticipated. This plan and the information supplied with it is furnished as a general guide only and STW does not guarantee its accuracy.
- d) STW does not update these plans on a regular basis. Therefore the position and depth of STW Apparatus may change and this plan is issued subject to any such change. Before any works are carried out, you should confirm whether any changes to the plan have been made since it was issued.
- e) The plan must not be relied upon in the event of excavations or other works in the vicinity of STW Apparatus. It is your responsibility to ascertain the precise location of any STW Apparatus prior to undertaking any development or other works (including but not limited to excavations).
- f) No person or company shall be relieved from liability for loss and/or damage caused to STW Apparatus by reason of the actual position and/or depths of STW Apparatus being different from those shown on the plan.

In order to achieve safe working conditions adjacent to any STW Apparatus the following should be observed:

1. All STW Apparatus should be located by hand digging prior to the use of mechanical excavators.
2. All information set out in any plans received from us, or given by our staff at the site of the works, about the position and depth of the mains, is approximate. Every possible precaution should be taken to avoid damage to STW Apparatus. You or your contractor must ensure the safety of STW Apparatus and will be responsible for the cost of repairing any loss and/or damage caused (including without limitation replacement parts).
3. Water mains are normally laid at a depth of 900mm. No records are kept of customer service pipes which are normally laid at a depth of 750mm; but some idea of their positions may be obtained from the position of stop tap covers and their existence must be anticipated.
4. During construction work, where heavy plant will cross the line of STW Apparatus, specific crossing points must be agreed with STW and suitably reinforced where required. These crossing points should be clearly marked and crossing of the line of STW Apparatus at other locations must be prevented.
5. Where it is proposed to carry out piling or boring within 20 metres of any STW Apparatus, STW should be consulted to enable any affected STW Apparatus to be surveyed prior to the works commencing.
6. Where excavation of trenches adjacent to any STW Apparatus affects its support, the STW Apparatus must be supported to the satisfaction of STW. Water mains and some sewers are pressurised and can fail if excavation removes support to thrust blocks to bends and other fittings.
7. Where a trench is excavated crossing or parallel to the line of any STW Apparatus, the backfill should be adequately compacted to prevent any settlement which could subsequently cause damage to the STW Apparatus. In special cases, it may be necessary to provide permanent support to STW Apparatus which has been exposed over a length of the excavation before backfilling and reinstatement is carried out. There should be no concrete backfill in contact with the STW Apparatus.
8. No other apparatus should be laid along the line of STW Apparatus irrespective of clearance. Above ground apparatus must not be located within a minimum of 3 metres either side of the centre line of STW Apparatus for smaller sized pipes and 6 metres either side for larger sized pipes without prior approval. No manhole or chamber shall be built over or around any STW Apparatus.
9. A minimum radial clearance of 300 millimetres should be allowed between any plant or equipment being installed and existing STW Apparatus. We reserve the right to increase this distance where strategic assets are affected.
10. Where any STW Apparatus coated with a special wrapping is damaged, even to a minor extent, STW must be notified and the trench left open until the damage has been inspected and the necessary repairs have been carried out. In the case of any material damage to any STW Apparatus causing leakage, weakening of the mechanical strength of the pipe or corrosion-protection damage, the necessary remedial work will be recharged to you.
11. It may be necessary to adjust the finished level of any surface boxes which may fall within your proposed construction. Please ensure that these are not damaged, buried or otherwise rendered inaccessible as a result of the works and that all stop taps, valves, hydrants, etc. remain accessible and operable. Minor reduction in existing levels may result in conflict with STW Apparatus such as valve spindles or tops of hydrants housed under the surface boxes. Checks should be made during site investigations to ascertain the level of such STW Apparatus in order to determine any necessary alterations in advance of the works.
12. With regard to any proposed resurfacing works, you are required to contact STW on the number given above to arrange a site inspection to establish the condition of any STW Apparatus in the nature of surface boxes or manhole covers and frames affected by the works. STW will then advise on any measures to be taken, in the event of this a proportionate charge will be made.
13. You are advised that STW will not agree to either the erection of posts, directly over or within 1.0 metre of valves and hydrants,
14. No explosives are to be used in the vicinity of any STW Apparatus without prior consultation with STW.

TREE PLANTING RESTRICTIONS

There are many problems with the location of trees adjacent to sewers, water mains and other STW Apparatus and these can lead to the loss of trees and hence amenity to the area which many people may have become used to. It is best if the problem is not created in the first place. Set out below are the recommendations for tree planting in close proximity to public sewers, water mains and other STW Apparatus.

15. Please ensure that, in relation to STW Apparatus, the mature root systems and canopies of any tree planted do not and will not encroach within the recommended distances specified in the notes below.
16. Both Poplar and Willow trees have extensive root systems and should not be planted within 12 metres of a sewer, water main or other STW Apparatus.
17. The following trees and those of similar size, be they deciduous or evergreen, should not be planted within 6 metres of a sewer, water main or other STW Apparatus. E.g. Ash, Beech, Birch, most Conifers, Elm, Horse Chestnut, Lime, Oak, Sycamore, Apple and Pear. Asset Protection Statements Updated May 2014
18. STW personnel require a clear path to conduct surveys etc. No shrubs or bushes should be planted within 2 metre of the centre line of a sewer, water main or other STW Apparatus.
19. In certain circumstances, both STW and landowners may wish to plant shrubs/bushes in close proximity to a sewer, water main of other STW Apparatus for screening purposes. The following are shallow rooting and are suitable for this purpose: Blackthorn, Broom, Cotoneaster, Elder, Hazel, Laurel, Privet, Quickthorn, Snowberry, and most ornamental flowering shrubs.

1.0 Introduction

- 1.1 This note sets out a response to the Lead Local Flood Authority (LLFA) comments dated 5th August 2021 in relation to the planning application detailed below as supported by MAC Pre-planning Engineering Flood Risk Assessment (454-FRA-01-A):

“21/00787/OUT - Residential development of up to 93 dwellings, public open space, landscaping and SuDS”

2.0 Surface Water Outfall

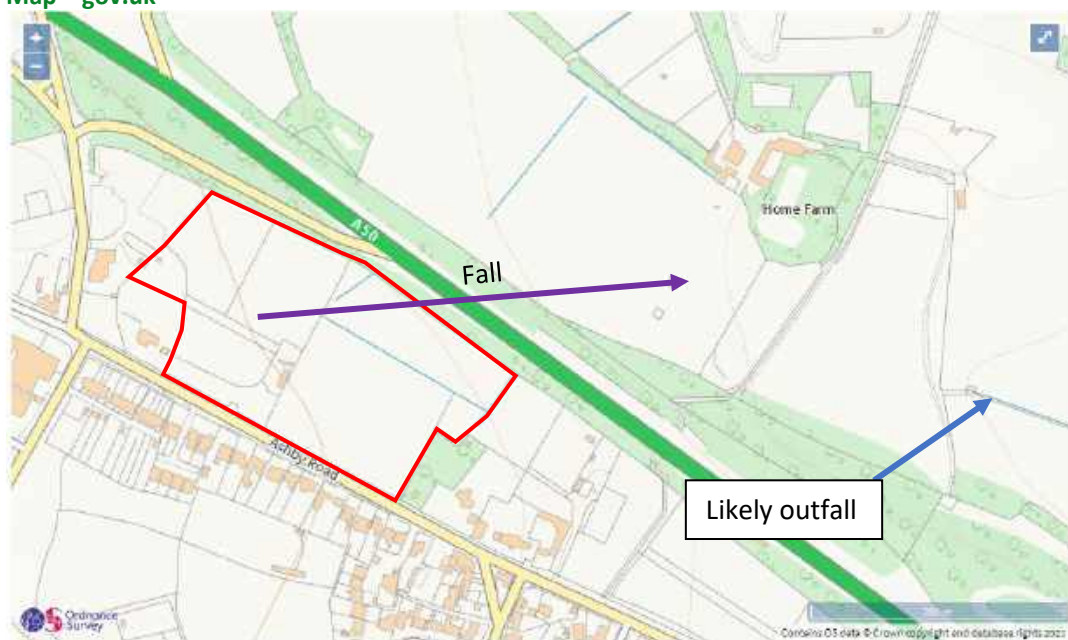
- 2.1 As set out in the Flood Risk Assessment surface water from the proposed development is to outfall to a ditch located in the north eastern corner of the site, as described in paragraph 3.3.5 of the FRA.
- 2.2 Infiltration techniques are not thought to be viable, subject to further testing at detailed design stage.
- 2.3 An onsite inspection of the existing drainage arrangements was undertaken which identified a number of existing ditches on the site with particular interest on those located on the northern boundary. The plan showing these is included in **Appendix A** of this note and within the FRA.
- 2.4 A single point of discharge has been proposed with surface water discharging into ‘ditch C’. Ditch C runs parallel to the eastern boundary flowing from north to south. A headwall was observed, image below (Inset 2.1). This suggests that the pipe is ditched under the A50.

Inset 2.1: Ditch C Headwall



- 2.5 We do not know the exact route of the watercourse beyond the headwall but the ditches marked on the plan shown in **Appendix A** currently drain the existing site and appear to have been constructed specifically for this purpose when the A50 was constructed. With flows attenuated to greenfield equivalent rates the proposed development will continue to drain in a similar manner to the existing fields.
- 2.6 The watercourse on highway land would be a highway structure. As such the Local Highway Authority have been contacted with regard to any details they may have of the watercourse, however, they do not have any details of the watercourse as demonstrated by a copy of the correspondence enclosed in **Appendix B**.
- 2.7 Any survey of the piped watercourse would only be able to identify a length of pipe from the headwall to any manhole or ditch. Due to the A50 and surrounding third party land it would not be possible to survey the route with any accuracy.
- 2.8 The Environment Agency's Flood Risk Map (Inset 2.2) indicates the topography of the surrounding land and maps some watercourses. This indicates that land in this area broadly falls from southwest to northeast, as indicated by the fall arrow. We would therefore expect the watercourse to ultimately drain into the mapped watercourse which is marked on Inset 2.2 below.

Inset 2.2: Direction of Fall and Outfall Watercourse based on Environment Agency Flood Risk Map – gov.uk



Summary

We have demonstrated that the site is already drained to the existing ditch(es) located on the northern boundary. The proposed development will broadly replicate the same method of outfall. As such the development will not significantly alter the existing drainage arrangement and will not have a significant adverse impact on the existing drainage network.



Appendix A

Existing Drainage
MAC drawing no. 454-FRA05



Notes:

1. Based on Castles Surveys Ltd 'Topographical Survey', drawing number 20324-20-01 dated 17-09-20.
2. Based on RJ Surveys 'Tree Survey & Layout Plan 01', dated October 2020.

Key:

Existing Ditch



T: 01604 340544 Northampton Office
E: info@mac-ltd.co.uk W: mac-ltd.co.uk
Martin Andrews Consulting Ltd

- Transport Assessments
- Flood Risk Assessments
- Highway Advice
- Access Design
- Drainage Strategies
- Vehicle tracking

Client: Pendimo Development Land and Property

Project: Land north of Ashby Road, Markfield

Title: Existing Drainage

Date: 09/05/21

Drw: MJA

Chk: MJA

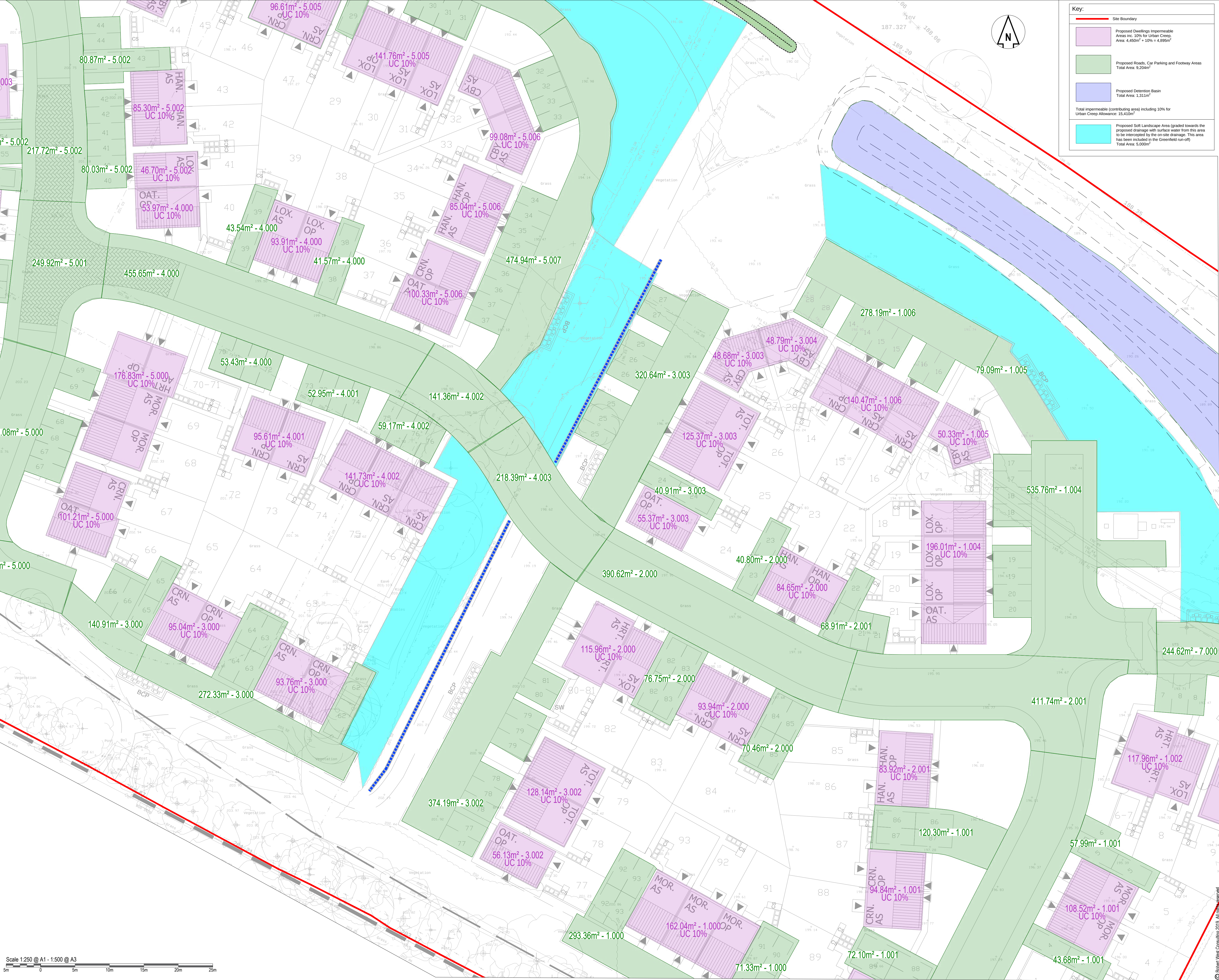
Drawing No: 454-FRA05

Revision: A

Scale: 1:500

Size: A2

Appendix C – Greenfield Runoff Calculation



Key:

- Site Boundary
- Proposed Dwellings Impermeable Areas inc. 10% for Urban Creep, Area: 4.450m² + 10% = 4.895m²
- Proposed Roads, Car Parking and Footway Areas
Total Area: 9.204m²
- Proposed Detention Basin
Total Area: 1.311m²
- Proposed Soft Landscape Area (graded towards the proposed drainage with surface water from this area to be intercepted by the on-site drainage. This area has been included in the Greenfield run-off)
Total Area: 5.000m²

Total impermeable (contributing area) including 10% for Urban Creep Allowance: 15.410m²

- DO NOT SCALE OFF THIS DRAWING**
- NOTES**
- The contractor is responsible for verifying all site & setting out dimensions before commencing work.
 - This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
 - All dimensions in meters unless stated otherwise.
- DRAINAGE NOTES:**
- All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK & BS EN 752).
 - Any existing drainage found crossing the site is to be investigated, and if found to be 'live', it should be diverted in consultation with the Client.
 - For location and setting out of building drainage points refer to architects drawings.
 - All pipe runs near buildings to comply with the Building Regulations 2015 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class GEN3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN3 concrete to a level below the lowest level of the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
 - Where pipes, external to the structures, have a depth to soft from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
 - Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
 - Where a pipe, under a vehicular area other than a carriageway has a depth of cover if less than 0.9m the pipe shall be protected with a concrete slab set above it.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibreboard or polythene) shall be provided at a maximum of 8m centres (conceding with pipe joints), the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. a board thickness of 16mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
 - All private building drainage shall be constructed in strict accordance with BS EN 752. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of (c/c)is = 1 in 40>H/s = 1 in 80 for foul drains and 1 in 80 for surface water drains.
 - All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
 - All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All pipes, bends and junction materials for adoptable drainage shall be UPVC compliant with Clause E2.21 of Design and Construction Guidance for Foul and Surface Water Sewers, Sector Guidance Appendix C, June 2022. These should conform to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All back inlet gullies to be roddable or connected to inspection chambers.
 - All gully connections other than at manholes to be 'Y' junctions.
 - All road gully connections to be 150mm diameter.
 - All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
 - No low point shall be without a method of drainage.
 - All connections to be soffit to soffit unless otherwise noted.
 - All concrete and concrete products to be in accordance with BRE 363 for sulphates.
 - The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
 - Before connections are made to existing public sewers an application under S106 must be made to relevant sewerage undertaker.
 - The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
 - Any existing drains to be abandoned to be decommissioned in accordance with the Building Regulations by either grubbing, infilling or sealing.
 - Should ground water be encountered on site during construction the Client shall be informed to determine if additional measures are required.
 - The drainage system shall be fully cleansed on completion of the project using methods that ensure pollution off site does not occur.
 - Any existing land drains severed during construction shall be reinstated.

Revision History					
Rev	Comment	By	Chkd	Appr	Date
A01	FOR APPROVAL		TZ	TZ	SB 24.11.2025
Current Revision					
A02	FOR APPROVAL		BS	TZ	SB 09.12.2025

FOR APPROVAL

ALLISON HOMES

robert west
proesgroup

1 Paris Garden
London
SE1 8ND
t: 0203 773 7860
www.robertwest.co.uk

Project: **MARKFIELD**

Drawing Title: **PROPOSED IMPERMEABLE AREA PLAN
SHEET 2 OF 3**

RWCL Internal Register reference: 5964-003 Scales: @ A1

1061-A02

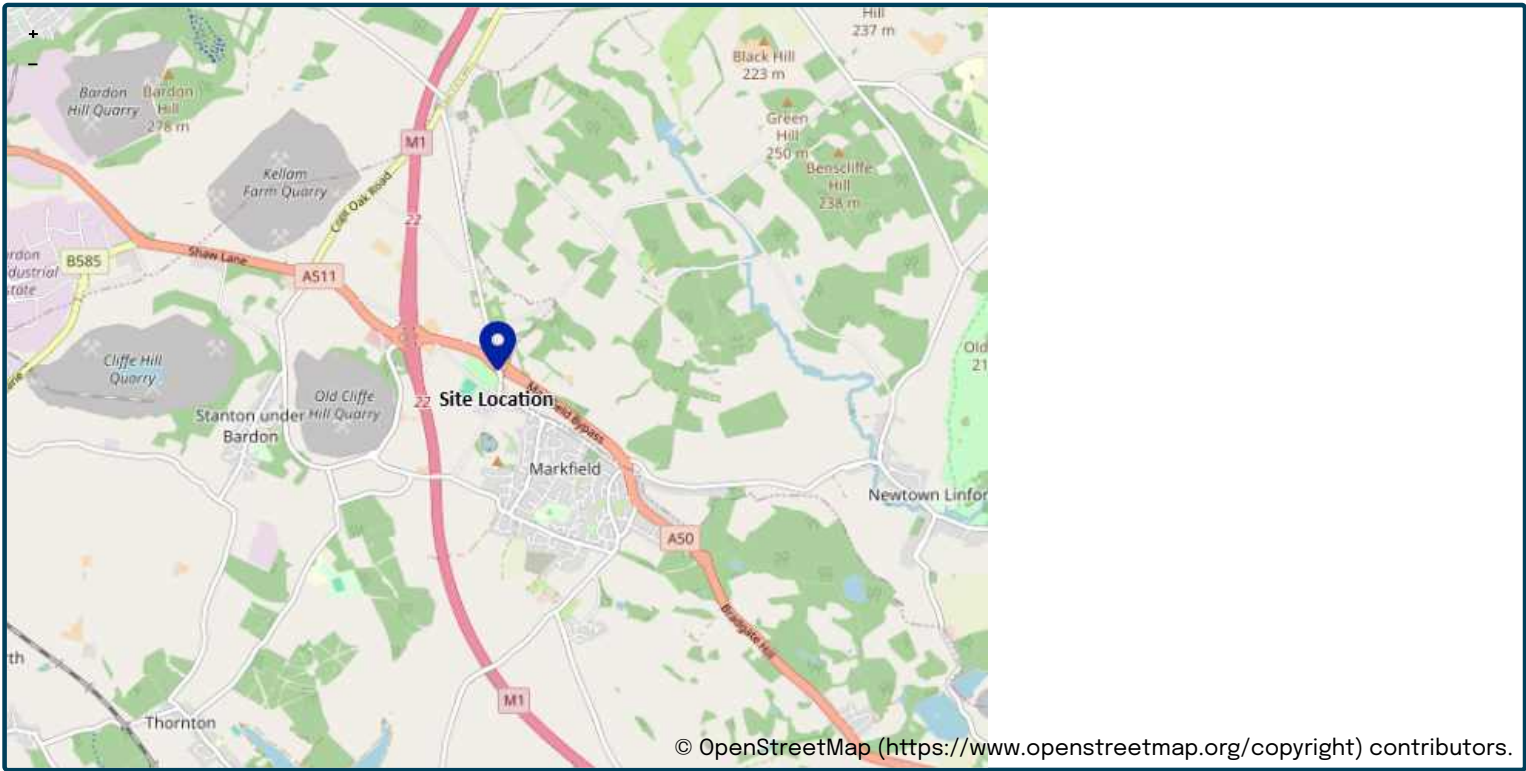
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	24/11/2025
Calculated by	TZ
Reference	5964/003
Model version	2.2.2

Location

Site name	Markfield
Site location	Ashby Road, Markfield



Site easting (British National Grid)	448614
Site northing (British National Grid)	310725

Site details

Total site area (ha)	2.04	ha
----------------------	-----------------------------------	----

Greenfield runoff

Method

Method	FEH statistical (2008)
--------	------------------------

FEH statistical (2008)

	<u>My value</u>	<u>Map value</u>
SAAR6190 (mm)	724	mm
BFIHOST19	0.31	
QMed-QBar conversion	1.124	1.124
QMed (l/s)	10.5	l/s
QBar (FEH statistical 2008) (l/s)	11.8	l/s

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	4	4
1 year growth factor	0.83	
2 year growth factor	0.89	
10 year growth factor	1.49	
30 year growth factor	2	
100 year growth factor	2.57	
200 year growth factor	3.04	

Results

Method	FEH statistical (2008)
Flow rate 1 year (l/s)	9.8
Flow rate 2 year (l/s)	10.5
Flow rate 10 years (l/s)	17.6
Flow rate 30 years (l/s)	23.6
Flow rate 100 years (l/s)	30.4
Flow rate 200 years (l/s)	35.9

