Project:	**Hanging Heaton, Batley**	Doc No:	**24004-LE-ZZ-05-RP-D-0001**
Subject:	**Drainage Strategy**	Rev:	**P01-S2**
Prepared by:	**M Fenton**	Date:	**26/06/2024**
Approved by:	**W Farrell**	Date:	**26/06/2024**

Introduction

Lynas Engineers have been appointed by Mandale Homes to undertake a drainage design to support a planning application (ref 2023/93597) for the 'Hanging Heaton' residential development in Batley.

Current proposals are for 19No. residential plots with associated gardens, driveways, access roads and POS areas. The site can be accessed from Heaton Grange road and the nearest post code is WF17-6EN. A 'Site Location & Existing Ground Levels' plan is provided in Appendix A.

Several appendices have been included as part of this technical note, namely:

- Appendix A – Existing Site Information
- Appendix B – Correspondence
- Appendix C – Design Drawings
- Appendix D – Hydraulic Calculations
- Appendix E – Construction Surface Water Management Plan (CSWMP)
- Appendix F – Overland Flow Analysis
- Appendix G – Access & Maintenance

Correspondence

Lead Local Flood Authority (LLFA)

The full correspondence from the LLFA is available in Appendix B and has been summarised below, with comments provided:

- The off-site surface water discharge should be subject to a minimum flow control device outlet diameter of 75mm. Hydrobrake Ref SHE-**0075**-2500-1000-2500.
- The attenuation tank should be provided with an upstream silt trap type MH to minimise siltation within the tank and a low flow channel provide through the base of the tank. Access for inspection and maintenance of the tank should also be provided. Refer to 'Proposed Drainage GA' and Polystorm Inspect data sheet in Appendix C. Silt trap manhole (ref S14) is provided upstream of the tank and Polystorm Inspect cells used. The cell creates a horizontal tunnel running through the middle of the tank to provide access for inspection and maintenance. Additionally, the tunnel restricts the dissipation of silt.
- Detailed design scheme including attenuation construction details/design, plans and longitudinal sections. Refer to design drawings in Appendix C.
- Hydraulic calculations must be supplied to demonstrate that the attenuation storage is sufficient to accommodate a 1 in 100 year (plus climate change allowance) rainfall event without off-site flooding. Refer to Appendix D for hydraulic calculation results. There is no flooding during a 1:100 year +45% return period event, with a flow restriction of 2.5l/s achieved.
- Overland Flow Routing. An assessment of the effects of 1 in 100 year storm events, with an additional allowance for climate change, blockage scenarios and exceedance events. Exceedance flood routing should be indicated on a plan to show that there will be no flooding to proposed or existing properties. There is no flooding for the 1:100 year +45% return period event. Refer to the 'Overland Flood Routing' section below for blockage scenarios.
- Temporary surface water drainage for the construction phase required, including attenuation arrangements. Refer to Appendix E for CSWMP. Attenuation tank to be constructed as part of the first phase of development.
- The scheme shall include a maintenance and management plan for surface water infrastructure. Refer to Appendix G.

- A unilateral undertaking to set up a management company to carry out an approved maintenance and management scheme. A management company will be assigned once planning permission is achieved.
- The scheme shall include a risk assessment and method statement, in accordance with CDM Regulations 2015, for access to and into the attenuation structure. This is to be provided by the management company once assigned. It would be unsafe to provide a generic assessment and unreasonable to expect a management company to be instructed before the scheme has achieved planning permission. The scheme has been designed to simplify maintenance wherever possible.

Yorkshire Water (YW)

The full correspondence from YW is available in Appendix B and has been summarised below, with comments provided:

- There should be no new tree planting within 5 metres of public sewer assets. Additionally, it may not be acceptable to raise or lower ground levels over the sewer and we will not accept any inspection chambers on the sewer to be built over. No new planting will be proposed within 5m of the public sewer. Additionally, as shown on the 'Proposed Levels GA' drawing (Appendix C), the existing ground levels are to be retained in the north-east (POS) section of the site.
- Evidence should be submitted to show that other means of surface water disposal have been considered and why they have been discounted. A ground investigation was carried out by Solmek, an extract provided in Appendix B states *"the results returned an inferred infiltration rates 0.00 × 10^-6. Soakaways drainage may not be suitable for the proposed development."*
  The nearest watercourse is over 300m to the west of the site and would create significant 3rd party land issues, making the development unviable.
- The submitted drawing should show surface water storage and flow control rate. Refer to the 'Proposed Drainage GA' in Appendix C.

Overland Flood Routing

The 'Site Location & Existing Ground Levels' drawing (Appendix A) show the existing site levels falling from south north. The 'Proposed Levels GA' drawing (Appendix C) also shows the site levels falling from south to north. The proposed works will result in no significant changes to the exceedance flood routing through the site. Additionally, it can be seen on the 'Site Sections' drawing (Appendix C) that the proposed roads contain no sags and will not trap water, which is often a flood risk for low lying properties.

As shown in Appendix F, the 'Existing Surface Water Flood Risk' mapping, extracted from the government website, indicates the site is not at risk of surface water flooding. A build-up of water can be seen between the northern site boundary and an existing warehouse. This does not raise significant concerns as, in accordance with NPPF, a warehouse can be considered 'less vulnerable'.

Rain on Grid Simulation.

This section should be read in conjunction with the 'Proposed Ground M100 Rain on Grid' drawing (Appendix F).

- A proposed surface was created with the proposed