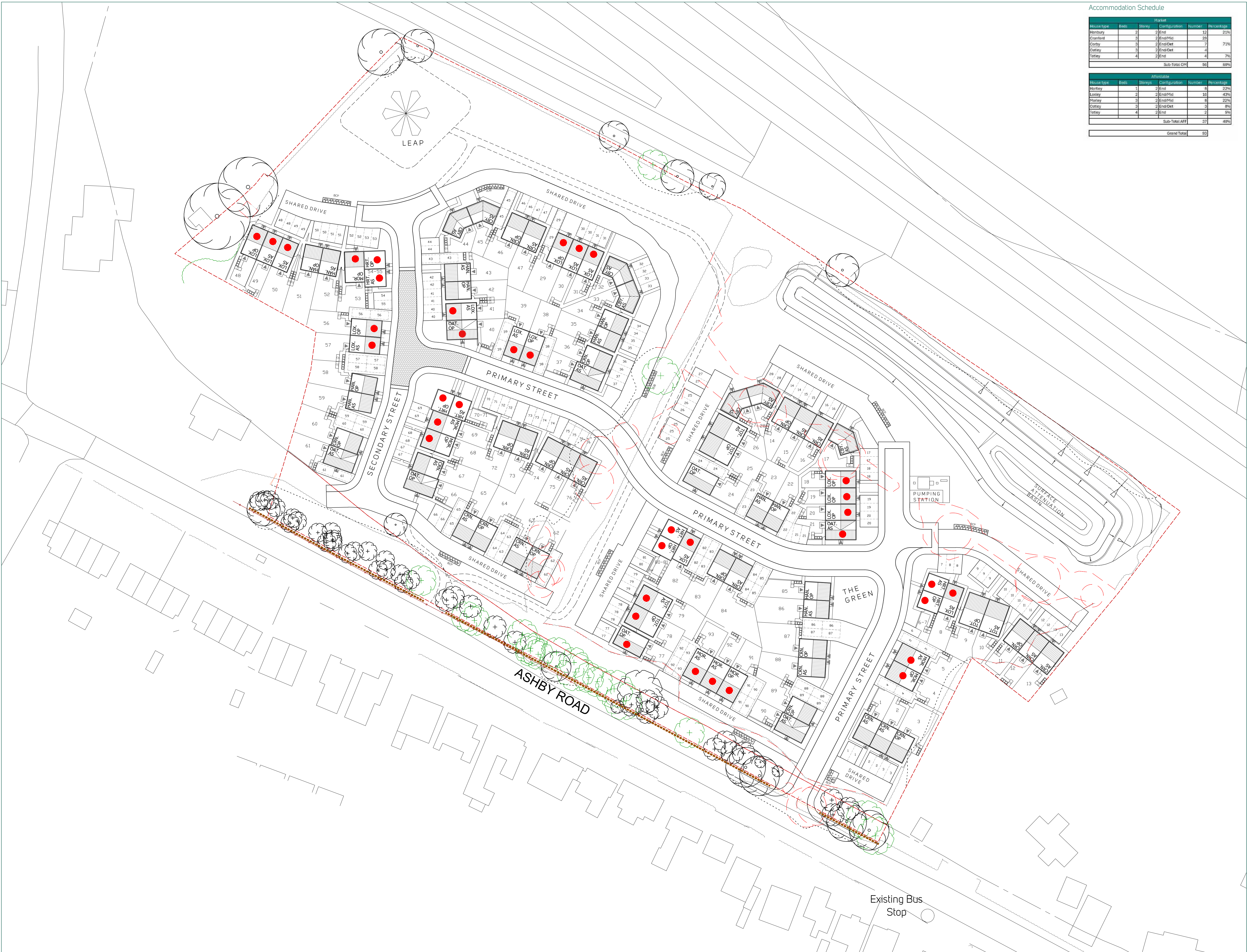
Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than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

Disclaimer

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

Appendix D – Site Investigation Report

Appendix E – Proposed Site Layout Plan



Accommodation Schedule

Market					
House Type	Bed	Storey	Configuration	Number	Percentage
Herby	2	2	End	12	21%
Crabford	3	2	EndMid	29	71%
Crabby	3	2	EndDet	7	
Crabby	3	2	EndDet	4	
Totley	4	2	End	4	7%
Sub-Total OM				56	60%

Affordable					
House Type	Bed	Storey	Configuration	Number	Percentage
Herby	1	2	End	3	22%
Crabby	2	2	EndMid	16	43%
Crabby	3	2	EndMid	8	22%
Crabby	3	2	EndDet	3	8%
Totley	4	2	End	2	9%
Sub-Total AFF				37	40%
Grand Total				93	

Key

- Application site boundary
- Existing tree retention
- Existing tree removal
- Proposed tree planting (refer landscape proposal)
- Bin collection point
- On plot bin location
- Affordable plot
- Existing stone wall

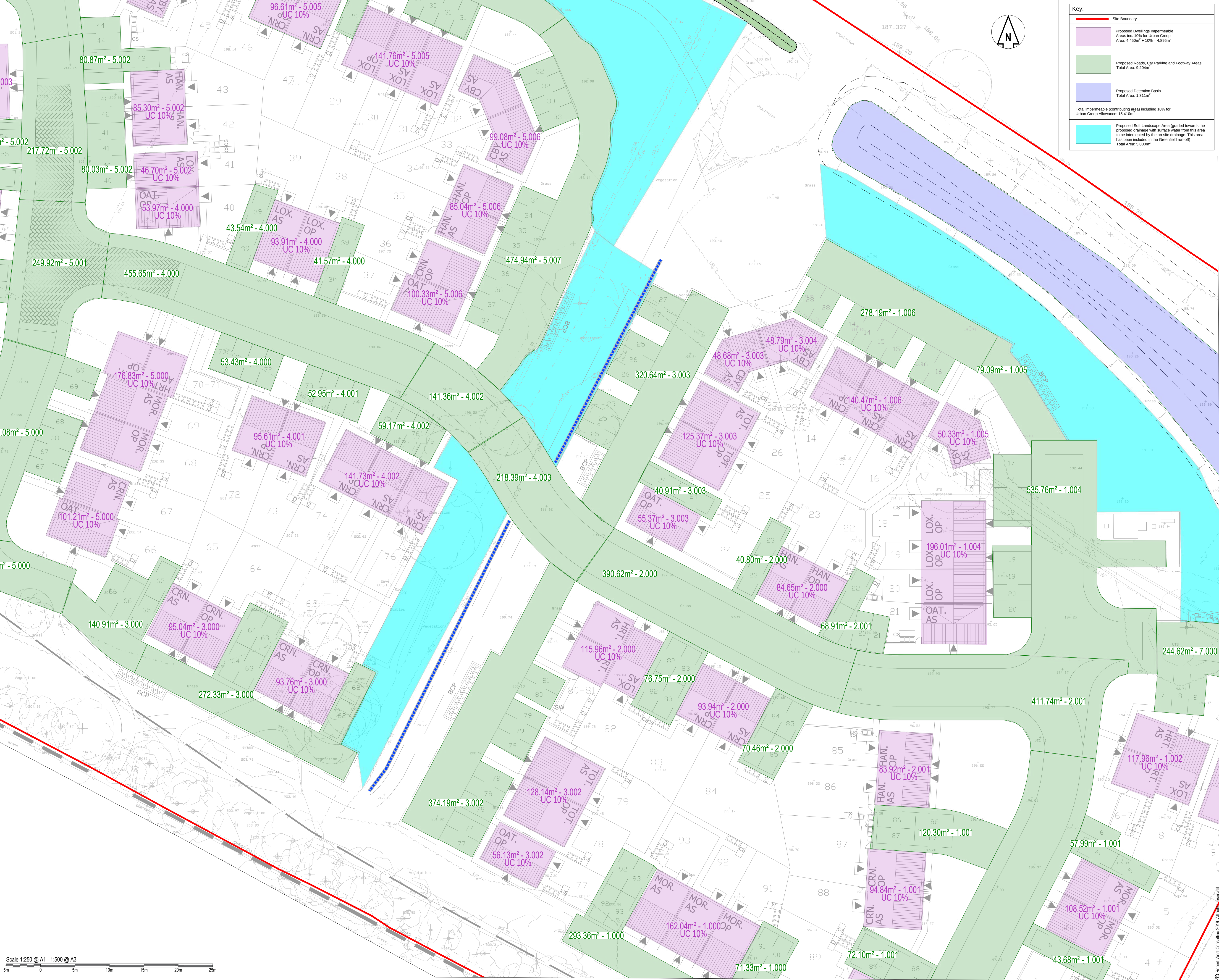


Project
Land off Ashby Road, Markfield

Drawing Title
Technical Planning Layout

Project Code Drawing No Rev Drawing Scale
n2159 008 - 1:500 @ A1

Appendix F – Proposed Impermeable Areas Plan



Key:

- Site Boundary
- Proposed Dwellings Impermeable Areas inc. 10% for Urban Creep, Area: 4.450m² + 10% = 4.895m²
- Proposed Roads, Car Parking and Footway Areas
Total Area: 9.204m²
- Proposed Detention Basin
Total Area: 1.311m²
- Proposed Soft Landscape Area (graded towards the proposed drainage with surface water from this area to be intercepted by the on-site drainage. This area has been included in the Greenfield run-off)
Total Area: 5.000m²

Total impermeable (contributing area) including 10% for Urban Creep Allowance: 15.410m²

- DO NOT SCALE OFF THIS DRAWING**
- NOTES**
- The contractor is responsible for verifying all site & setting out dimensions before commencing work.
 - This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
 - All dimensions in meters unless stated otherwise.
- DRAINAGE NOTES:**
- All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK & BS EN 752).
 - Any existing drainage found crossing the site is to be investigated, and if found to be 'live', it should be diverted in consultation with the Client.
 - For location and setting out of building drainage points refer to architects drawings.
 - All pipe runs near buildings to comply with the Building Regulations 2015 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class GEN3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN3 concrete to a level below the lowest level of the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
 - Where pipes, external to the structures, have a depth to soft from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
 - Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
 - Where a pipe, under a vehicular area other than a carriageway has a depth of cover if less than 0.9m the pipe shall be protected with a concrete slab set above it.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibreglass or polyurethane) shall be provided at a maximum of 8m centres (conceding with pipe joints), the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. a board thickness of 16mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
 - All private building drainage shall be constructed in strict accordance with BS EN 752. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of (c)1:15 = 1 in 40 (1:15 = 1 in 80) for foul drains and 1 in 80 for surface water drains.
 - All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
 - All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All pipes, bends and junction materials for adoptable drainage shall be UPVC compliant with Clause E2.21 of Design and Construction Guidance for Foul and Surface Water Sewers, Sector Guidance Appendix C, June 2022. These should conform to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All back inlet gullies to be roddable or connected to inspection chambers.
 - All gully connections other than at manholes to be 'Y' junctions.
 - All road gully connections to be 150mm diameter.
 - All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
 - No low point shall be without a method of drainage.
 - All connections to be soffit to soffit unless otherwise noted.
 - All concrete and concrete products to be in accordance with BRE 363 for sulphates.
 - The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
 - Before connections are made to existing public sewers an application under S106 must be made to relevant sewerage undertaker.
 - The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
 - Any existing drains to be abandoned to be decommissioned in accordance with the Building Regulations by either grubbing, infilling or sealing.
 - Should ground water be encountered on site during construction the Client shall be informed to determine if additional measures are required.
 - The drainage system shall be fully cleansed on completion of the project using methods that ensure pollution off site does not occur.
 - Any existing land drains severed during construction shall be reinstated.

Revision History					
Rev	Comment	By	Chkd	Appr	Date
A01	FOR APPROVAL		TZ	TZ	SB 24.11.2025
Current Revision					
A02	FOR APPROVAL		BS	TZ	SB 09.12.2025

FOR APPROVAL

ALLISON HOMES

robert west
proesgroup

1 Paris Garden
London
SE1 8ND
t: 0203 773 7860
www.robertwest.co.uk

Project: **MARKFIELD**

Drawing Title: **PROPOSED IMPERMEABLE AREA PLAN
SHEET 2 OF 3**

RWCL Internal Register reference: 5964-003 Scales: @ A1

1061-A02



- DO NOT SCALE OFF THIS DRAWING
- NOTES**
- The contractor is responsible for verifying all site & setting out dimensions before commencing work.
 - This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
 - All dimensions in meters unless stated otherwise.
- DRAINAGE NOTES:**
- All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK & BS EN 752).
 - Any existing drainage found crossing the site is to be investigated, and if found to be 'live', it should be diverted in consultation with the Client.
 - For location and setting out of building drainage points refer to architects drawings.
 - All pipe runs near buildings to comply with the Building Regulations 2015 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class GEN3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
 - Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
 - Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
 - Where a pipe, under a vehicular area other than a carriageway has a depth of cover if less than 0.9m the pipe shall be protected with a concrete slab set above it.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibreboard or polyurethane) shall be provided at a maximum of 8m centres (conceding with pipe joints), the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. a board thickness of 16mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
 - All private building drainage shall be constructed in strict accordance with BS EN 752. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of (c/c) is = 1 in 400-l/s = 1 in 80) for foul drains and 1 in 80 for surface water drains.
 - All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
 - All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All pipes, bends and junction materials for adoptable drainage shall be UPVC compliant with Clause E2.21 of Design and Construction Guidance for Foul and Surface Water Water Sewers, Sector Guidance Appendix C, June 2022. These should conform to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All back inlet gullies to be roddable or connected to inspection chambers.
 - All gully connections other than at manholes to be 'Y' junctions.
 - All road gully connections to be 150mm diameter.
 - All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
 - No low point shall be without a method of drainage.
 - All connections to be soffit to soffit unless otherwise noted.
 - All concrete and concrete products to be in accordance with BRE 363 for sulphates.
 - The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
 - Before connections are made to existing public sewers an application under S106 must be made to relevant sewerage undertaker.
 - The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
 - Any existing drains to be abandoned to be decommissioned in accordance with the Building Regulations by either grubbing, infilling or sealing.
 - Should ground water be encountered on site during construction the Client shall be informed to determine if additional measures are required.
 - The drainage system shall be fully cleansed on completion of the project using methods that ensure pollution off site does not occur.
 - Any existing land drains severed during construction shall be reinstated.

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Rev	Comment	By	Chkd	Appr	Date
A01	FOR APPROVAL		TZ	TZ	SB 24.11.2025
A02	FOR APPROVAL		BS	TZ	SB 09.12.2025

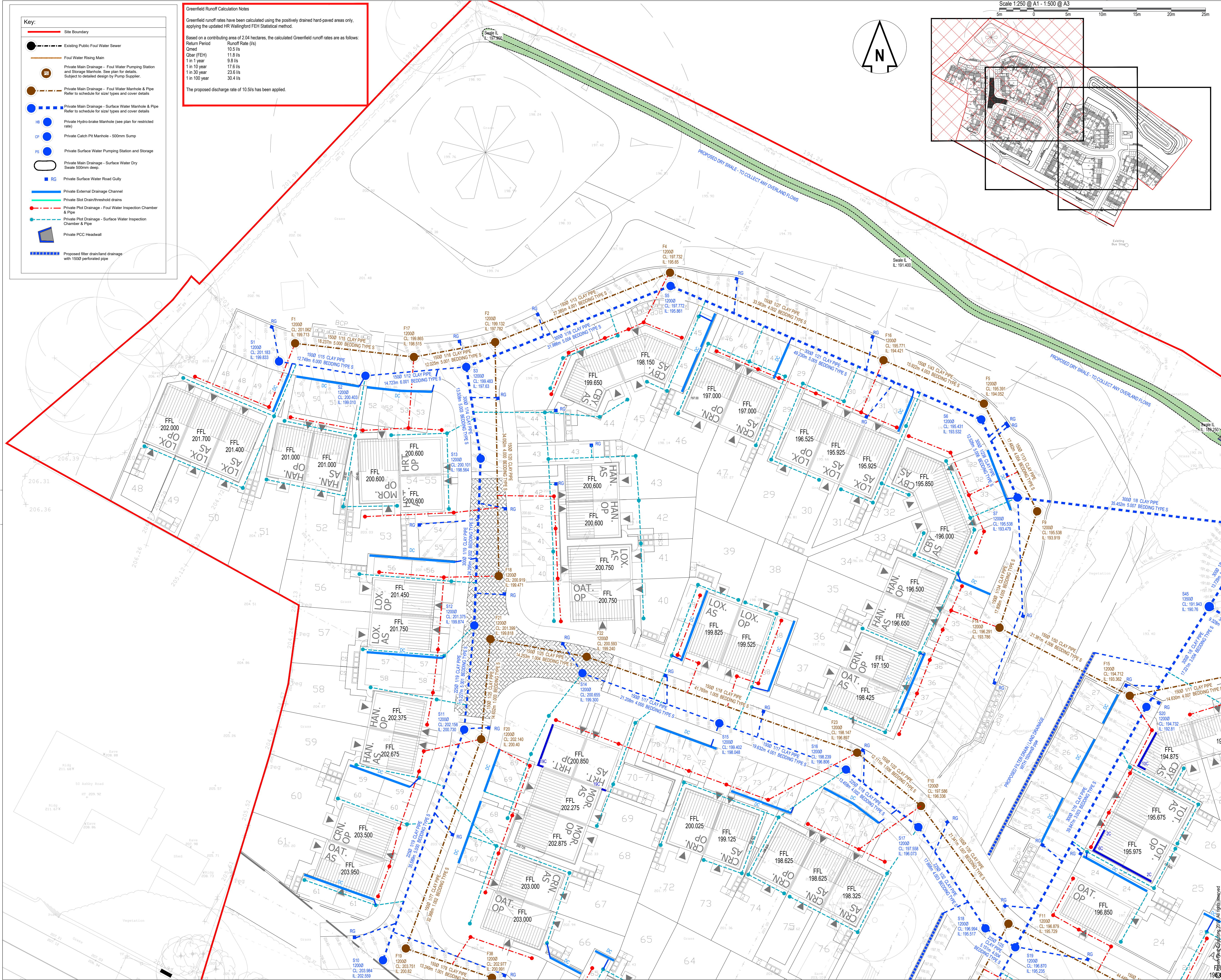
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ALLISON HOMES

1 Paris Garden
London
SE1 8ND
t: 0203 773 7880
www.robertwest.co.uk

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Appendix G – Proposed Drainage Strategy Plan and Calculations



Greenfield Runoff Calculation Notes

Greenfield runoff rates have been calculated using the positively drained hard-paved areas only, applying the updated HR Wallingford FEH Statistical method.

Based on a contributing area of 2.04 hectares, the calculated Greenfield runoff rates are as follows:

Return Period	Runoff Rate (l/s)
Qmed	10.5 l/s
Qbar (FEH)	11.8 l/s
1 in 1 year	9.8 l/s
1 in 10 year	17.6 l/s
1 in 30 year	23.6 l/s
1 in 100 year	30.4 l/s

The proposed discharge rate of 10.5 l/s has been applied.

- NOTES**
- The contractor is responsible for verifying all site & setting out dimensions before commencing work.
 - This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
 - All dimensions in meters unless stated otherwise.
- DRAINAGE NOTES:**
- All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK) BS EN 1252.
 - Any existing drainage found crossing the site is to be investigated, and if found to be 'live', it should be diverted in consultation with the Client.
 - For location and setting out of building drainage points refer to architects drawings.
 - All pipe runs near buildings to comply with the Building Regulations 2015 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class GEN3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
 - Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
 - Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
 - Where a pipe, under a vehicular area other than a carriageway has a depth of cover if less than 0.9m the pipe shall be protected with a concrete slab set above it.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided, compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints), the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section, a board thickness of 15mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
 - All private building drainage shall be constructed in strict accordance with BS EN 752. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of <1 l/s = 1 in 40> 1 l/s = 1 in 80 for foul drains and 1 in 80 for surface water drains.
 - All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
 - All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BS EN 13598 and BS EN 1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All pipes, bends and junction materials for adoptable drainage shall be UPVC compliant with Clause E2.21 of Design and Construction Guidance for Foul and Surface Water Water Sewers, Sector Guidance Appendix C, June 2022. These should conform to BS4660, BS EN 13598 and BS EN 1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All back inlet gullies to be roddable or connected to inspection chambers.
 - All gully connections other than at manholes to be 'Y' junctions.
 - All road gully connections to be 150mm diameter.
 - All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
 - No low point shall be without a method of drainage.
 - All connections to be soffit to soffit unless otherwise noted.
 - All concrete and concrete products to be in accordance with BRE 363 for sulphates.
 - The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
 - Before connections are made to existing public sewers an application under S106 must be made to relevant sewerage undertaker.
 - The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
 - Any existing drains to be abandoned to be decommissioned in accordance with the Building Regulations by either grubbing, infilling or sealing.
 - Should ground water be encountered on site during construction the Client shall be informed to determine if additional measures are required.
 - The drainage system shall be fully cleaned on completion of the project using methods that ensure pollution off site does not occur.
 - Any existing land drains severed during construction shall be reinstated.

Revision History				
Rev	Comment	By	Chkd	Date
19	A01 FOR APPROVAL	TZ	TZ	24.11.2025
A02	FOR APPROVAL	BS	TZ	09.12.2025

APPROVAL

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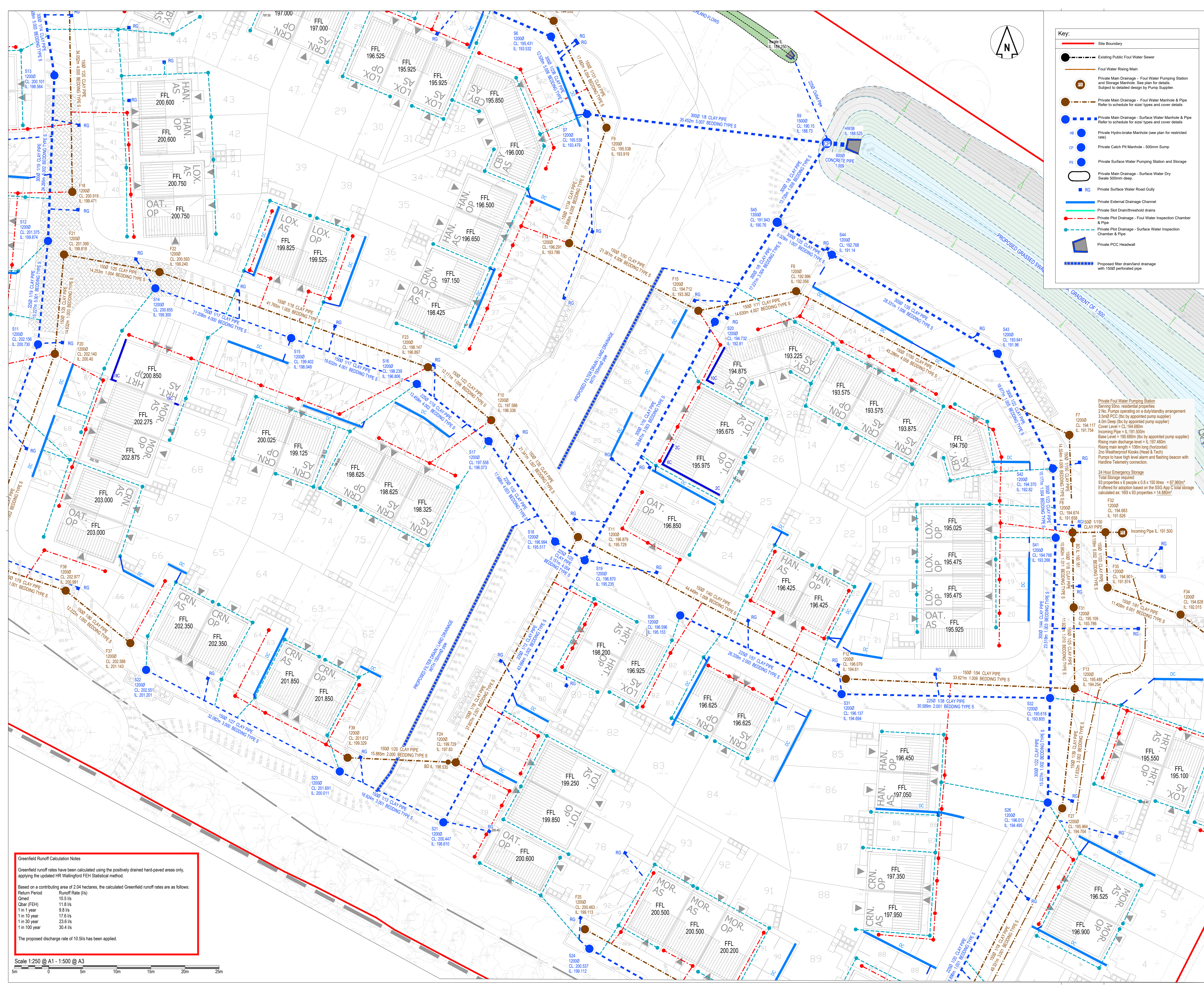
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London
SE1 1ND
t: 0203 773 7880
www.robertwest.co.uk

Project: **MARKFIELD**

Drawing Title: **PROPOSED DRAINAGE PLAN SHEET 1 OF 3**

RWCL Internal Register reference: 5964-003

Scales @ A1: **1020-A02**



Key:

- Site Boundary
- Existing Public Foul Water Sewer
- Foul Water Rising Main
- Private Main Drainage - Foul Water Manhole & Pipe
- Private Main Drainage - Surface Water Manhole & Pipe
- Private Hydro-brake Manhole
- Private Catch Pit Manhole
- Private Surface Water Pumping Station and Storage
- Private Main Drainage - Surface Water Dry Swale
- Private Surface Water Road Gully
- Private External Drainage Channel
- Private Slot Drain/threshold drains
- Private Plot Drainage - Foul Water Inspection Chamber & Pipe
- Private Plot Drainage - Surface Water Inspection Chamber & Pipe
- Private PCC Headwall
- Proposed filter drain/land drainage with 1500 perforated pipe

Private Foul Water Pumping Station
Serving 83no. residential properties
2 No. Pumps operating on a duty/standby arrangement
3.5m³ PCC (to be by appointed pump supplier)
4.0m Deep (to be by appointed pump supplier)
Cover Level = CL 194.600m
Incoming Pipe = IL 191.500m
Base Level = 190.880m (to be by appointed pump supplier)
Rising main discharge level = IL 197.400m
Rising main length = 106m (long horizontal)
2no Weatherproof Kiosks (Head & Tech)
Pumps to have high level alarm and flashing beacon with Hardline Telemetry connection.

24 Hour Emergency Storage
Total Storage required
93 properties x 6 people x 0.8 x 150 litres = 67,800m³
If offered for adoption based on the SSG: 93 x 0.8 x 150 litres = 11,340m³
calculated as: 1600 x 93 properties = 14,880m³

Greenfield Runoff Calculation Notes

Greenfield runoff rates have been calculated using the positively drained hard-paved areas only, applying the updated HR Wellingford FEH Statistical method.

Based on a contributing area of 2.04 hectares, the calculated Greenfield runoff rates are as follows:

Return Period	Runoff Rate (l/s)
Omed	10.5 l/s
Clear (FEH)	11.8 l/s
1 in 1 year	9.8 l/s
1 in 10 year	17.6 l/s
1 in 30 year	23.6 l/s
1 in 100 year	30.4 l/s

The proposed discharge rate of 10.5l/s has been applied.

Scale 1:250 @ A1 - 1:500 @ A3

DO NOT SCALE OFF THIS DRAWING

NOTES

- The contractor is responsible for verifying all site & setting out dimensions before commencing work.
- This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
- All dimensions in meters unless stated otherwise.

DRAINAGE NOTES:

- All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK) BS EN 152.
- Any existing drainage found crossing the site is to be investigated, and if found to be 'live', it should be diverted in consultation with the Client.
- For location and setting out of building drainage points refer to architects drawings.
- All pipe runs near buildings to comply with the Building Regulations 2015 part H11. Where a pipe is within 1m of a foundation the trench shall be filled with class GEN3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
- Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
- Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
- Where a pipe, under a vehicular area other than a carriageway has a depth of cover if less than 0.9m the pipe shall be protected with a concrete slab set above it.
- In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided, compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints), the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section, a board thickness of 15mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
- All private building drainage shall be constructed in strict accordance with BS EN 752. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of (<1% = 1 in 40>1% = 1 in 80) for foul drains and 1 in 80 for surface water drains.
- All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
- All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
- All pipes, bends and junction materials for adoptable drainage shall be UPVC compliant with Clause E2.21 of Design and Construction Guidance for Foul and Surface Water Sewers, Sector Guidance Appendix C, June 2022. These should conform to BS4660, BSEN13598 and BSEN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
- All back inlet gullies to be roddable or connected to inspection chambers.
- All gully connections other than at manholes to be 'Y' junctions.
- All road gully connections to be 150mm diameter.
- All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
- No low point shall be without a method of drainage.
- All connections to be soffit to soffit unless otherwise noted.
- All concrete and concrete products to be in accordance with BRE 363 for sulphates.
- The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
- Before connections are made to existing public sewers an application under S106 must be made to relevant sewerage undertaker.
- The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
- Any existing drains to be abandoned to be decommissioned in accordance with the Building Regulations by either grouting, infilling or sealing.
- Should ground water be encountered on site during construction the Client shall be informed to determine if additional measures are required.
- The drainage system shall be fully cleared on completion of the project using methods that ensure pollution off site does not occur.
- Any existing land drains severed during construction shall be reinstated.

Revision History					
Rev	Comment	By	Chkd	Appr	Date
A01	FOR APPROVAL	TZ	TZ	SB	24.11.2025
A02	FOR APPROVAL	BS	TZ	SB	09.12.2025

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ALLISON HOMES

1 Paris Garden
London
SE1 1ND
t: 0203 773 7880
www.robertwest.co.uk

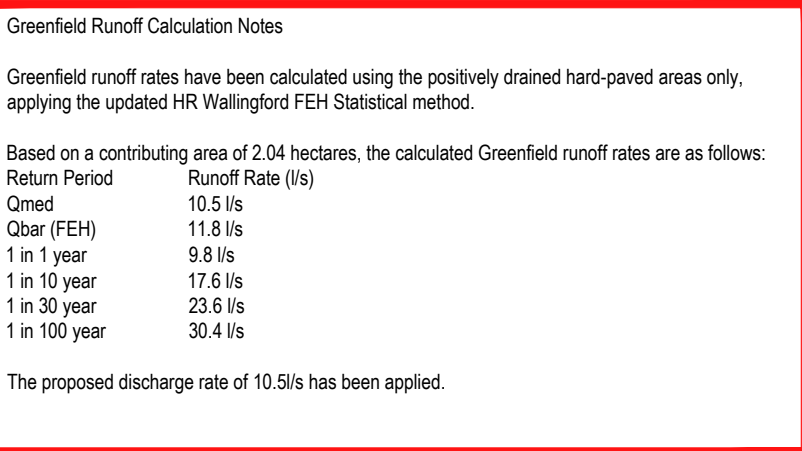
Project **MARKFIELD**

Drawing Title **PROPOSED DRAINAGE SHEET 2 OF 3**

RWCL Internal Register reference: 5964-003 Scales @ A1

1021-A02

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NOTES

1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
3. All dimensions in meters unless stated otherwise.

DRAINAGE NOTES

1. All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK) BS EN 752.
2. Any existing drainage found crossing the site is to be investigated, and if found to be live, it should be diverted in consultation with the Client.
3. For location and setting out of building drainage points refer to architects drawings.
4. All pipe runs near buildings to comply with the Building Regulations 2015 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class G3/5 concrete up to the level of the trench. Where the trench is deeper than 150mm, the trench shall be filled with class G3/5 concrete to a level below the lowest level for the foundation level and the distance from foundation level less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class G3/5 concrete.
5. Where a trench is to be laid with a depth of soil to the ground level of less than 450mm they shall have a class G3/5 concrete base (minimum 150mm thick).
6. Where a pipe, under a carriageway, has a depth of cover of less than 12m the pipe shall be laid in a concrete bed and surrounded.
7. Where a pipe, under a vehicular area other than a carriageway has a depth of cover of less than 12m, the pipe shall be laid in a concrete slab above it.
8. In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (conforming with pipe joints). The boards shall be pre-cut to pipe diameter and length and shall be laid in the concrete cross section, a board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
9. All private building drainage shall be constructed in strict accordance with BS EN 752. All public building drainage shall be constructed in strict accordance with BS EN 752. Unless otherwise specified below ground drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of $(\text{c}1\text{v}1 = 1 \text{ in } 40\text{d}15 = 1 \text{ in } 80)$ for foul drains and 1 in 50 for surface water drains.
10. All building drainage shall be laid in conjunction with 'non adoptive bedding details' (all class 3, 4 or 5) unless otherwise specified.
11. All pipe beds and junction for private building drainage shall be UPVC conforming to BS4660, BSSEN3598 and BSSEN401 as appropriate and shall be laid in accordance with the manufacturer's specification.
12. All pipe bedding and junction materials for adoptable drainage shall be UPVC compliant with Clause 22.21 of Design and Construction Guidance for Foul and Surface Water Water Sewers, Sector Guidance Appendix C, June 2022. These should conform to BS4660, BSSEN3598 and BSSEN401 as appropriate and shall be laid in accordance with the manufacturer's specification.
13. All back inlet gullies to be roddable or connected to inspection chambers.
14. All gully collections other than at manholes to be 'Y' junctions.
15. All road gully connections to be 150mm diameter.
16. All manholes to be fitted with 150mm diameter valves where branch drain exceeds 12mm except at the head of the run. Soil vent pipes shall at the head of the run to terminate to fresh air.
17. No low point shall be made without a method of drainage.
18. All connections to be sufficient unless otherwise noted.
19. All drainage and concrete products to be in accordance with BRE 363 for sulphates.
20. The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
21. Before connections are made to existing public sewers an application under S106 must be made to the local authority.
22. The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversions are proposed must be confirmed and reported to the engineer before works commences on site.
23. Any existing drains to be disconnected in accordance with the Building Regulations by either grubbing, infilling or sealing.
24. Should ground water be encountered on site during construction the Client shall be informed to determine if additional measures are required.
25. The drainage system shall be fully commissioned on completion of the project using methods that ensure pollution of the environment is avoided.
26. Any existing land drains severed during construction shall be reinstated.

Revision History						
Rev	Comment	By	Chkd	Appr	Date	
A01	FOR APPROVAL	TZ	TZ	SB	24.11.2022	
Current Revision						
A02	FOR APPROVAL	BS	TZ	SB	09.12.2022	

FOR APPROVAL

ALLISON HOMES

robert west.
proesgroup

1 Paris Garden
London
SE1 8ND
t: 0203 773 7880
www.robertwest.co.uk

Project
MARKFIELD

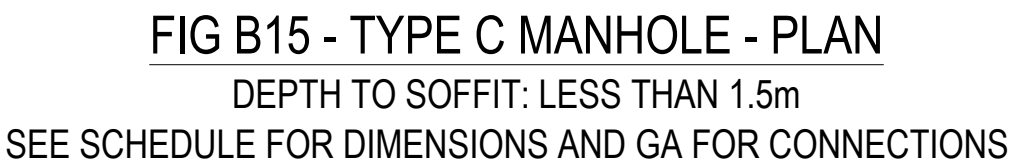
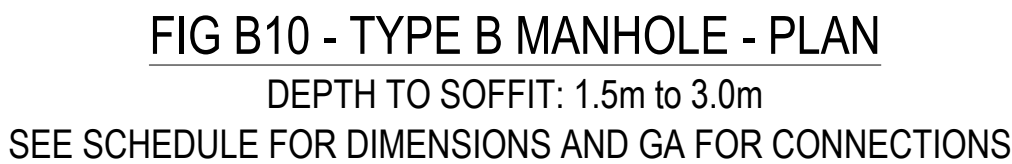
Drawing Title

PROPOSED DRAINAGE
SHEET 3 OF 3

RWCL Internal Register reference: 5964-003

Scales @ A:

022-A02



1100-A01

NOTES

1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
3. All dimensions in meters unless stated otherwise.

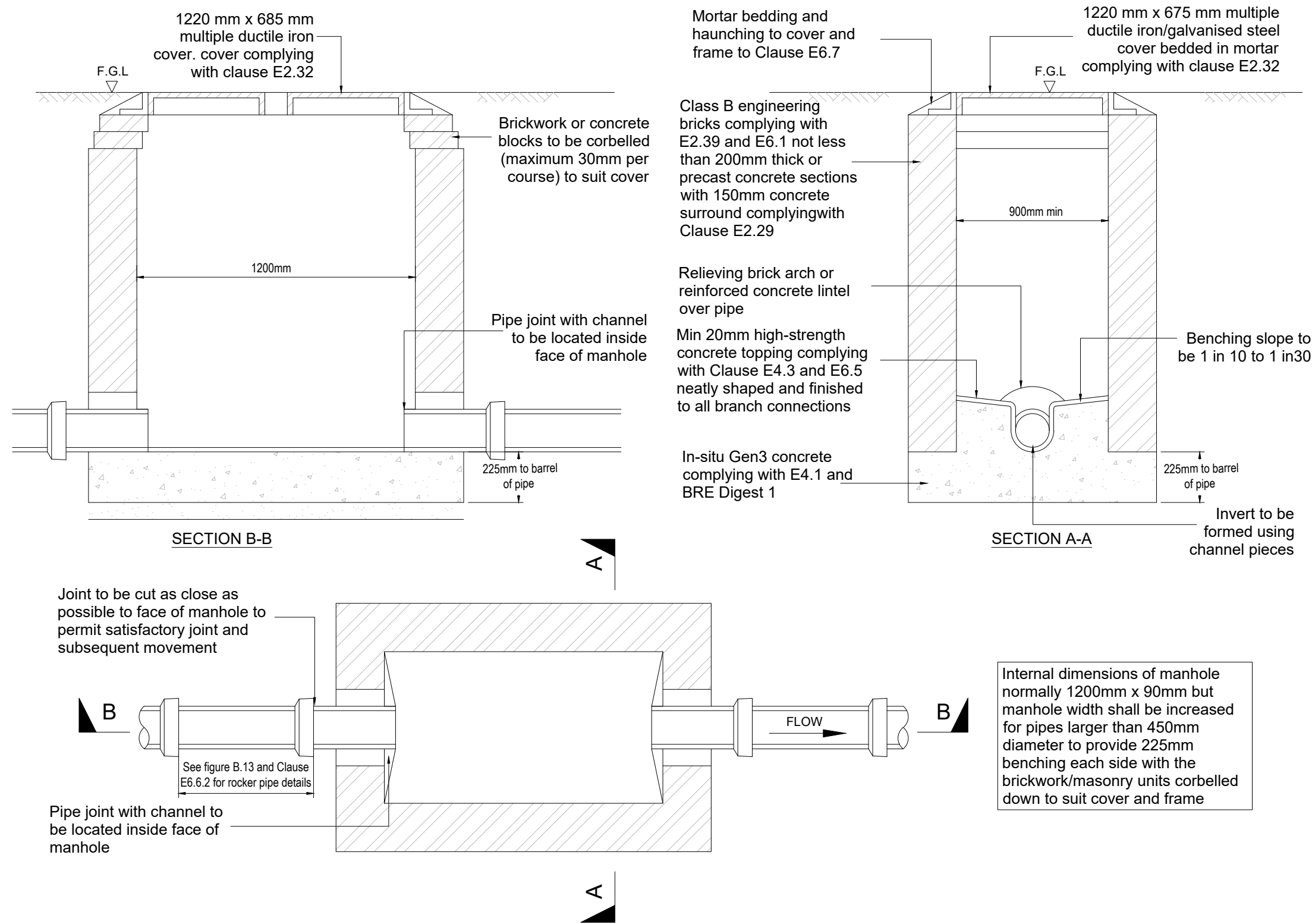


FIG B33 - TYPE C MANHOLE - PLAN
DEPTH TO SOFFIT: LESS THAN 1.5m

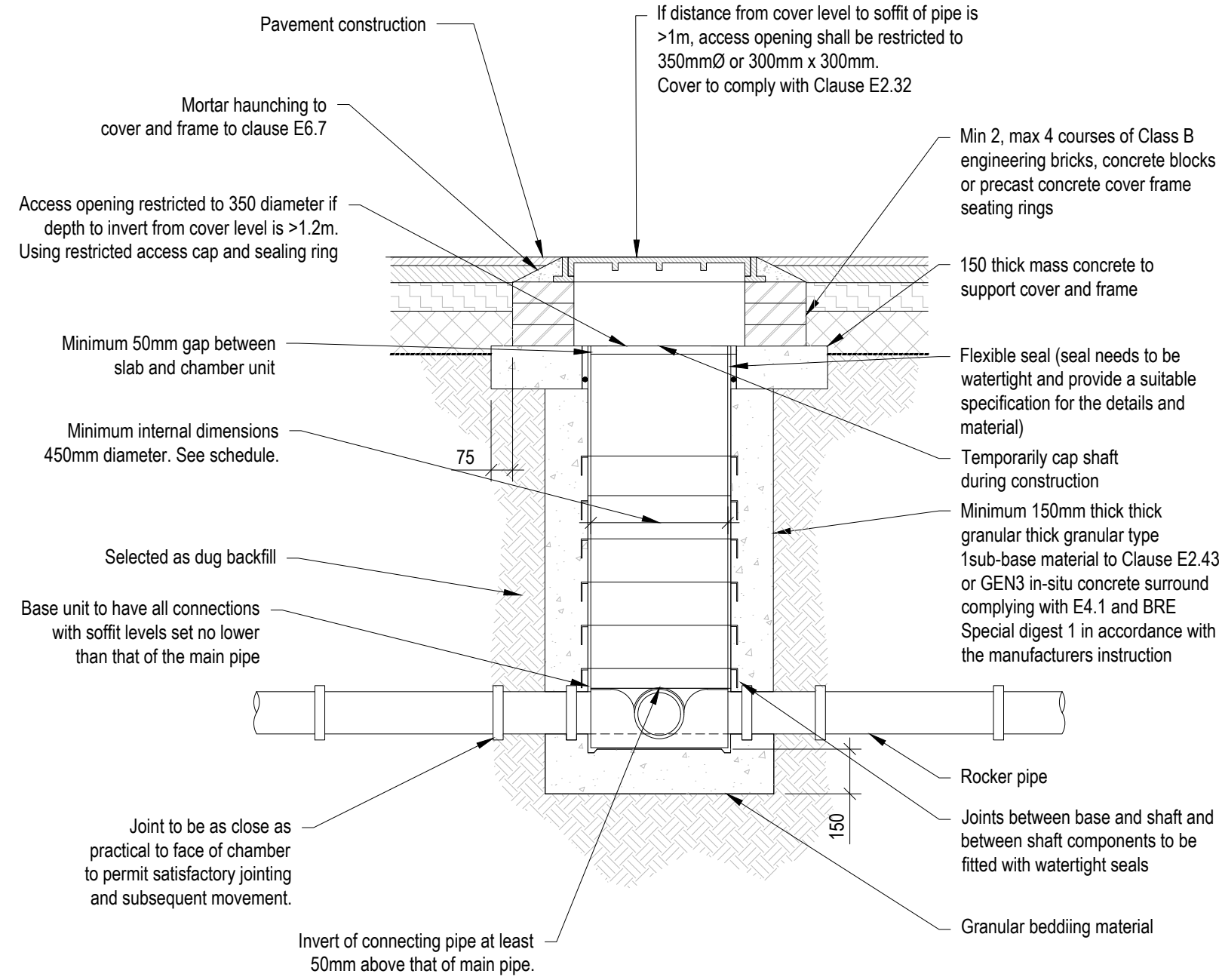
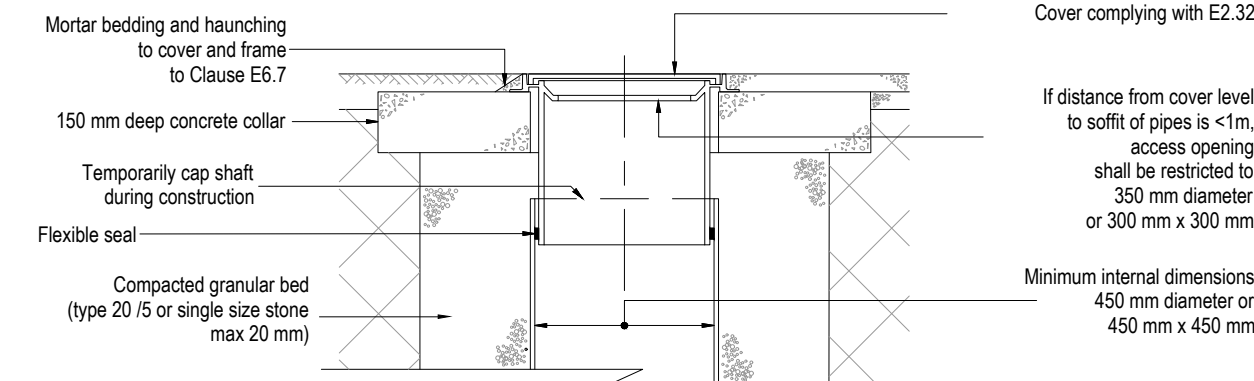


FIG B 37 - TYPE D - PLASTIC INSPECTION CHAMBER

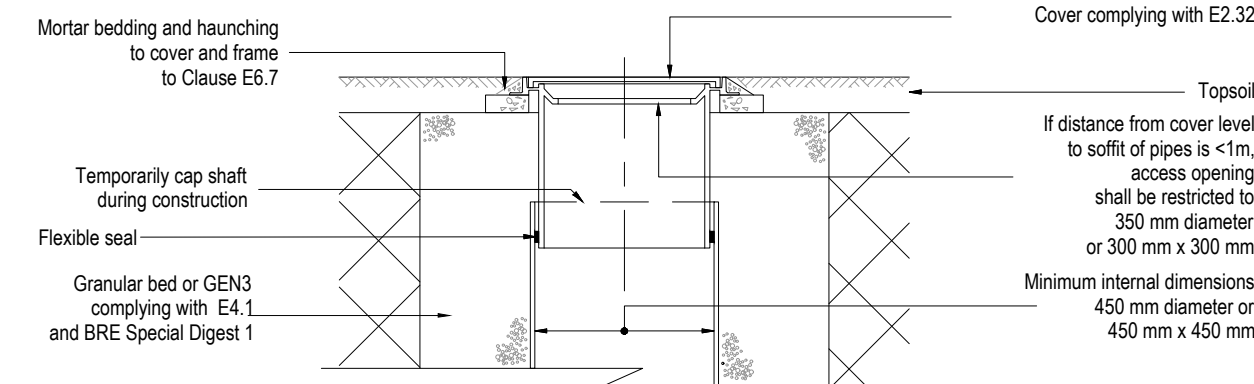
- FOR 450 DIAMETER CHAMBERS IN :-
DOMESTIC DRIVEWAYS (B125) UP TO - 3.0m DEEP
- AREAS SUBJECT TO VEHICLE LOADING (D400) UP TO 3.0m DEEP

Plastic chambers and rings shall comply with Clause E2.31

Sited in domestic driveways or footways



Sited in domestic gardens



Note: Where the access chamber is in the highway (including any footway) ,the highway Authority can have specific requirements

Not to scale

FIGURE B 38 - TYPE D - TYPICAL INSPECTION CHAMBER DETAIL

Flexible material construction alternative top details for use in areas of light vehicle loading or landscaped areas

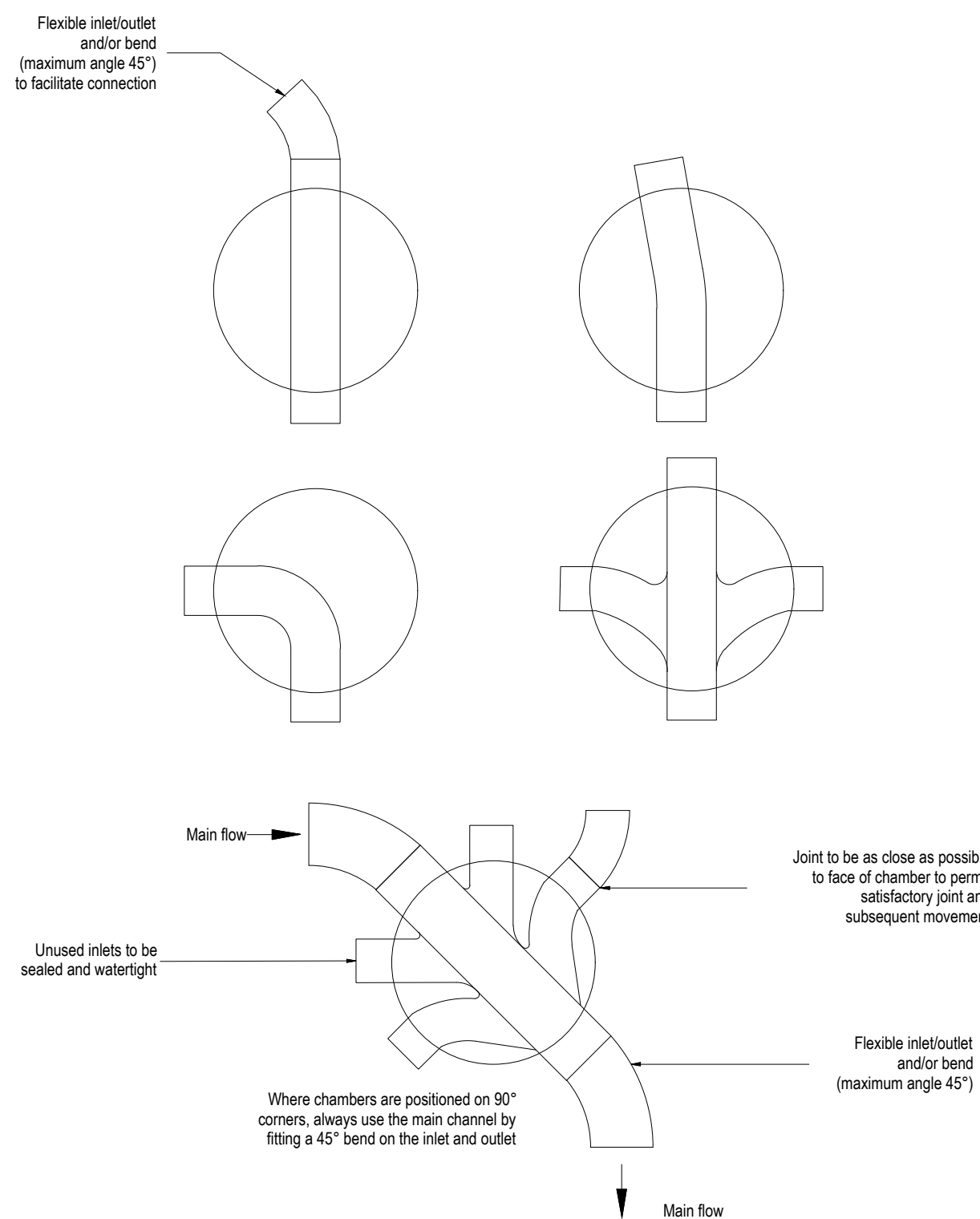


FIGURE B 22 TYPICAL BASE LAYOUTS FOR TYPE D CHAMBERS

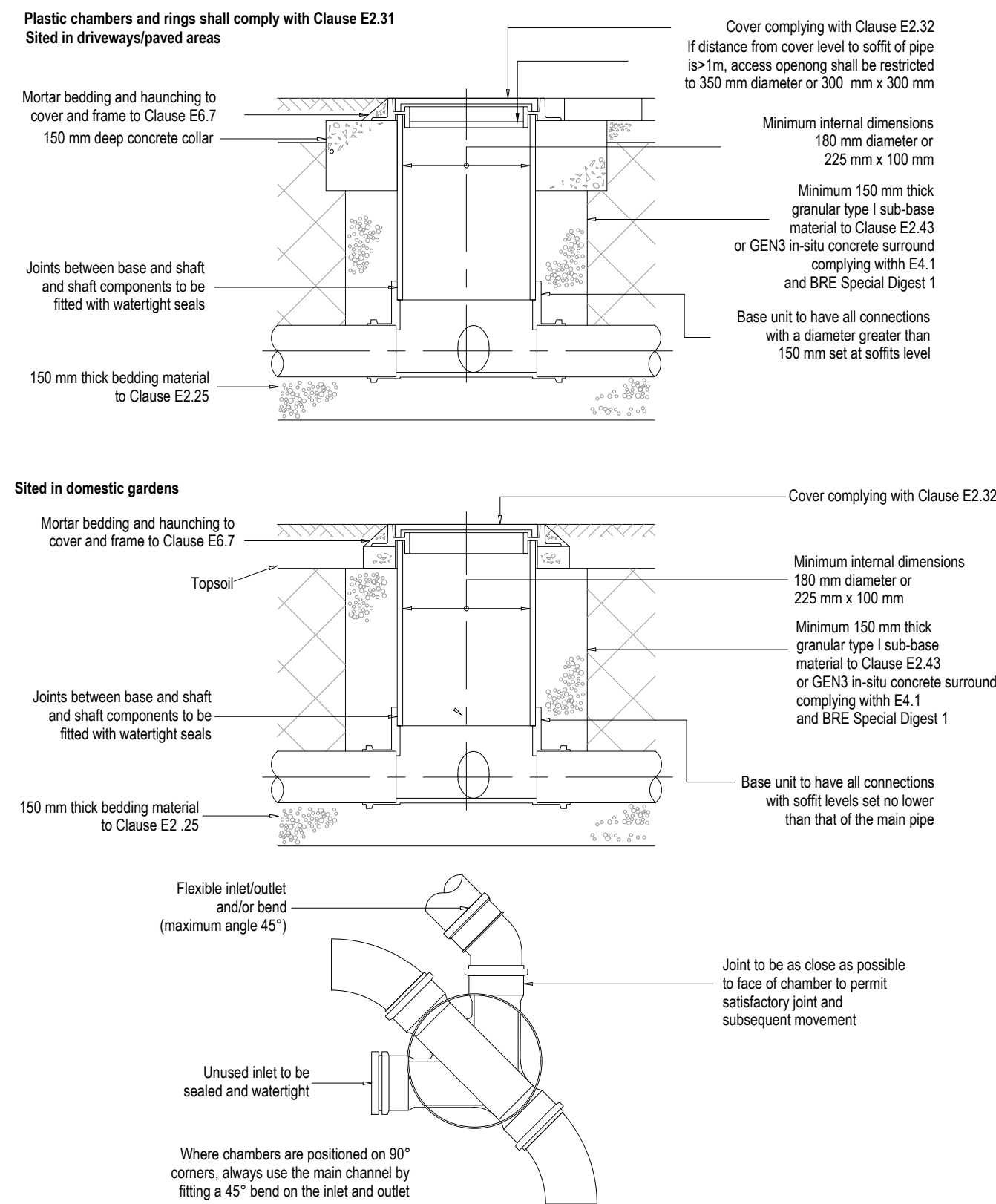


FIGURE B 42 - TYPE E - TYPICAL INSPECTION CHAMBER DETAIL

For 450 diameter chambers in :-depth from cover level to soffit of pipe up to 2m flexible material construction

Revision History				
Rev	Comment	By	Chkd	Appr
Current Revision				
A01	FOR APPROVAL	TZ	TZ	SB

APPROVAL

ALLISON HOMES

robert west
proesgroup
1 Paris Garden
London
SE1 1ND
t: 0203 773 7880
www.robertwest.co.uk

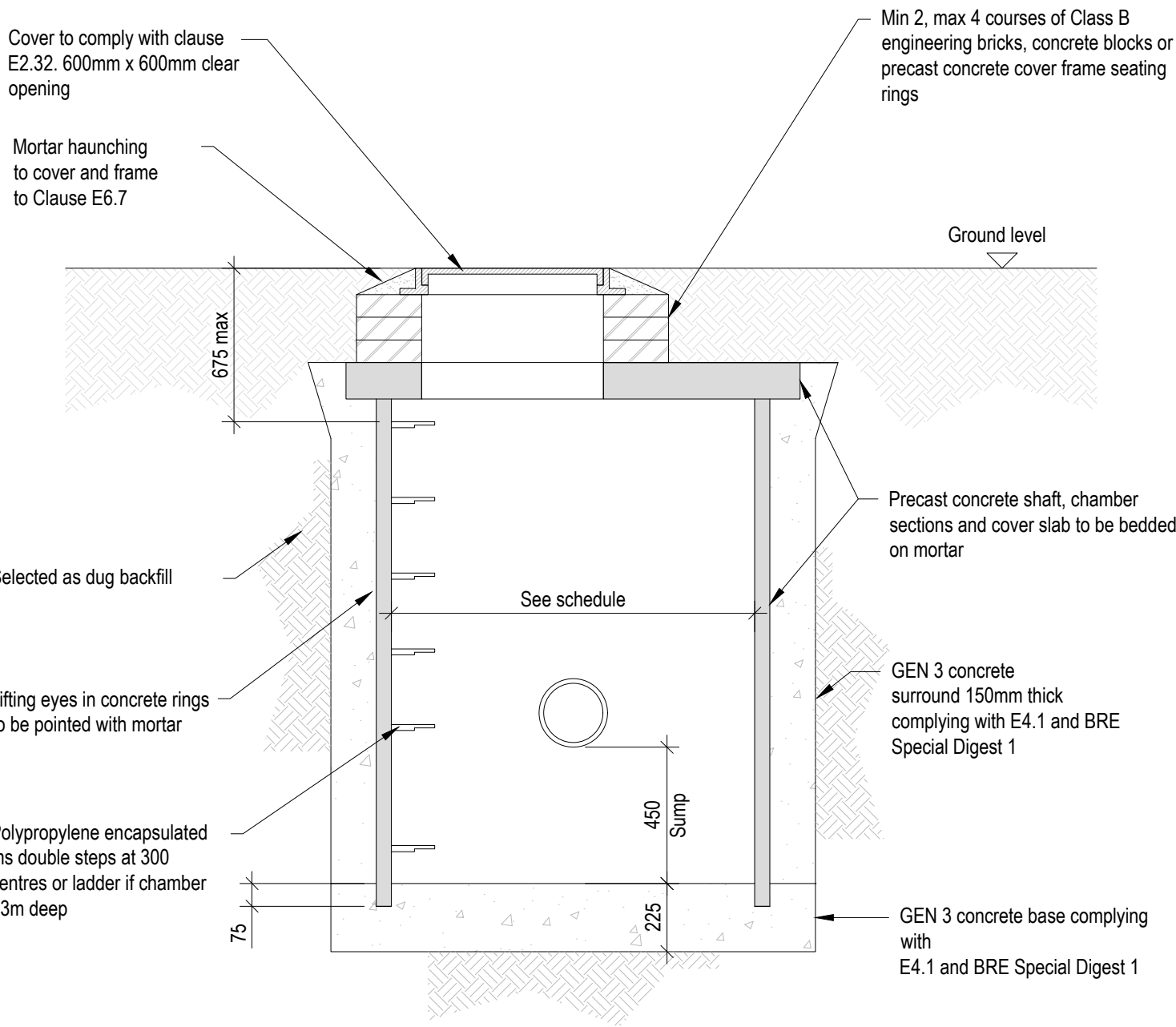
Project
MARKFIELD

Drawing Title
PROPOSED CONSTRUCTION DETAILS
SHEET 2

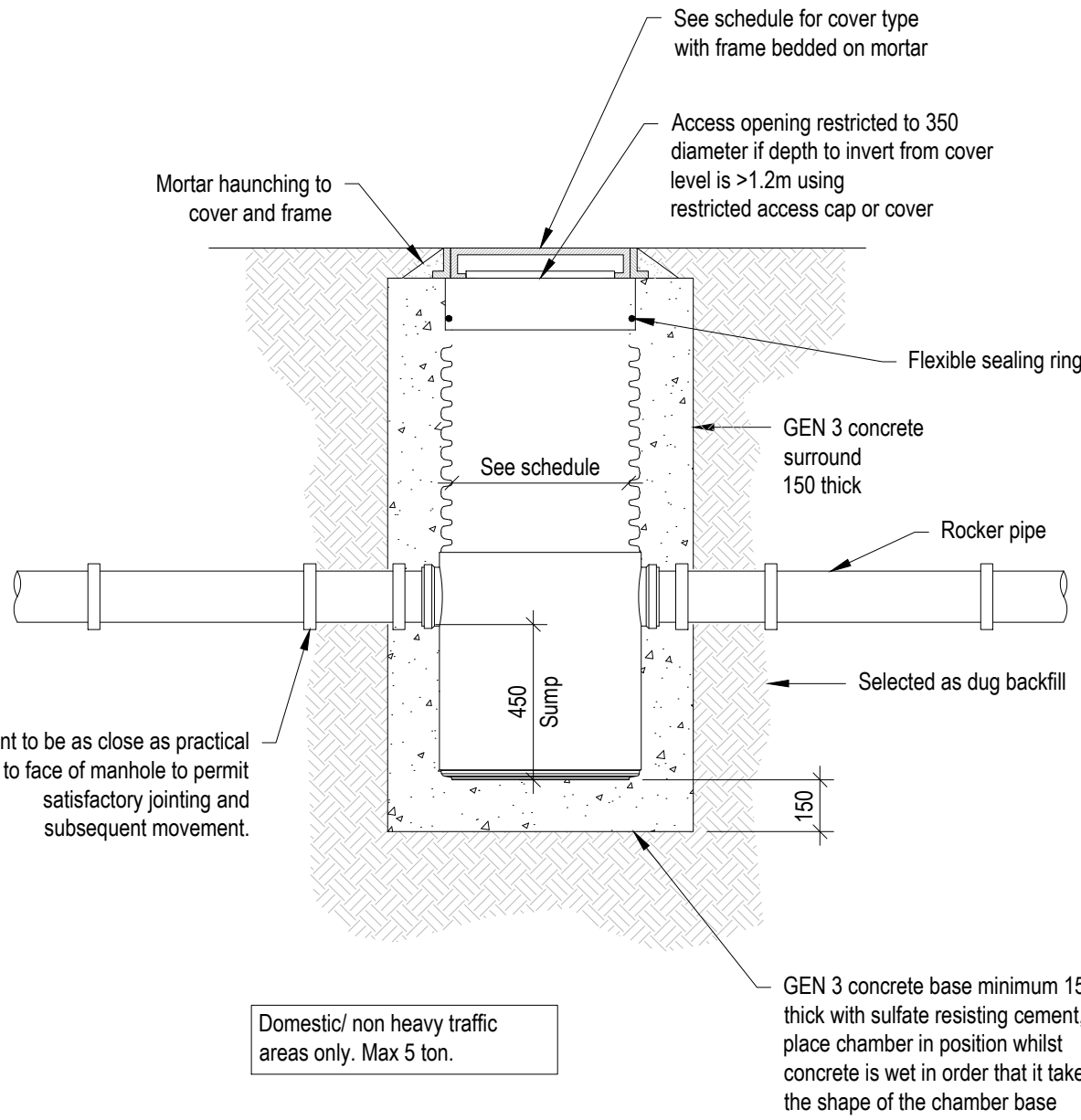
RWCL Internal Register reference: 5964-003

Scales @ A1

1101 -A01

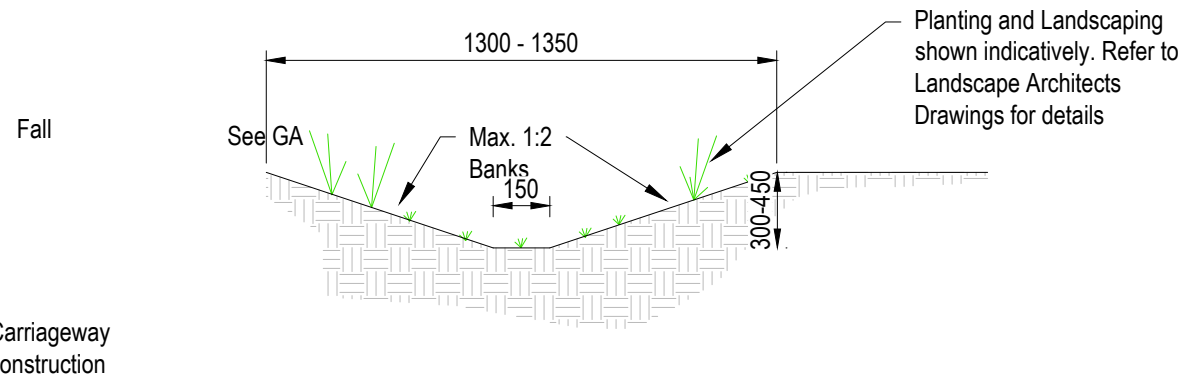


PRECAST CONCRETE
CATCHPIT DETAIL



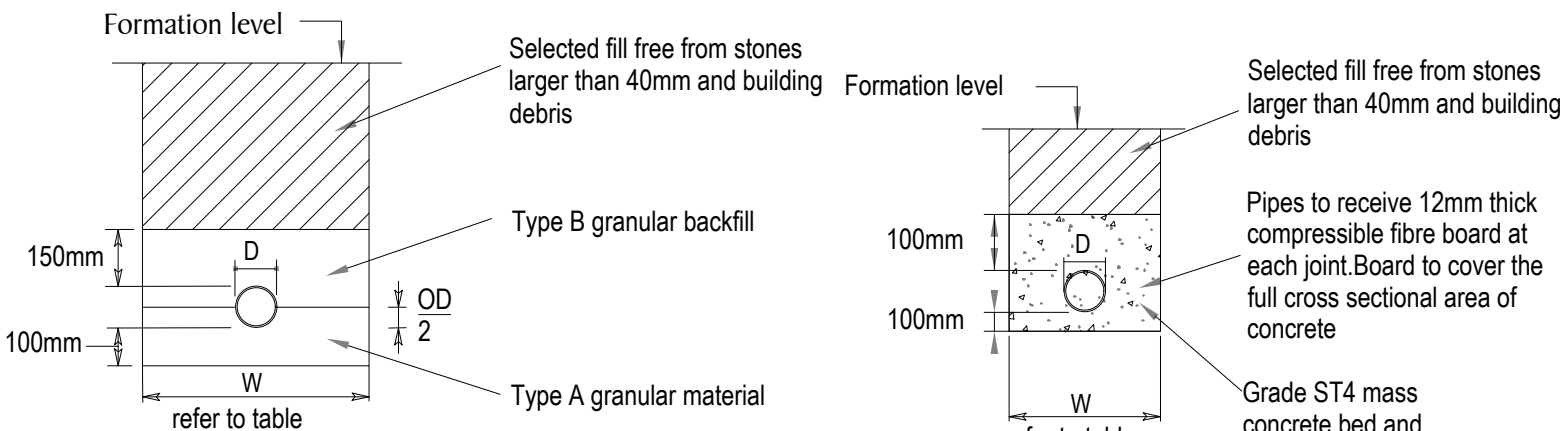
PLASTIC INSPECTION CHAMBER - CATCHPIT

Scale: 1:20



PROPOSED DRAINAGE (DRY) SWALE

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S, ARCHITECT'S AND SPECIALIST'S DRAWINGS AND THE SPECIFICATION.
- DO NOT SCALE FROM THIS DRAWING MANUALLY OR ELECTRONICALLY.
- TYPE A TO BE 10MM SINGLE SIZED AGGREGATE TO BS EN 1610 ANNEX B TABLE B15 FOR 100Ø PIPES AND 14MM FOR 150Ø
- TYPE B TO BE UNIFORM READILY COMPACTABLE MATERIAL FREE FROM ANY TREE ROOTS, VEGETATION MATTER, BUILDING DEBRIS, FROZEN SOIL, CLAY LUMPS RETAINED ON A 100MM SIEVE OR STONES RETAINED ON A 40MM SIEVE.
- WHERE A FOUNDATION PASSES CLOSE TO A SEWER OR DRAIN TRENCH OR TRIAL PIT THE FOUNDATION DEPTH IS TO BE SUCH THAT ITS UNDERSIDE IS BELOW A LINE PROJECTED UP AT 45° FROM THE NEAREST BOTTOM CORNER OF THE DRAIN TRENCH, SEWER TRENCH OR TRIAL PIT OR CONCRETE BACKFILL TO TRENCHES USED AS DETAILED
- ANY SOFT SPOT FOUND IN TRENCH LINE TO BE REPORTED TO SITE STAFF PRIOR TO PLACING OF PIPE BEDDING.
- JOINT FILLER TO CONCRETE PIPE SURROUND SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS 1142 PART 3. THICKNESS OF BOARD 12MM.
- ALL PIPEWORK SHALL BE CONSTRUCTED FROM 'SUPER STRENGTH' VITRIFIED CLAY TO BS 65, BS EN 295 OR UPVC TO BS EN 1401
- PRECAST CONCRETE PIPES AND CHAMBERS TO BE TO BS 5911.



TYPE 1 (RIDGED PIPE)
CLASS B

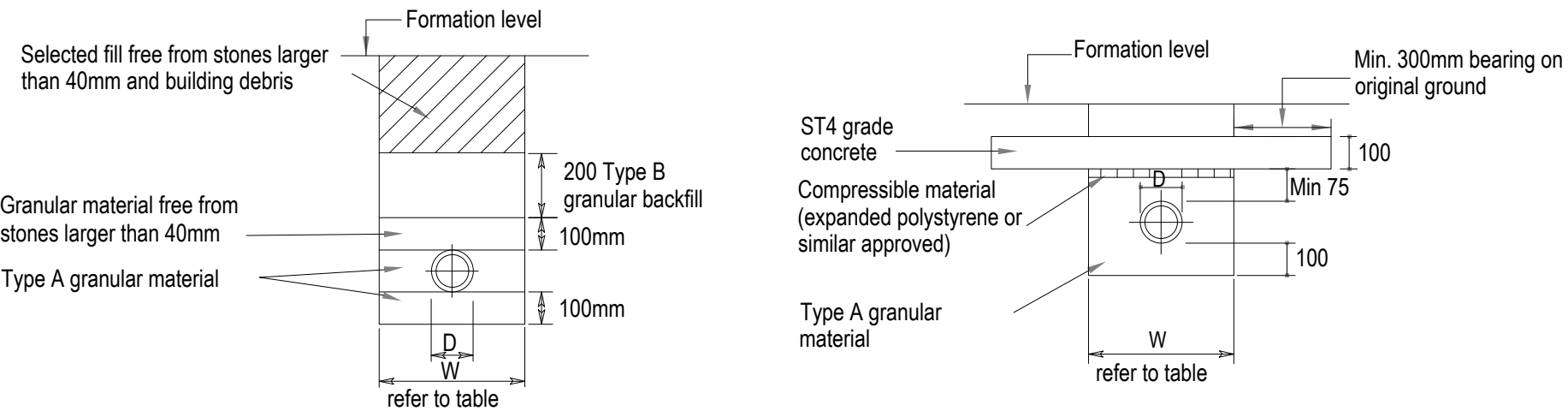
Location: Pedestrian areas up to 5.0m depth, Vehicle areas 0.6m - 5.0m

TYPE 2 (RIDGED PIPES)
CLASS X

Location: Vehicle areas - up to 0.6m

TYPICAL PIPE BEDDING DETAILS

(SCALE 1:20)



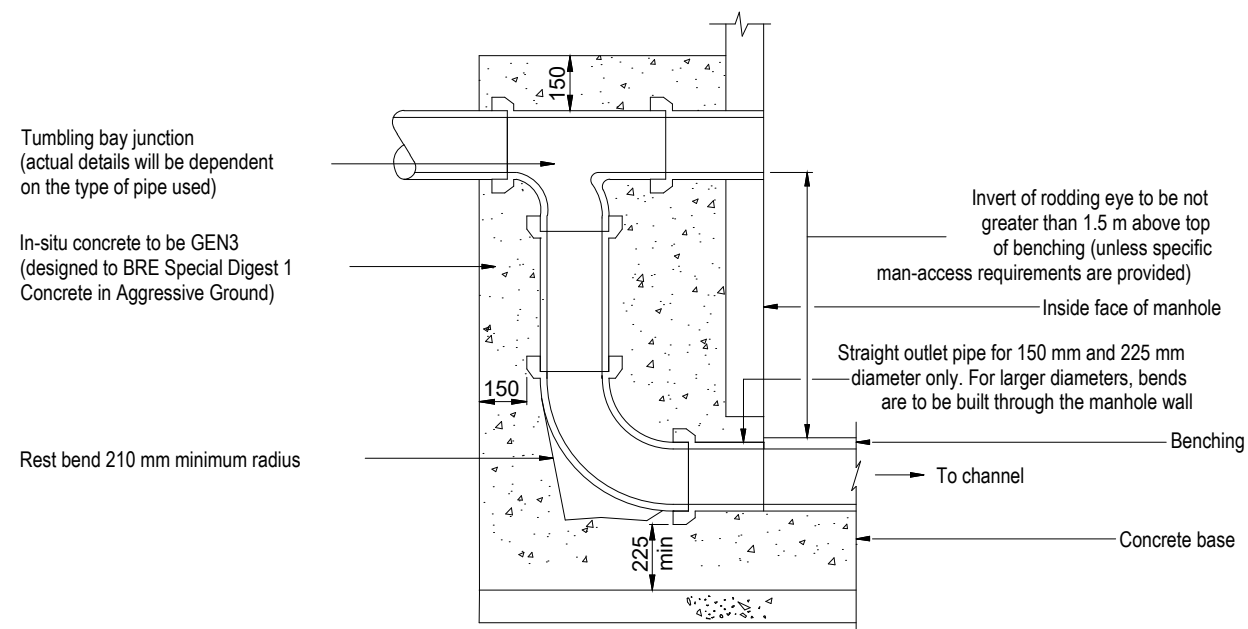
TYPE 3 (UPVC PIPES)
CLASS S1

Location: Pedestrian areas, 0.6m - 7.0m Vehicle areas, 0.9m - 7.0m Under buildings

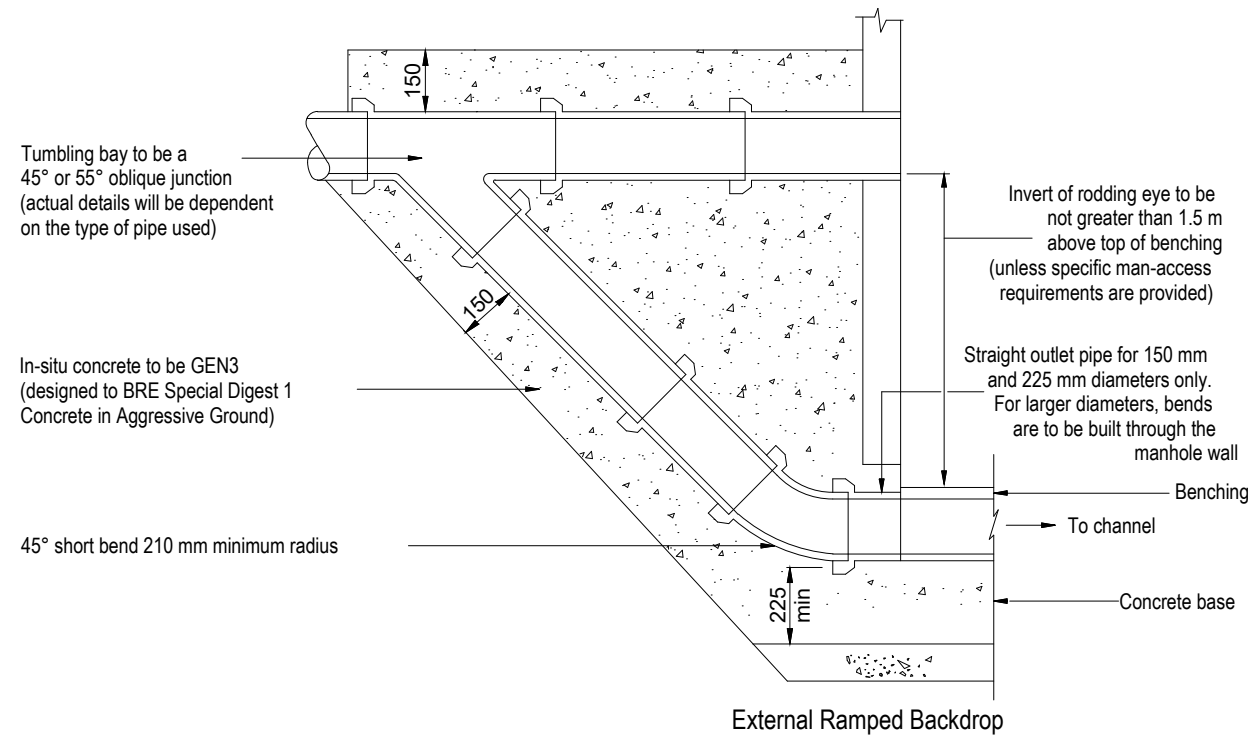
TYPE 4 (UPVC PIPES)

Location: Pedestrian areas up to 0.6m, private vehicle parking and areas subject to construction traffic up to 0.9m.

When laid in landscape areas subject to no loading (incl. construction traffic) ST4 concrete can be omitted.



EXTERNAL VERTICAL BACKDROP



EXTERNAL RAMPED BACKDROP

TABLE 1

DN	Minimum trench width (OD + x)		
	Supported trench	Unsupported trench	
		# > 60°	# < 60°
less 225	600	600	600
225 to 350	800	800	800
350 to 700	OD + 700	OD + 700	OD + 400
700 to 1200	OD + 850	OD + 850	OD + 400
greater 1200	OD + 1000	OD + 1000	OD + 400

In the values OD + x, x/2 equals the minimum working space between the pipe and the trench wall or support, where:
OD is external diameter.
is angle of unsupported trench side measured to the horizontal.

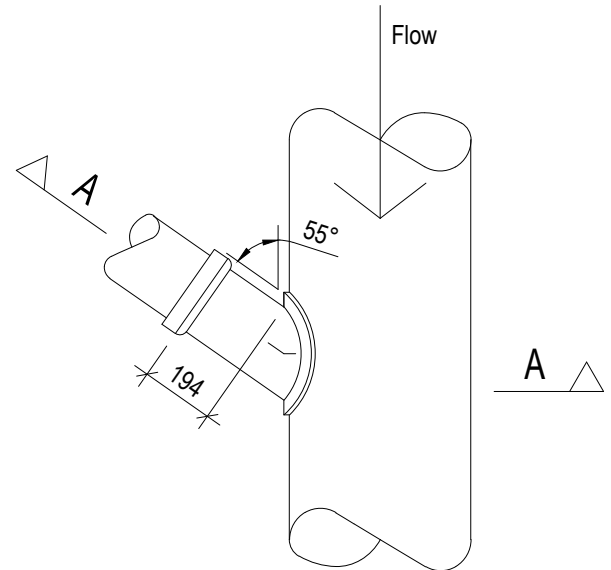
MINIMUM TRENCH WIDTH IN RELATION TO
NORMAL SIZE DN

TABLE 2

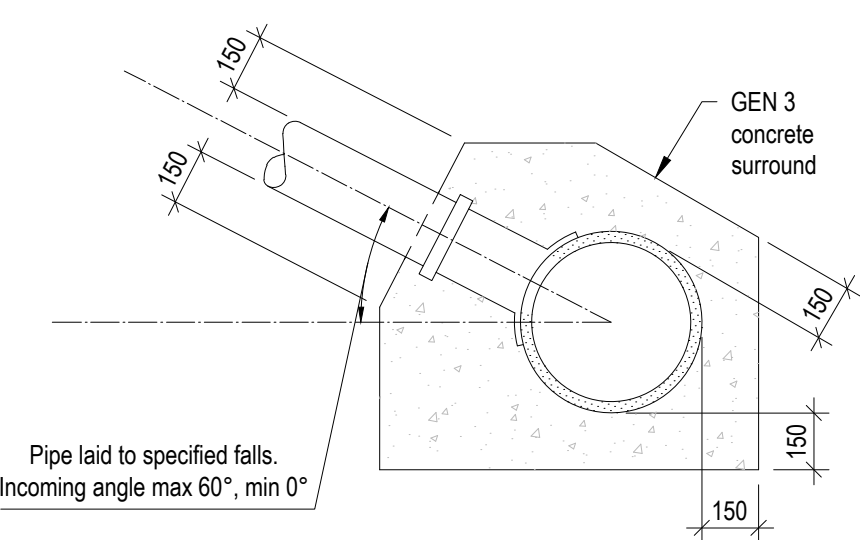
Trench depth	Minimum trench width
less 1000	As Table 1
1000 to 1750	800
1750 to 4000	900
greater 4000	1000

The minimum trench width shall be the greater of the values taken from tables 1 & 2.

MINIMUM TRENCH WIDTH IN RELATION TO
TRENCH DEPTH



SADDLE CONNECTION - PLAN
VIEW



SADDLE CONNECTION SECTION A-A

SCALE 1:20

DO NOT SCALE OFF THIS DRAWING

NOTES

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- All dimensions in meters unless stated otherwise.

Revision History					
Rev	Comment	By	Chkd	Appr	Date
Current Revision					
A01	FOR APPROVAL	TZ	TZ	SB	24.11.2025

APPROVAL

ALLISON HOMES

robert west
proesgroup
1 Paris Garden
London
SE1 1ND
t: 0203 773 7880
www.robertwest.co.uk

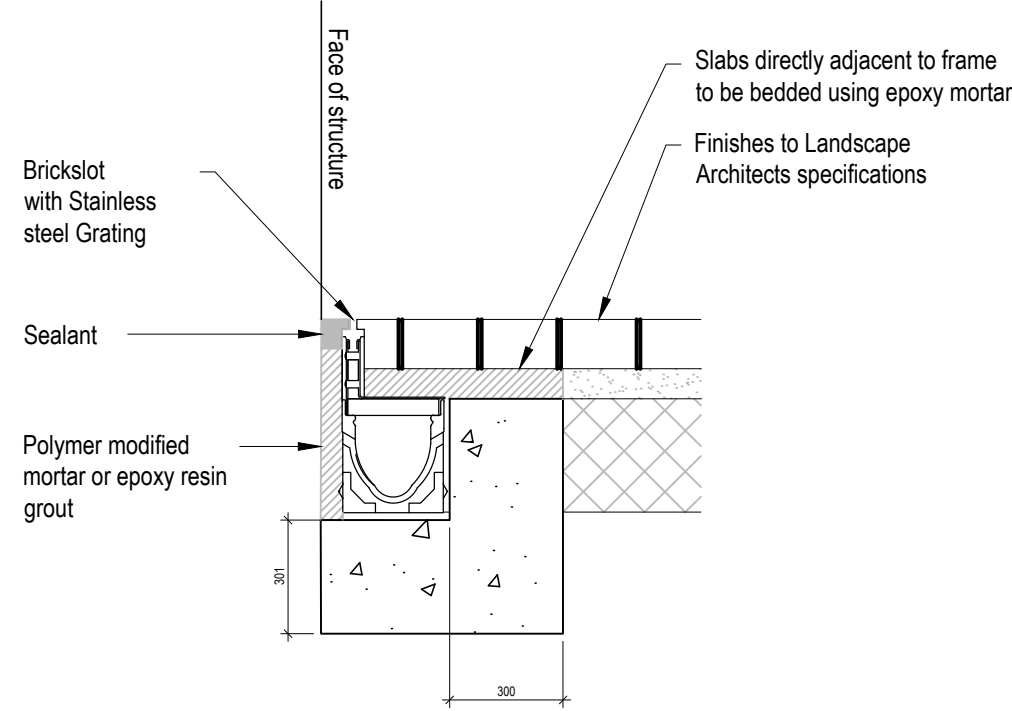
Project
MARKFIELD

Drawing Title
PROPOSED CONSTRUCTION DETAILS
SHEET 3

RWCL Internal Register reference: 5964-003

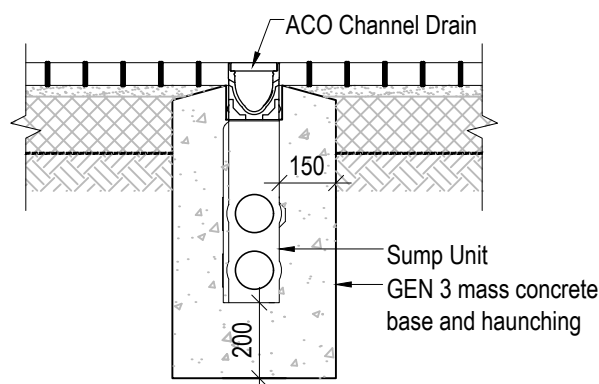
Scales @ A1

1102 - A01

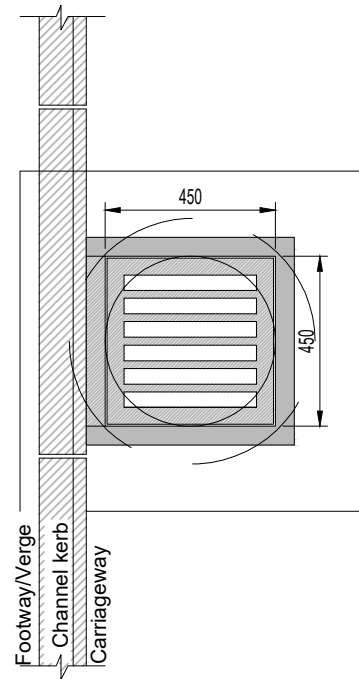


LINEAR SLOT DRAIN AT THRESHOLD DETAIL

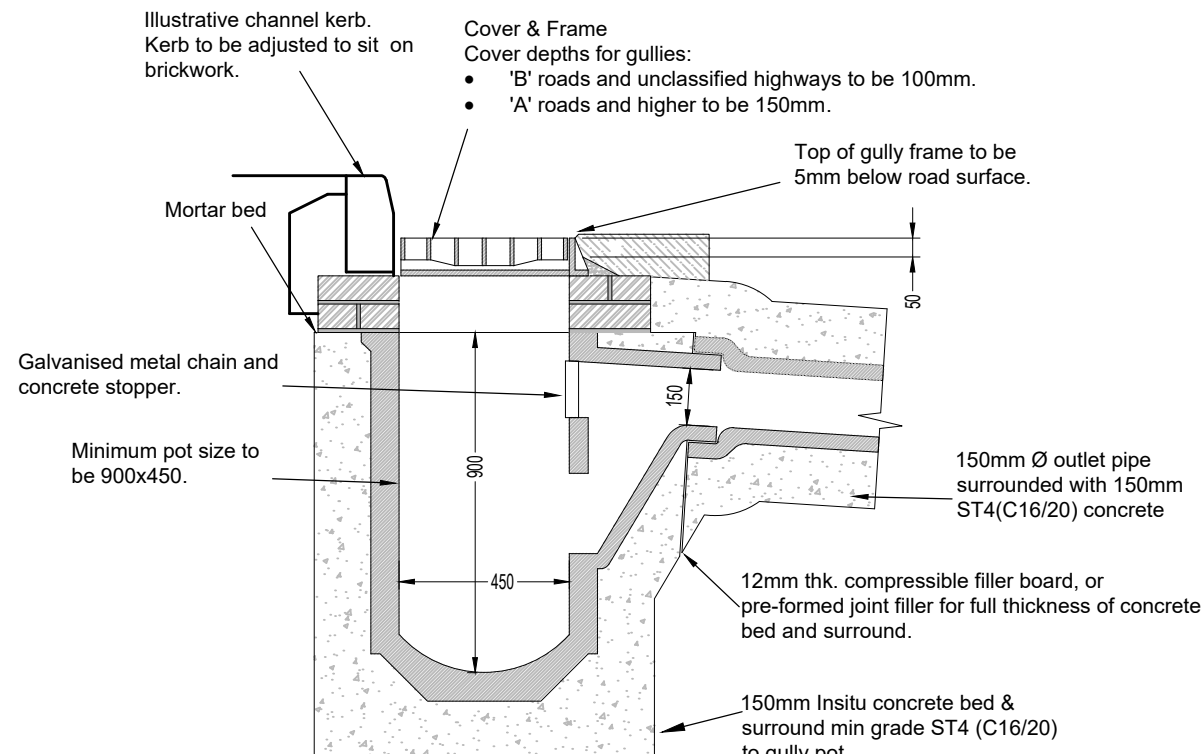
SCALE 1:20



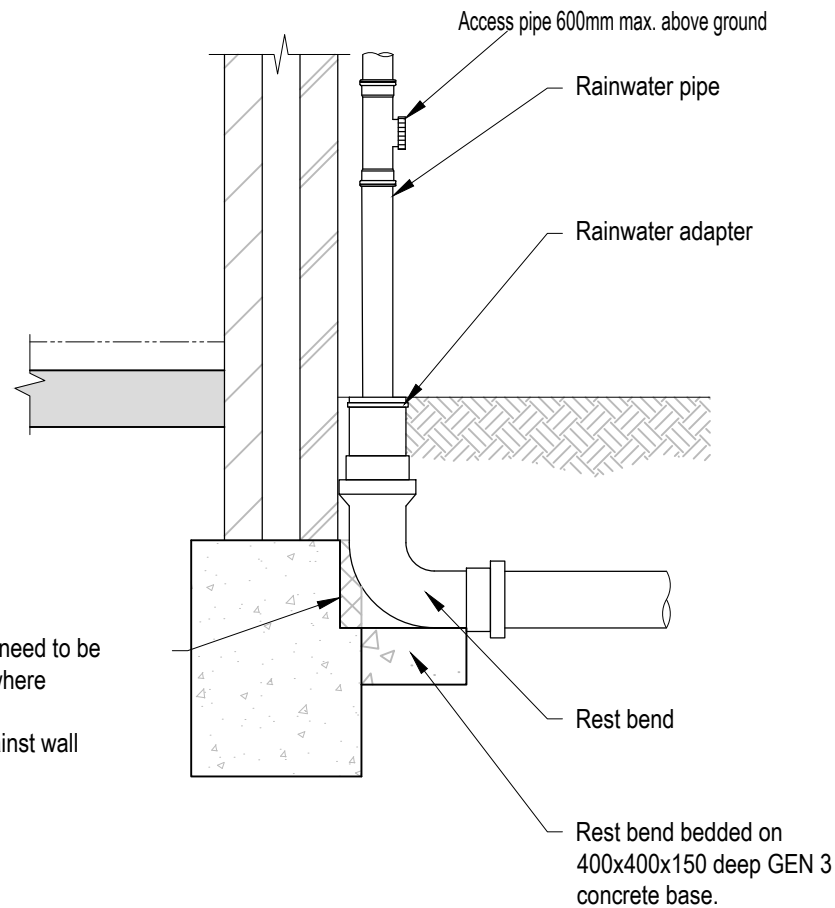
SUMP UNIT CHANNEL/SLOT DRAIN DETAIL (ACO M100D UNIVERSAL SUMP)



ROAD GULLY AT KERB Type:Precast Concrete Plan

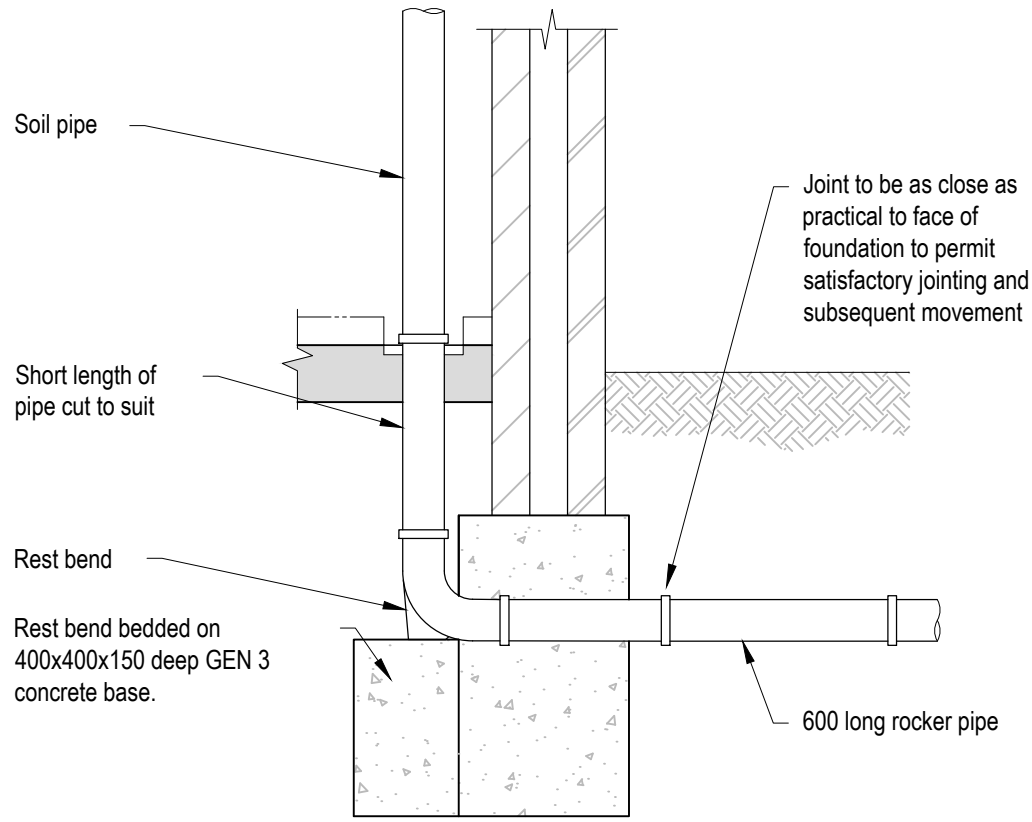


ROAD GULLY AT KERB Type:Precast Concrete Section



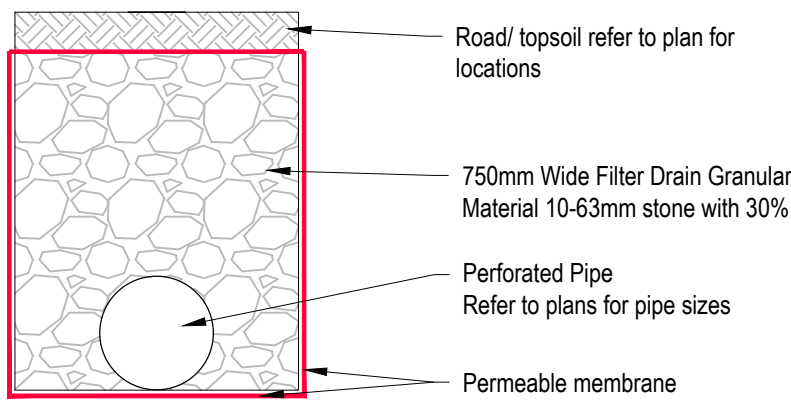
RAINWATER DOWN PIPE TO DRAIN (SURFACE WATER SYSTEM)

SCALE 1:20



TYPICAL SOIL VENT PIPE/STUB STACK/WC DETAIL

SCALE 1:20



FILTER DRAIN

DO NOT SCALE OFF THIS DRAWING

NOTES

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Revision History						
Rev	Comment	By	Chkd	Appr	Date	
Current Revision						
A01	FOR APPROVAL	TZ	TZ	SB	24.11.20	

APPROVAL

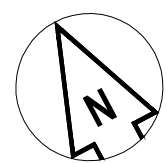
ALLISON HOMES

robert west
proesgroup
1 Paris Garden
London
SE1 1ND
t: 0203 773 7880
www.robertwest.co.uk

Project
MARKFIELD

Drawing Title
PROPOSED CONSTRUCTION DETAILS
SHEET 4

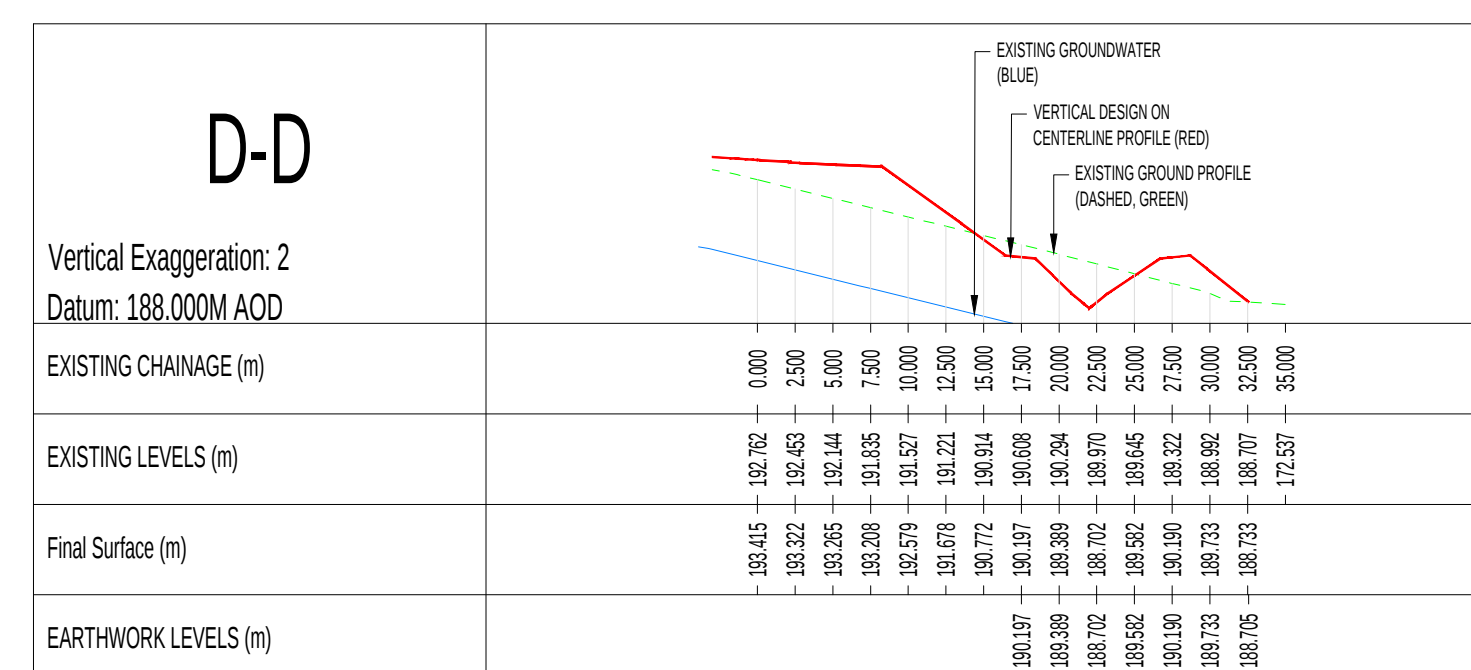
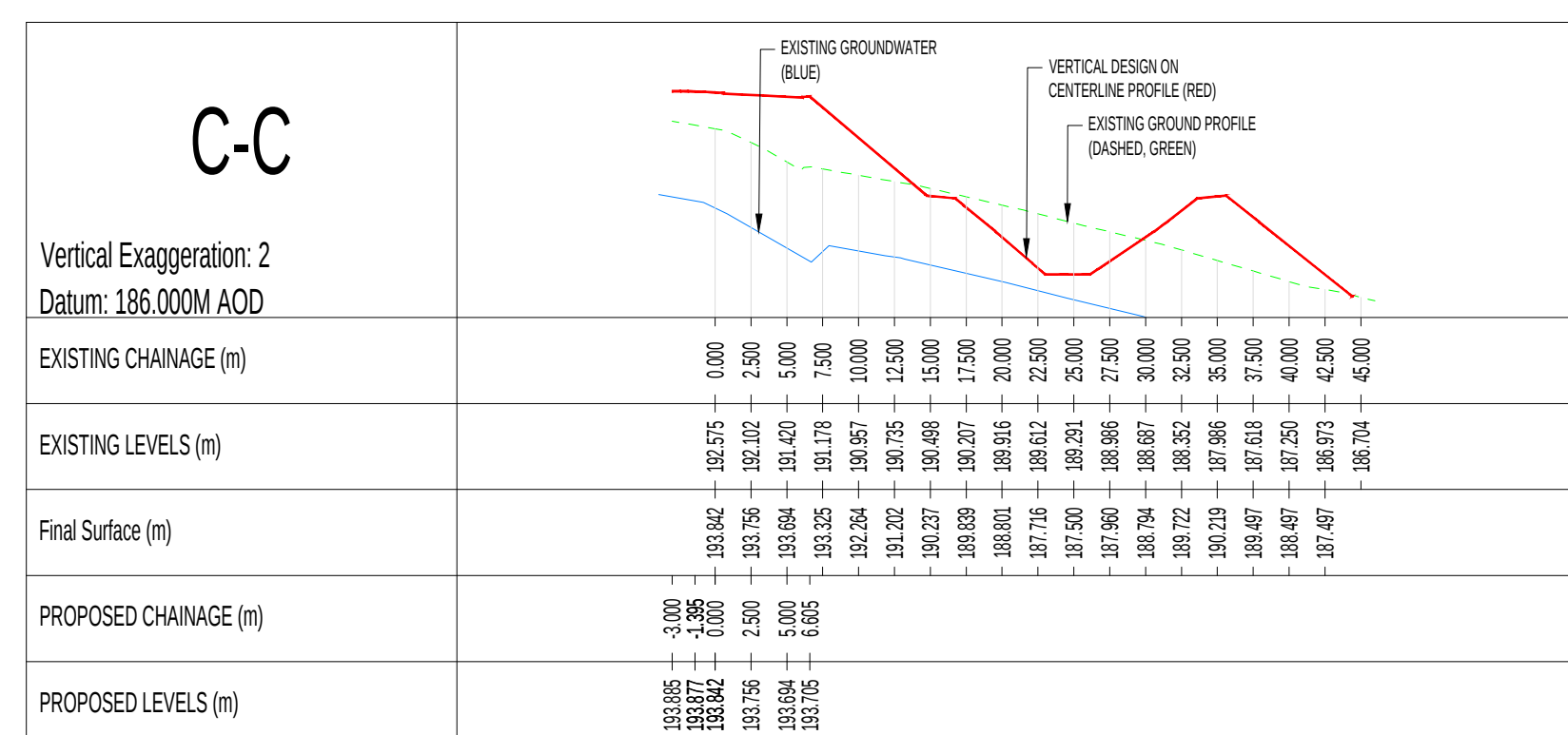
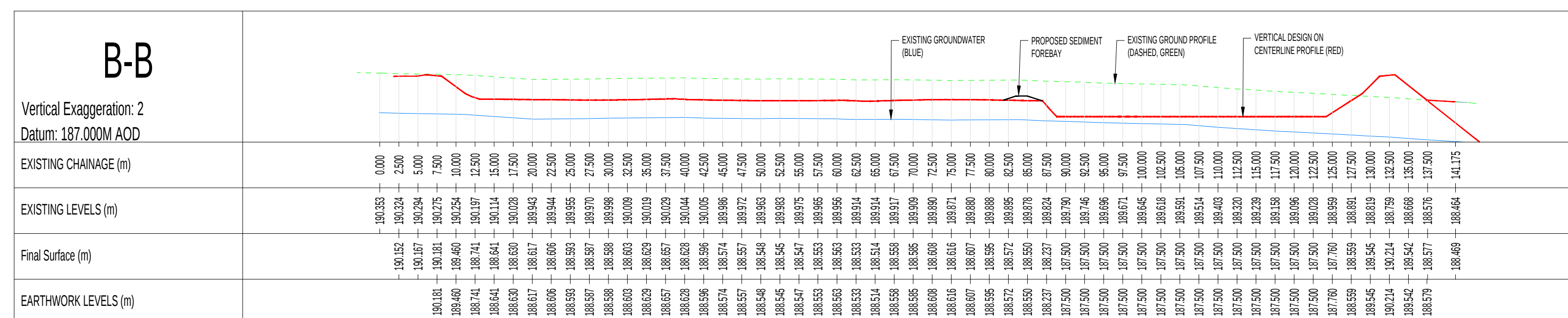
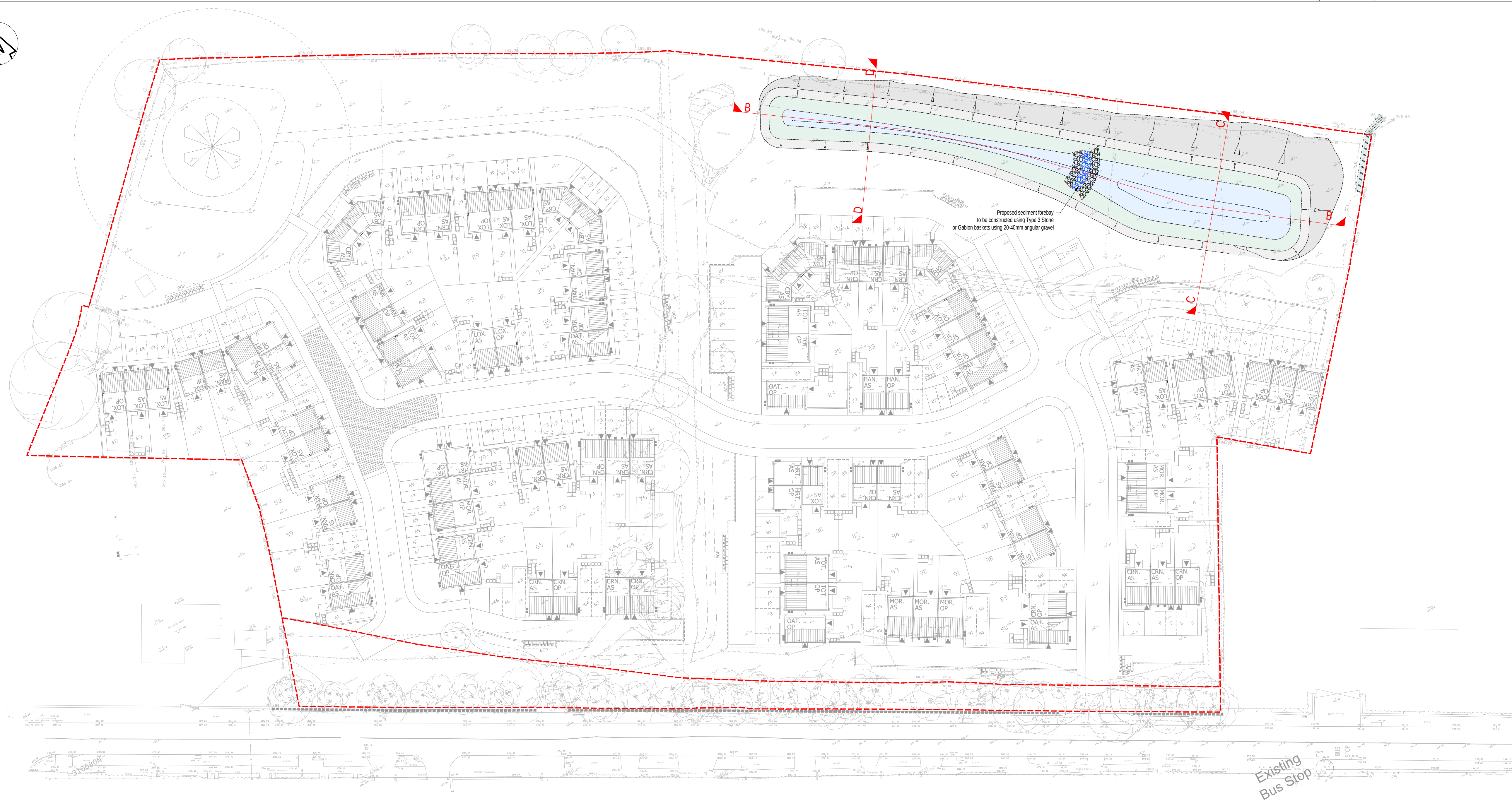
RWCL Internal Register reference: 5964-003 Scales @ A1



DO NOT SCALE OFF THIS DRAWING

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Revision History						
Rev	Comment	By	Chkd	Appr	Date	
A01	FOR APPROVAL	BS	TZ	SB	24 11 2020	
Current Revision						
A02	FOR APPROVAL	BS	TZ	SB	09 12 2020	

FOR APPROVAL

ALLISON HOMES

robert west.
proesgroup

1 Paris Garden
London
SE1 8ND

t: 0203 773 7880

www.robertwest.co.uk

Project
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Drawing Title
PROPOSED POND SECTIONS

RWCL Internal Register reference: 5964-003 Scales @ A1

1120-A02

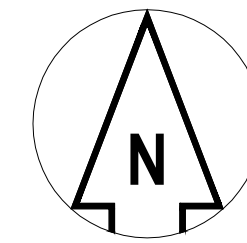
Key:

Site Boundary

Exceedance Flow Arrow

Scale 1:500 @ A1 - 1:1000 @ A3

10m 0 10m 20m 30m 40m 50m



DO NOT SCALE OFF THIS DRAWING

NOTES

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3. All dimensions in meters unless stated otherwise.

Revision History						
Rev	Comment	By	Chkd	Appr	Date	
Current Revision						
A01 FOR APPROVAL		TZ	TZ	SB	24.11.2025	

APPROVAL

ALLISON HOMES

1 Paris Garden
London
SE1 8ND
t: 0203 773 7880
www.robertwest.co.uk

Project **MARKFIELD**

Drawing Title **PROPOSED SITE
EXCEEDANCE FLOW PLAN**

RWCL Internal Register reference: 5964-003 Scales @ A1

1150-A01



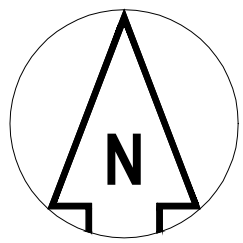
Key:

Site Boundary

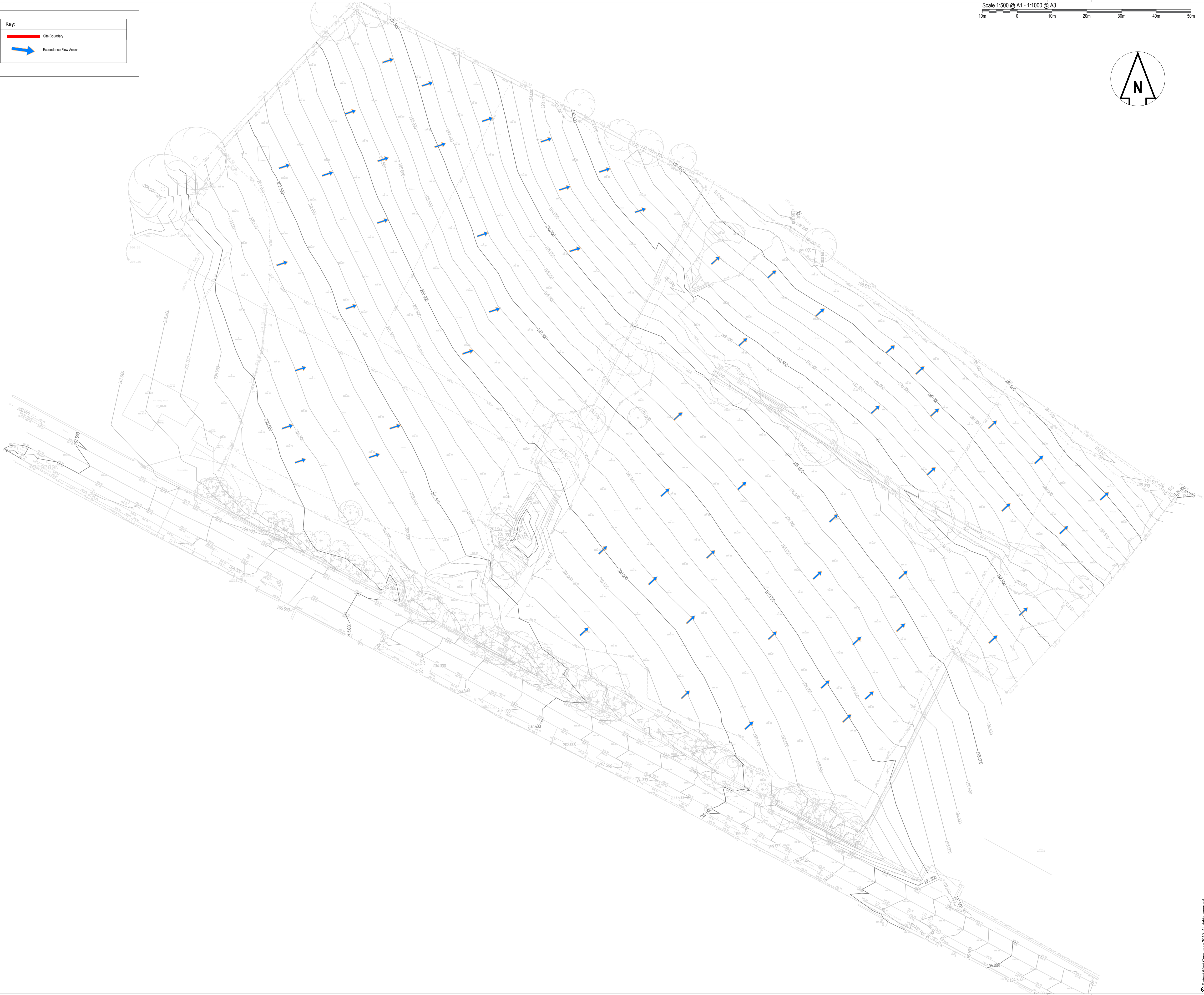
Exceedance Flow Arrow

Scale 1:500 @ A1 - 1:1000 @ A3

10m 0 10m 20m 30m 40m 50m



- DO NOT SCALE OFF THIS DRAWING
- NOTES
1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
 2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
 3. All dimensions in meters unless stated otherwise.



Revision History						
Rev	Comment	By	Chkd	Appr	Date	
Current Revision						
A01	FOR APPROVAL	TZ	TZ	SB	24.11.2025	

APPROVAL

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robert west

prosgroup

1 Paris Garden
London
SE1 8ND
t: 0203 773 7880
www.robertwest.co.uk

Project
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Drawing Title
EXISTING SITE
EXCEEDANCE FLOW PLAN

RWCL Internal Register reference: 59964-003 Scales @ A1

1151-A01

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Diameter (m)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
S24	0.054	1.200	Type D	200.537	199.112	1.200	448823.383	310619.614
S25	0.163	1.200	Type D	198.960	197.180	1.555	448866.791	310594.950
S26	0.013	1.200	Type D	196.012	194.495	1.217	448890.620	310641.052
S30	0.090	1.200	Type D	196.596	195.153	1.218	448836.709	310668.497
S31	0.057	1.200	Type D	196.137	194.694	1.218	448860.380	310656.947
S32	0.000	1.200	Type B	195.618	193.805	1.513	448890.964	310656.375
S41	0.075	1.200	Type D	194.766	193.266	1.200	448891.795	310679.878
S42	0.013	1.200	Type D	194.370	192.820	1.250	448891.378	310690.047
S43	0.044	1.200	Type D	193.641	191.960	1.381	448883.293	310706.883
S44	0.000	1.200	Type D	192.768	191.140	1.328	448858.956	310721.385
S22	0.062	1.200	Type D	202.551	201.201	1.200	448758.349	310660.504
S23	0.000	1.200	Type B	201.691	200.011	1.530	448786.764	310645.610
S21	0.058	1.200	Type B	200.447	198.610	1.612	448801.955	310638.149
S14	0.076	1.200	Type D	200.655	199.300	1.205	448759.711	310716.456
S15	0.016	1.200	Type D	199.402	198.048	1.205	448779.624	310709.161
S16	0.036	1.200	Type D	198.239	196.806	1.208	448798.066	310702.429
S17	0.022	1.200	Type D	197.558	196.073	1.260	448808.599	310694.052
S18	0.000	1.200	Type D	196.994	195.517	1.252	448818.355	310679.323
S19	0.061	1.200	Type D	196.870	195.235	1.335	448822.707	310676.567
S20	0.005	1.200	Type B	194.732	192.810	1.622	448841.785	310711.549
S45	0.000	1.200	Type D	191.943	190.760	0.883	448850.931	310726.141
S10	0.104	1.200	Unknown	203.984	202.559	1.200	448730.674	310674.678
S11	0.042	1.200	Type D	202.156	200.730	1.201	448742.489	310708.248
S12	0.070	1.200	Type D	201.375	199.874	1.201	448743.955	310723.404
S13	0.008	1.200	Type D	200.101	198.564	1.237	448744.894	310747.681
S1	0.054	1.200	Type D	201.183	199.833	1.200	448715.546	310761.826
S2	0.006	1.200	Type D	200.403	199.010	1.243	448728.123	310759.742
S3	0.047	1.200	Type B	199.483	197.630	1.553	448742.791	310761.024
S5	0.067	1.200	Type B	197.772	195.861	1.611	448772.525	310772.813
S6	0.031	1.200	Type B	195.431	193.532	1.599	448817.757	310753.377
S7	0.047	1.200	Type B	195.538	193.479	1.759	448823.025	310742.013
S9	0.000	1.500	Type D	190.150	188.730	0.820	448858.223	310737.774
S8	0.000	1.500	Type D	190.150	188.525	1.025	448865.223	310737.379
S33	0.088	1.200	Unknown	194.040	192.495	1.320	448922.339	310662.521
S34	0.000	1.200	Type B	192.724	190.485	1.939	448942.206	310647.144
S37	0.000	1.200	Type B	190.150	188.245	1.605	448947.878	310659.025
S35	0.000	1.200	Type B	190.150	187.530	2.170	448949.678	310666.497
S38	0.131	1.500	Type B	190.150	187.350	2.200	448949.805	310670.039
S39	0.000	1.500	Type B	190.150	186.970	2.880	448959.492	310671.579
S40	0.000	1.200	Type A	190.150	186.320	3.530	448967.191	310677.032

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (m)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	S24	199.112	S25	197.180	Circ	0.225mØ	49.926	25.8	0.600	1.200	1.555
1.001	S25	197.180	S26	194.570	Circ	0.225mØ	51.896	19.9	0.600	1.555	1.217
1.002	S26	194.495	S32	193.805	Circ	0.3mØ	15.327	22.2	0.600	1.217	1.513
2.000	S30	195.153	S31	194.694	Circ	0.225mØ	26.339	57.5	0.600	1.218	1.218
2.001	S31	194.694	S32	193.880	Circ	0.225mØ	30.589	37.6	0.600	1.218	1.513
1.003	S32	193.805	S41	193.266	Circ	0.3mØ	23.518	43.7	0.600	1.513	1.200
1.004	S41	193.266	S42	192.820	Circ	0.3mØ	10.177	22.8	0.600	1.200	1.250
1.005	S42	192.820	S43	191.960	Circ	0.3mØ	18.677	21.7	0.600	1.250	1.381
1.006	S43	191.960	S44	191.140	Circ	0.3mØ	28.331	34.5	0.600	1.381	1.328
1.007	S44	191.140	S45	190.760	Circ	0.3mØ	9.328	24.5	0.600	1.328	0.883
3.000	S22	201.201	S23	200.011	Circ	0.15mØ	32.082	27.0	0.600	1.200	1.530
3.001	S23	200.011	S21	198.685	Circ	0.15mØ	16.924	12.8	0.600	1.530	1.612
3.002	S21	198.610	S19	195.310	Circ	0.225mØ	43.664	13.2	0.600	1.612	1.335
4.000	S14	199.300	S15	198.048	Circ	0.15mØ	21.208	16.9	0.600	1.205	1.205
4.001	S15	198.048	S16	196.881	Circ	0.15mØ	19.632	16.8	0.600	1.205	1.208
4.002	S16	196.806	S17	196.073	Circ	0.225mØ	13.458	18.4	0.600	1.208	1.260
4.003	S17	196.073	S18	195.517	Circ	0.225mØ	17.668	31.8	0.600	1.260	1.252

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (m)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
4.004	S18	195.517	S19	195.310	Circ	0.225mØ	5.151	24.9	0.600	1.252	1.335
3.003	S19	195.235	S20	192.810	Circ	0.3mØ	39.847	16.4	0.600	1.335	1.622
3.004	S20	192.810	S45	190.760	Circ	0.3mØ	17.221	8.4	0.600	1.622	0.883
1.008	S45	190.760	S9	189.030	Circ	0.3mØ	13.729	7.9	0.600	0.883	0.820
5.000	S10	202.559	S11	200.730	Circ	0.225mØ	35.589	19.5	0.600	1.200	1.201
5.001	S11	200.730	S12	199.949	Circ	0.225mØ	15.227	19.5	0.600	1.201	1.201
5.002	S12	199.874	S13	198.564	Circ	0.3mØ	24.295	18.6	0.600	1.201	1.237
5.003	S13	198.564	S3	197.630	Circ	0.3mØ	13.508	14.5	0.600	1.237	1.553
6.000	S1	199.833	S2	199.010	Circ	0.15mØ	12.749	15.5	0.600	1.200	1.243
6.001	S2	199.010	S3	197.780	Circ	0.15mØ	14.723	12.0	0.600	1.243	1.553
5.004	S3	197.630	S5	195.861	Circ	0.3mØ	31.986	18.1	0.600	1.553	1.611
5.005	S5	195.861	S6	193.532	Circ	0.3mØ	49.230	21.1	0.600	1.611	1.599
5.006	S6	193.532	S7	193.479	Circ	0.3mØ	12.526	238.0	0.600	1.599	1.759
5.007	S7	193.479	S9	189.030	Circ	0.3mØ	35.452	8.0	0.600	1.759	0.820
1.009	S9	188.730	S8	188.525	Circ	0.6mØ	7.011	34.2	0.600	0.820	1.025
1.010	S8	188.525	S38	187.350	Circ	0.6mØ	108.115	92.0	0.600	1.025	2.200
7.000	S33	192.495	S34	190.560	Circ	0.225mØ	25.123	13.0	0.600	1.320	1.939
7.001	S34	190.485	S37	188.245	Circ	0.3mØ	13.166	5.9	0.600	1.939	1.605
7.002	S37	188.245	S35	187.680	Circ	0.3mØ	7.686	13.6	0.600	1.605	2.170
7.003	S35	187.530	S38	187.500	Circ	0.45mØ	3.544	118.1	0.600	2.170	2.200
1.011	S38	187.350	S39	186.970	Circ	0.6mØ	9.809	25.8	0.600	2.200	2.580
1.012	S39	186.970	S40	186.320	Circ	0.3mØ	9.434	14.5	0.600	2.880	3.530

Outfall Details

Outfall Manhole S40 : Free Discharge

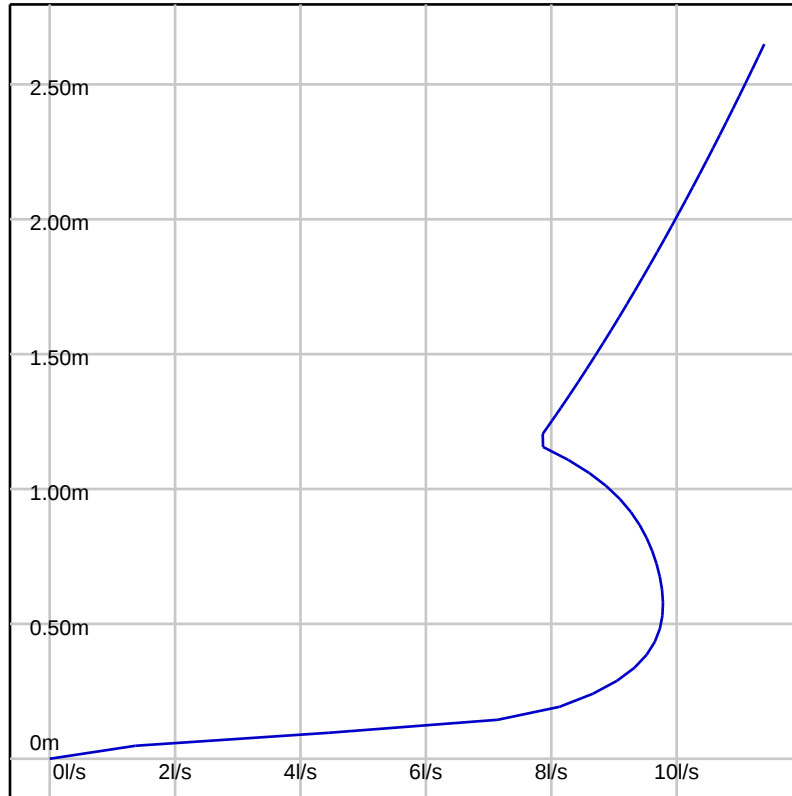
Flow Control Details

Controls within Manhole S39

Hydro-Brake® Optimum Control at Manhole S39

Model Ref	Design Depth (m)	Design Flow (l/s)	Depth Above Invert (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
SHE-0131-1050-2230-1050	2.230	10.500	0.000	0.570	9.782	1.167	7.749

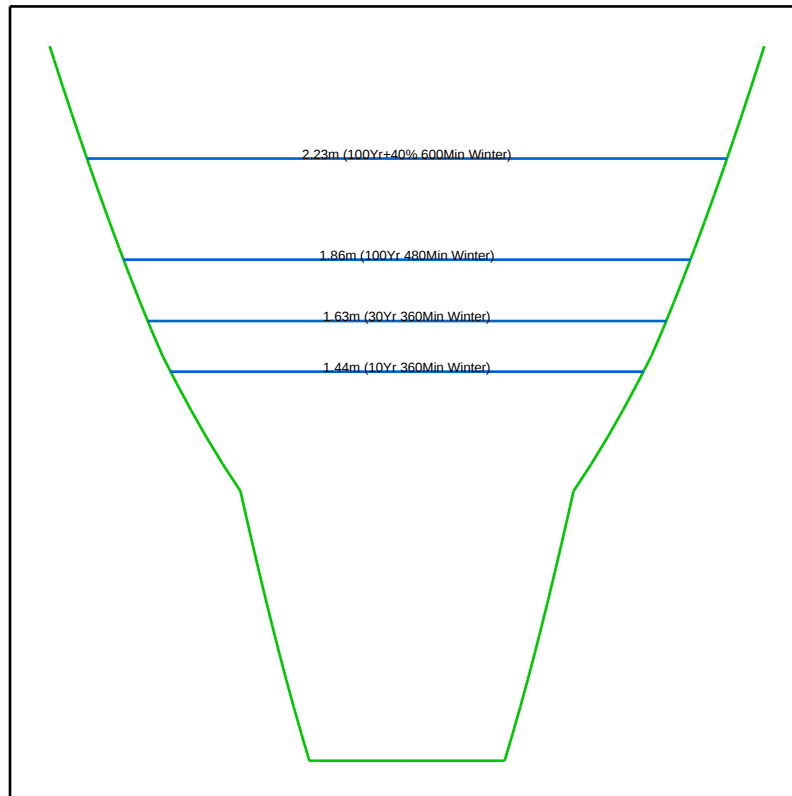
Hydro-Brake® Optimum Control at S39



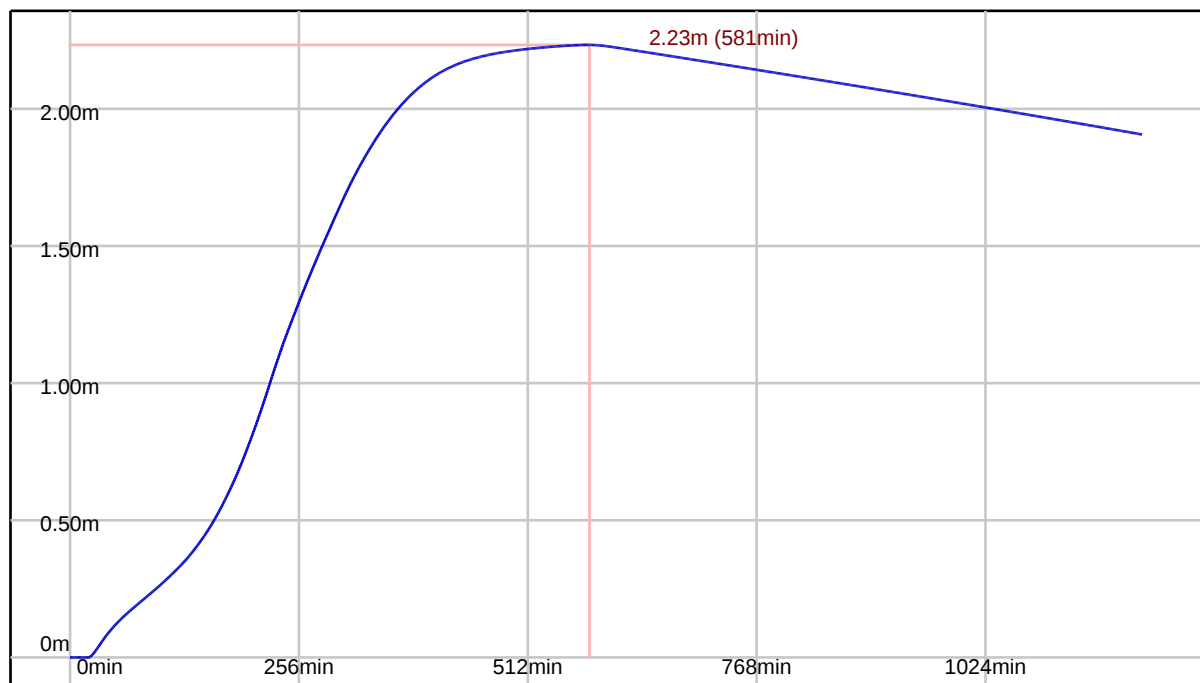
Pond Structure at Manhole S39

Pond Invert (m)	Max Depth (m)	Volume To Water Level (m3)	Water Level (m)	Freeboard (m)	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
187.500	2.650	1300.261	189.850	0.300	0.00000000	0.00000000	2.00

Pond Depth/Area Diagram at S39



Pond at S39 (100Yr+40% 600Min Winter)



Simulation Settings

FEH2022 (point): Filename=FEH_Point_Descriptors_448889_310666_v5_1_0.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2880

Return Periods (yrs) + Climate Change: (10, +0%), (30, +0%), (100, +0%), (100, +40%)

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
10Yr 15Min Winter	61.352	0.00	3.73	100Yr 15Min Summer	99.638	0.00	3.83
10Yr 15Min Summer	61.352	0.00	3.81	100Yr 15Min Winter	99.638	0.00	3.97
10Yr 30Min Winter	39.400	0.00	4.62	100Yr 30Min Summer	65.248	0.00	3.98
10Yr 30Min Summer	39.400	0.00	4.57	100Yr 30Min Winter	65.248	0.00	4.22
10Yr 60Min Winter	24.338	0.00	5.05	100Yr 60Min Summer	40.724	0.00	4.05
10Yr 60Min Summer	24.338	0.00	5.00	100Yr 60Min Winter	40.724	0.00	4.40
10Yr 120Min Winter	15.485	0.00	4.54	100Yr 120Min Summer	24.816	0.00	3.83
10Yr 120Min Summer	15.485	0.00	4.49	100Yr 120Min Winter	24.816	0.00	4.03
10Yr 180Min Winter	11.793	0.00	4.12	100Yr 180Min Summer	18.503	0.00	3.62
10Yr 180Min Summer	11.793	0.00	4.09	100Yr 180Min Winter	18.503	0.00	3.71
10Yr 240Min Winter	9.525	0.00	3.72	100Yr 240Min Summer	14.929	0.00	3.41
10Yr 240Min Summer	9.525	0.00	3.70	100Yr 240Min Winter	14.929	0.00	3.58
10Yr 360Min Winter	7.041	0.00	2.98	100Yr 360Min Summer	10.963	0.00	3.06
10Yr 360Min Summer	7.041	0.00	2.95	100Yr 360Min Winter	10.963	0.00	3.12
10Yr 480Min Winter	5.655	0.00	2.04	100Yr 480Min Summer	8.759	0.00	2.79
10Yr 480Min Summer	5.655	0.00	2.01	100Yr 480Min Winter	8.759	0.00	2.76
10Yr 600Min Winter	4.736	0.00	0.95	100Yr 600Min Summer	7.320	0.00	2.48
10Yr 600Min Summer	4.736	0.00	0.94	100Yr 600Min Winter	7.320	0.00	2.48
10Yr 720Min Summer	4.081	0.00	0.00	100Yr 720Min Summer	6.300	0.00	2.16
10Yr 720Min Winter	4.081	0.00	-0.02	100Yr 720Min Winter	6.300	0.00	2.17
10Yr 960Min Winter	3.229	0.00	-0.03	100Yr 960Min Summer	4.961	0.00	1.25
10Yr 960Min Summer	3.229	0.00	-0.03	100Yr 960Min Winter	4.961	0.00	1.30
10Yr 1440Min Summer	2.319	0.00	-0.07	100Yr 1440Min Summer	3.523	0.00	-0.03
10Yr 1440Min Winter	2.319	0.00	-0.06	100Yr 1440Min Winter	3.523	0.00	-0.01
10Yr 2880Min Winter	1.334	0.00	-0.05	100Yr 2880Min Summer	1.962	0.00	-0.01
10Yr 2880Min Summer	1.334	0.00	-0.05	100Yr 2880Min Winter	1.962	0.00	0.02
30Yr 15Min Summer	78.807	0.00	4.31	100Yr+40% 15Min Summer	139.493	0.00	2.96
30Yr 15Min Winter	78.807	0.00	4.36	100Yr+40% 15Min Winter	139.493	0.00	3.09
30Yr 30Min Summer	51.149	0.00	4.79	100Yr+40% 30Min Summer	91.347	0.00	3.19
30Yr 30Min Winter	51.149	0.00	4.95	100Yr+40% 30Min Winter	91.347	0.00	3.31
30Yr 60Min Summer	31.723	0.00	4.73	100Yr+40% 60Min Summer	57.013	0.00	3.50
30Yr 60Min Winter	31.723	0.00	4.83	100Yr+40% 60Min Winter	57.013	0.00	3.63
30Yr 120Min Summer	19.617	0.00	4.21	100Yr+40% 120Min Summer	34.742	0.00	3.55
30Yr 120Min Winter	19.617	0.00	4.26	100Yr+40% 120Min Winter	34.742	0.00	3.62
30Yr 180Min Winter	14.708	0.00	3.94	100Yr+40% 180Min Summer	25.904	0.00	3.41
30Yr 180Min Summer	14.708	0.00	3.87	100Yr+40% 180Min Winter	25.904	0.00	3.46
30Yr 240Min Summer	11.859	0.00	3.63	100Yr+40% 240Min Summer	20.901	0.00	3.26
30Yr 240Min Winter	11.859	0.00	3.68	100Yr+40% 240Min Winter	20.901	0.00	3.36
30Yr 360Min Summer	8.709	0.00	3.11	100Yr+40% 360Min Summer	15.349	0.00	2.99
30Yr 360Min Winter	8.709	0.00	3.17	100Yr+40% 360Min Winter	15.349	0.00	3.14
30Yr 480Min Summer	6.961	0.00	2.67	100Yr+40% 480Min Summer	12.263	0.00	2.77
30Yr 480Min Winter	6.961	0.00	2.69	100Yr+40% 480Min Winter	12.263	0.00	2.87
30Yr 600Min Summer	5.818	0.00	2.14	100Yr+40% 600Min Summer	10.248	0.00	2.54
30Yr 600Min Winter	5.818	0.00	2.18	100Yr+40% 600Min Winter	10.248	0.00	2.62
30Yr 720Min Winter	5.008	0.00	1.43	100Yr+40% 720Min Summer	8.820	0.00	2.27
30Yr 720Min Summer	5.008	0.00	1.34	100Yr+40% 720Min Winter	8.820	0.00	2.31
30Yr 960Min Summer	3.953	0.00	-0.09	100Yr+40% 960Min Summer	6.945	0.00	1.84
30Yr 960Min Winter	3.953	0.00	-0.06	100Yr+40% 960Min Winter	6.945	0.00	1.82
30Yr 1440Min Winter	2.826	0.00	-0.01	100Yr+40% 1440Min Summer	4.932	0.00	1.02
30Yr 1440Min Summer	2.826	0.00	-0.01	100Yr+40% 1440Min Winter	4.932	0.00	1.02
30Yr 2880Min Summer	1.608	0.00	-0.04	100Yr+40% 2880Min Winter	2.747	0.00	-0.01
30Yr 2880Min Winter	1.608	0.00	-0.04	100Yr+40% 2880Min Summer	2.747	0.00	0.01

Simulation Results

Return Period Yrs: 10.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S24	15 min Summer	8	199.178	0.066	19.706		OK
S25	15 min Summer	8	197.313	0.133	78.734		OK
S26	15 min Summer	8	194.615	0.120	82.192		OK
S30	15 min Summer	8	195.261	0.108	32.760		OK
S31	15 min Summer	8	194.822	0.127	53.373		OK
S32	15 min Summer	8	194.006	0.201	134.745		OK
S41	15 min Summer	8	193.447	0.181	161.270		OK
S42	15 min Summer	9	193.001	0.181	165.392		OK
S43	15 min Summer	9	192.194	0.234	181.195		OK
S44	15 min Summer	9	191.342	0.202	182.287		OK
S22	15 min Summer	8	201.293	0.092	22.536		OK
S23	15 min Summer	8	200.081	0.070	22.382		OK
S21	15 min Summer	8	198.694	0.084	43.144		OK
S14	15 min Summer	8	199.386	0.086	27.470		OK
S15	15 min Summer	8	198.145	0.097	33.107		OK
S16	15 min Summer	8	196.901	0.095	45.772		OK
S17	15 min Summer	8	196.196	0.123	53.599		OK
S18	15 min Summer	8	195.630	0.113	53.342		OK
S19	15 min Summer	8	195.375	0.140	118.206		OK
S20	15 min Summer	8	192.923	0.113	119.747		OK
S45	15 min Summer	9	190.953	0.193	301.889		OK
S10	15 min Summer	8	202.645	0.087	37.788		OK
S11	15 min Summer	8	200.834	0.104	52.687		OK
S12	15 min Summer	8	199.986	0.113	77.867		OK
S13	15 min Summer	8	198.670	0.106	80.430		OK
S1	15 min Summer	8	199.902	0.069	19.631		OK
S2	15 min Summer	8	199.077	0.068	21.729		OK
S3	15 min Summer	8	197.769	0.139	118.744		OK
S5	15 min Summer	8	196.024	0.162	142.545		OK
S6	15 min Summer	9	193.904	0.372	151.598		Surcharged
S7	15 min Summer	9	193.615	0.136	169.480		OK
S9	15 min Summer	9	189.006	0.276	472.305		OK
S8	360 min Winter	345	188.948	0.423	16.651		OK
S33	15 min Summer	8	192.566	0.071	31.975		OK
S34	15 min Summer	8	190.538	0.053	31.806		OK
S37	360 min Winter	345	188.943	0.698	0.465		Surcharged
S35	360 min Winter	344	188.943	1.413	0.557		Surcharged
S38	360 min Winter	344	188.943	1.593	8.486		Surcharged
S39	360 min Winter	346	188.943	1.443	8.574		Surcharged
S40	2880 min Winter	2019	186.352	0.032	9.782		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	8	S24	S25	0.099	1.154	19.546	0.190	OK
1.001	15 min Summer	8	S25	S26	0.133	3.179	77.483	0.661	OK
1.002	15 min Summer	8	S26	S32	0.161	2.128	82.010	0.346	OK
2.000	15 min Summer	8	S30	S31	0.118	1.548	32.578	0.474	OK
2.001	15 min Summer	8	S31	S32	0.127	2.277	52.735	0.620	OK
1.003	15 min Summer	9	S32	S41	0.191	2.843	134.309	0.797	OK
1.004	15 min Summer	9	S41	S42	0.181	3.619	160.914	0.689	OK
1.005	15 min Summer	9	S42	S43	0.208	3.178	165.802	0.692	OK
1.006	15 min Summer	9	S43	S44	0.218	3.314	182.287	0.961	OK
1.007	15 min Summer	9	S44	S45	0.198	3.701	182.740	0.812	OK
3.000	15 min Summer	8	S22	S23	0.081	2.300	22.382	0.651	OK
3.001	15 min Summer	8	S23	S21	0.070	2.756	22.206	0.443	OK

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
3.002	15 min Summer	8	S21	S19	0.084	3.181	42.791	0.298	OK
4.000	15 min Summer	8	S14	S15	0.092	2.421	27.367	0.630	OK
4.001	15 min Summer	8	S15	S16	0.097	2.716	32.835	0.753	OK
4.002	15 min Summer	8	S16	S17	0.109	2.398	45.673	0.374	OK
4.003	15 min Summer	8	S17	S18	0.118	2.529	53.342	0.576	OK
4.004	15 min Summer	8	S18	S19	0.113	2.667	53.133	0.508	OK
3.003	15 min Summer	8	S19	S20	0.127	4.146	117.799	0.428	OK
3.004	15 min Summer	9	S20	S45	0.153	3.309	119.311	0.309	OK
1.008	15 min Summer	9	S45	S9	0.193	6.291	302.604	0.763	OK
5.000	15 min Summer	8	S10	S11	0.095	2.346	37.621	0.318	OK
5.001	15 min Summer	8	S11	S12	0.104	2.912	52.316	0.442	OK
5.002	15 min Summer	8	S12	S13	0.109	3.339	77.665	0.300	OK
5.003	15 min Summer	8	S13	S3	0.123	2.947	80.162	0.273	OK
6.000	15 min Summer	8	S1	S2	0.068	2.502	19.575	0.431	OK
6.001	15 min Summer	8	S2	S3	0.067	2.802	21.609	0.418	OK
5.004	15 min Summer	8	S3	S5	0.151	3.320	118.279	0.451	OK
5.005	15 min Summer	8	S5	S6	0.231	2.422	141.573	0.583	OK
5.006	15 min Summer	9	S6	S7	0.218	2.782	152.962	2.136	OK
5.007	15 min Summer	9	S7	S9	0.136	5.473	169.701	0.429	OK
1.009	480 min Winter	428	S9	S8	0.328	1.799	82.118	0.070	OK
1.010	360 min Winter	345	S8	S38	0.512	0.412	64.625	0.090	OK
7.000	15 min Summer	8	S33	S34	0.071	2.949	31.806	0.219	OK
7.001	120 min Summer	66	S34	S37	0.165	2.525	14.078	0.031	OK
7.002	30 min Summer	26	S37	S35	0.300	1.634	27.409	0.091	Surcharged
7.003	60 min Summer	33	S35	S38	0.450	0.554	34.640	0.117	OK
1.011	15 min Summer	10	S38	S39	0.600	2.025	473.509	0.349	Surcharged
1.012	2880 min Winter	2019	S39	S40	0.032	2.396	9.782	0.033	OK

Return Period Yrs: 30.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S24	15 min Summer	8	199.187	0.075	25.313		OK
S25	15 min Summer	8	197.338	0.158	101.156		OK
S26	15 min Summer	8	194.633	0.138	105.546		OK
S30	15 min Summer	8	195.278	0.126	42.083		OK
S31	15 min Summer	8	194.845	0.150	68.570		OK
S32	15 min Summer	8	194.052	0.247	173.338		OK
S41	15 min Summer	9	193.483	0.217	206.351		OK
S42	15 min Summer	9	193.102	0.282	212.511		OK
S43	15 min Summer	9	192.564	0.604	230.119		Surcharged
S44	15 min Summer	9	191.381	0.241	226.606		OK
S22	15 min Summer	8	201.312	0.110	28.949		OK
S23	15 min Summer	8	200.092	0.081	28.733		OK
S21	15 min Summer	8	198.706	0.096	55.419		OK
S14	15 min Summer	8	199.402	0.102	35.287		OK
S15	15 min Summer	8	198.166	0.118	42.526		OK
S16	15 min Summer	8	196.915	0.109	58.727		OK
S17	15 min Summer	8	196.217	0.144	68.794		OK
S18	15 min Summer	8	195.648	0.131	68.475		OK
S19	15 min Summer	8	195.398	0.163	151.826		OK
S20	15 min Summer	8	192.940	0.130	153.816		OK
S45	15 min Summer	9	190.991	0.231	378.983		OK
S10	15 min Summer	8	202.658	0.099	48.542		OK
S11	15 min Summer	8	200.851	0.121	67.692		OK
S12	15 min Summer	8	200.003	0.129	100.057		OK
S13	15 min Summer	8	198.685	0.121	103.359		OK
S1	15 min Summer	8	199.913	0.080	25.218		OK
S2	15 min Summer	8	199.088	0.078	27.914		OK
S3	15 min Summer	8	197.792	0.162	152.611		OK
S5	15 min Summer	8	196.052	0.191	183.223		OK
S6	15 min Summer	9	194.089	0.557	194.591		Surcharged
S7	15 min Summer	9	193.636	0.157	217.416		OK
S9	360 min Winter	331	189.144	0.414	13.980		OK
S8	360 min Winter	333	189.139	0.614	7.494		Surcharged
S33	15 min Summer	8	192.576	0.081	41.075		OK
S34	15 min Summer	8	190.545	0.060	40.869		OK
S37	360 min Winter	347	189.131	0.886	0.507		Surcharged
S35	360 min Winter	348	189.131	1.601	0.522		Surcharged
S38	360 min Winter	348	189.131	1.781	9.328		Surcharged
S39	360 min Winter	348	189.131	1.631	8.712		Surcharged
S40	720 min Summer	306	186.352	0.032	9.781		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	8	S24	S25	0.117	1.207	25.124	0.245	OK
1.001	15 min Summer	8	S25	S26	0.158	3.345	99.497	0.849	OK
1.002	15 min Summer	8	S26	S32	0.193	2.197	105.337	0.445	OK
2.000	15 min Summer	8	S30	S31	0.138	1.637	41.858	0.610	OK
2.001	15 min Summer	8	S31	S32	0.161	2.301	68.001	0.799	OK
1.003	15 min Summer	9	S32	S41	0.231	2.953	172.787	1.025	OK
1.004	15 min Summer	9	S41	S42	0.249	3.703	206.759	0.885	OK
1.005	15 min Summer	10	S42	S43	0.291	3.195	210.589	0.880	OK
1.006	15 min Summer	9	S43	S44	0.271	3.377	226.606	1.195	OK
1.007	15 min Summer	9	S44	S45	0.236	3.914	225.975	1.004	OK
3.000	15 min Summer	8	S22	S23	0.096	2.416	28.733	0.836	OK
3.001	15 min Summer	8	S23	S21	0.081	2.933	28.523	0.570	OK
3.002	15 min Summer	8	S21	S19	0.096	3.403	54.989	0.383	OK
4.000	15 min Summer	8	S14	S15	0.110	2.528	35.154	0.809	OK
4.001	15 min Summer	8	S15	S16	0.118	2.821	42.109	0.966	OK
4.002	15 min Summer	8	S16	S17	0.127	2.540	58.612	0.481	OK

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
4.003	15 min Summer	8	S17	S18	0.138	2.680	68.475	0.740	OK
4.004	15 min Summer	8	S18	S19	0.131	2.832	68.214	0.652	OK
3.003	15 min Summer	8	S19	S20	0.146	4.420	151.313	0.549	OK
3.004	15 min Summer	9	S20	S45	0.180	3.566	153.305	0.398	OK
1.008	15 min Summer	9	S45	S9	0.230	6.515	378.896	0.955	OK
5.000	15 min Summer	8	S10	S11	0.110	2.502	48.338	0.408	OK
5.001	15 min Summer	8	S11	S12	0.121	3.099	67.234	0.568	OK
5.002	15 min Summer	8	S12	S13	0.125	3.573	99.807	0.385	OK
5.003	15 min Summer	8	S13	S3	0.141	3.143	103.041	0.351	OK
6.000	15 min Summer	8	S1	S2	0.079	2.664	25.146	0.553	OK
6.001	15 min Summer	8	S2	S3	0.078	2.985	27.767	0.537	OK
5.004	15 min Summer	8	S3	S5	0.176	3.519	152.051	0.579	OK
5.005	15 min Summer	8	S5	S6	0.246	2.939	182.019	0.750	OK
5.006	15 min Summer	9	S6	S7	0.228	3.397	196.201	2.739	OK
5.007	15 min Summer	9	S7	S9	0.157	5.827	217.659	0.550	OK
1.009	360 min Winter	345	S9	S8	0.505	2.045	149.564	0.127	OK
1.010	360 min Winter	301	S8	S38	0.600	0.441	79.679	0.111	Surcharged
7.000	15 min Summer	8	S33	S34	0.081	3.163	40.869	0.282	OK
7.001	60 min Summer	33	S34	S37	0.172	3.075	26.396	0.057	OK
7.002	15 min Winter	14	S37	S35	0.300	2.445	37.706	0.125	Surcharged
7.003	15 min Winter	8	S35	S38	0.450	0.807	36.252	0.122	OK
1.011	15 min Winter	10	S38	S39	0.600	2.126	557.261	0.410	Surcharged
1.012	720 min Summer	306	S39	S40	0.032	2.396	9.781	0.033	OK

Return Period Yrs: 100.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S24	15 min Summer	8	199.197	0.085	32.005		OK
S25	15 min Summer	8	197.372	0.192	127.918		OK
S26	15 min Summer	10	194.738	0.243	113.213		OK
S30	15 min Summer	10	195.316	0.164	42.384		OK
S31	15 min Summer	10	195.158	0.463	70.453		Surcharged
S32	15 min Summer	10	194.606	0.801	187.571		Surcharged
S41	15 min Summer	10	193.955	0.689	225.344		Surcharged
S42	15 min Summer	10	193.560	0.740	231.120		Surcharged
S43	15 min Summer	10	192.798	0.838	250.954		Surcharged
S44	15 min Summer	11	191.459	0.319	245.312		Surcharged
S22	15 min Summer	9	201.420	0.218	35.065		Surcharged
S23	15 min Summer	8	200.101	0.090	33.006		OK
S21	15 min Summer	8	198.719	0.109	68.155		OK
S14	15 min Summer	9	199.444	0.144	42.743		OK
S15	15 min Summer	10	198.445	0.397	44.069		Surcharged
S16	15 min Summer	9	196.926	0.119	68.159		OK
S17	15 min Summer	9	196.235	0.162	80.477		OK
S18	15 min Summer	9	195.663	0.147	80.497		OK
S19	15 min Summer	8	195.419	0.184	183.912		OK
S20	15 min Summer	8	192.955	0.145	186.485		OK
S45	15 min Summer	9	191.019	0.259	428.847		OK
S10	15 min Summer	8	202.672	0.114	61.375		OK
S11	15 min Summer	8	200.871	0.140	85.600		OK
S12	15 min Summer	8	200.021	0.148	126.519		OK
S13	15 min Summer	8	198.703	0.138	130.716		OK
S1	15 min Summer	8	199.926	0.093	31.884		OK
S2	15 min Summer	8	199.100	0.091	35.295		OK
S3	15 min Summer	8	197.818	0.188	193.005		OK
S5	15 min Summer	9	196.113	0.252	226.856		OK
S6	15 min Summer	9	194.343	0.811	246.875		Surcharged
S7	15 min Summer	9	193.660	0.181	273.599		OK
S9	30 min Summer	18	189.427	0.697	592.549		Surcharged
S8	30 min Summer	18	189.382	0.857	590.797		Surcharged
S33	15 min Summer	8	192.587	0.092	51.934		OK
S34	15 min Summer	8	190.552	0.067	51.693		OK
S37	480 min Winter	461	189.358	1.113	0.543		Surcharged
S35	480 min Winter	462	189.358	1.828	0.461		Surcharged
S38	480 min Winter	462	189.358	2.008	9.408		Surcharged
S39	480 min Winter	462	189.358	1.858	9.686		Surcharged
S40	960 min Winter	351	186.352	0.032	9.781		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	8	S24	S25	0.139	1.244	31.786	0.310	OK
1.001	15 min Summer	8	S25	S26	0.209	3.379	125.544	1.072	OK
1.002	15 min Summer	10	S26	S32	0.271	2.173	130.281	0.550	OK
2.000	15 min Summer	10	S30	S31	0.194	1.700	52.935	0.771	OK
2.001	15 min Summer	9	S31	S32	0.225	2.279	79.274	0.932	OK
1.003	15 min Winter	9	S32	S41	0.300	2.905	185.506	1.101	Surcharged
1.004	30 min Summer	16	S41	S42	0.300	3.727	220.076	0.942	Surcharged
1.005	15 min Winter	10	S42	S43	0.300	3.200	222.444	0.929	Surcharged
1.006	15 min Summer	11	S43	S44	0.300	3.555	251.131	1.324	Surcharged
1.007	15 min Summer	11	S44	S45	0.276	4.131	247.069	1.097	OK
3.000	15 min Summer	9	S22	S23	0.120	2.435	33.684	0.980	OK
3.001	15 min Summer	8	S23	S21	0.090	3.069	34.148	0.682	OK
3.002	15 min Summer	8	S21	S19	0.109	3.604	68.602	0.477	OK
4.000	15 min Summer	9	S14	S15	0.147	2.576	43.765	1.007	OK
4.001	15 min Winter	8	S15	S16	0.150	2.753	45.481	1.044	Surcharged
4.002	15 min Summer	9	S16	S17	0.141	2.610	68.144	0.559	OK

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
4.003	15 min Summer	9	S17	S18	0.154	2.769	80.497	0.869	OK
4.004	15 min Summer	9	S18	S19	0.147	2.934	80.497	0.770	OK
3.003	15 min Summer	8	S19	S20	0.164	4.623	183.321	0.666	OK
3.004	15 min Summer	9	S20	S45	0.202	3.795	185.773	0.482	OK
1.008	15 min Summer	9	S45	S9	0.279	6.479	428.033	1.079	OK
5.000	15 min Summer	8	S10	S11	0.127	2.643	61.129	0.516	OK
5.001	15 min Summer	8	S11	S12	0.140	3.268	85.019	0.718	OK
5.002	15 min Summer	8	S12	S13	0.143	3.800	126.225	0.487	OK
5.003	15 min Summer	8	S13	S3	0.163	3.318	130.331	0.444	OK
6.000	15 min Summer	8	S1	S2	0.092	2.812	31.795	0.700	OK
6.001	15 min Summer	8	S2	S3	0.090	3.152	35.107	0.679	OK
5.004	15 min Summer	9	S3	S5	0.219	3.644	192.303	0.733	OK
5.005	15 min Summer	9	S5	S6	0.276	3.369	229.204	0.944	OK
5.006	15 min Summer	9	S6	S7	0.241	4.062	246.776	3.446	OK
5.007	15 min Summer	10	S7	S9	0.237	6.143	273.525	0.691	OK
1.009	30 min Summer	18	S9	S8	0.600	3.313	638.964	0.542	Surcharged
1.010	15 min Winter	10	S8	S38	0.600	2.302	634.225	0.884	Surcharged
7.000	15 min Summer	8	S33	S34	0.092	3.370	51.693	0.356	OK
7.001	30 min Summer	17	S34	S37	0.180	3.598	45.391	0.098	OK
7.002	15 min Winter	11	S37	S35	0.300	2.592	47.721	0.158	Surcharged
7.003	15 min Winter	8	S35	S38	0.450	0.757	45.845	0.154	OK
1.011	15 min Winter	9	S38	S39	0.600	2.476	699.990	0.515	Surcharged
1.012	960 min Winter	351	S39	S40	0.032	2.396	9.781	0.033	OK

Return Period Yrs: 100.0

Climate Change %: 40

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S24	15 min Summer	9	199.217	0.105	42.924		OK
S25	15 min Summer	10	198.551	1.371	144.244		Surcharged
S26	15 min Summer	11	195.619	1.124	129.445		Surcharged
S30	15 min Summer	10	196.343	1.190	59.324		Flood Risk
S31	15 min Summer	11	196.056	1.362	67.568		Flood Risk
S32	15 min Summer	11	195.437	1.632	199.942		Flood Risk
S41	15 min Summer	11	194.751	1.484	223.404		Flood Risk
S42	15 min Summer	11	194.365	1.545	227.294		Flood Risk
S43	15 min Summer	11	193.631	1.671	242.981		Flood Risk
S44	15 min Summer	11	192.352	1.212	242.049		Surcharged
S22	15 min Summer	10	202.153	0.952	40.809		Surcharged
S23	15 min Summer	10	200.118	0.107	43.235		OK
S21	15 min Summer	9	198.736	0.126	87.753		OK
S14	15 min Summer	10	200.654	1.354	49.744		Flood Risk
S15	15 min Summer	10	198.996	0.948	60.666		Surcharged
S16	15 min Summer	9	196.941	0.135	82.861		OK
S17	15 min Summer	9	196.277	0.203	100.053		OK
S18	15 min Summer	9	195.690	0.173	99.785		OK
S19	15 min Summer	9	195.455	0.220	235.954		OK
S20	15 min Summer	10	192.988	0.178	225.560		OK
S45	15 min Summer	11	191.919	1.159	429.318		Flood Risk
S10	15 min Summer	8	202.699	0.141	85.928		OK
S11	15 min Summer	8	200.914	0.183	119.859		OK
S12	15 min Summer	8	200.055	0.181	176.938		OK
S13	15 min Summer	10	198.826	0.262	152.901		OK
S1	15 min Summer	8	199.953	0.120	44.639		OK
S2	15 min Summer	10	199.361	0.351	40.128		Surcharged
S3	15 min Summer	10	198.611	0.981	228.330		Surcharged
S5	15 min Summer	10	197.316	1.455	273.826		Surcharged
S6	15 min Summer	10	194.579	1.047	289.273		Surcharged
S7	15 min Summer	10	193.680	0.201	319.603		OK
S9	30 min Summer	19	189.996	1.266	697.633		Flood Risk
S8	30 min Summer	19	189.932	1.407	695.048		Flood Risk
S33	15 min Summer	8	192.607	0.112	72.711		OK
S34	15 min Summer	8	190.564	0.079	72.392		OK
S37	600 min Winter	579	189.733	1.488	0.558		Surcharged
S35	600 min Winter	579	189.733	2.203	0.558		Surcharged
S38	600 min Winter	579	189.733	2.383	10.274		Surcharged
S39	600 min Winter	579	189.733	2.233	10.276		Surcharged
S40	600 min Winter	579	186.353	0.033	10.438		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	9	S24	S25	0.165	1.436	44.540	0.434	OK
1.001	30 min Summer	15	S25	S26	0.225	3.325	128.195	1.094	OK
1.002	30 min Summer	16	S26	S32	0.300	2.259	133.611	0.564	Surcharged
2.000	15 min Winter	8	S30	S31	0.225	1.719	59.061	0.860	OK
2.001	30 min Summer	15	S31	S32	0.225	2.289	84.028	0.988	OK
1.003	15 min Winter	13	S32	S41	0.300	2.776	193.750	1.150	Surcharged
1.004	15 min Winter	7	S41	S42	0.300	3.624	228.231	0.977	Surcharged
1.005	15 min Winter	14	S42	S43	0.300	3.235	228.663	0.955	Surcharged
1.006	15 min Winter	14	S43	S44	0.300	3.617	255.677	1.348	Surcharged
1.007	15 min Winter	14	S44	S45	0.300	4.057	278.533	1.237	Surcharged
3.000	15 min Summer	10	S22	S23	0.129	2.680	43.235	1.257	OK
3.001	15 min Summer	10	S23	S21	0.107	3.199	43.283	0.864	OK
3.002	15 min Summer	9	S21	S19	0.135	3.605	87.727	0.610	OK
4.000	15 min Winter	9	S14	S15	0.150	2.760	48.770	1.122	Surcharged
4.001	15 min Winter	11	S15	S16	0.150	3.086	54.537	1.251	Surcharged
4.002	15 min Summer	9	S16	S17	0.169	2.688	82.787	0.679	OK

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
4.003	15 min Summer	9	S17	S18	0.188	2.831	99.785	1.078	OK
4.004	15 min Summer	9	S18	S19	0.173	3.032	99.690	0.953	OK
3.003	15 min Summer	9	S19	S20	0.196	4.842	236.627	0.859	OK
3.004	15 min Summer	10	S20	S45	0.239	3.993	238.322	0.618	OK
1.008	15 min Winter	9	S45	S9	0.300	6.470	435.648	1.098	Surcharged
5.000	15 min Summer	8	S10	S11	0.162	2.797	85.599	0.723	OK
5.001	15 min Summer	8	S11	S12	0.183	3.443	118.835	1.004	OK
5.002	15 min Summer	10	S12	S13	0.211	4.062	176.996	0.683	OK
5.003	15 min Summer	10	S13	S3	0.281	3.429	176.595	0.601	OK
6.000	15 min Summer	9	S1	S2	0.134	2.957	44.645	0.982	OK
6.001	15 min Summer	9	S2	S3	0.150	3.304	47.598	0.920	Surcharged
5.004	15 min Winter	9	S3	S5	0.300	3.672	238.912	0.910	Surcharged
5.005	15 min Winter	10	S5	S6	0.300	3.663	258.946	1.067	Surcharged
5.006	15 min Summer	10	S6	S7	0.250	4.575	288.388	4.027	OK
5.007	15 min Summer	10	S7	S9	0.250	6.219	319.820	0.808	OK
1.009	15 min Winter	10	S9	S8	0.600	3.357	722.620	0.613	Surcharged
1.010	15 min Winter	11	S8	S38	0.600	2.446	691.637	0.964	Surcharged
7.000	15 min Summer	8	S33	S34	0.112	3.680	72.392	0.499	OK
7.001	15 min Summer	9	S34	S37	0.189	3.846	72.311	0.157	OK
7.002	15 min Winter	9	S37	S35	0.300	2.275	63.266	0.209	Surcharged
7.003	15 min Winter	8	S35	S38	0.450	0.843	61.303	0.206	OK
1.011	30 min Summer	17	S38	S39	0.600	2.746	776.410	0.572	Surcharged
1.012	600 min Winter	579	S39	S40	0.033	2.439	10.438	0.036	OK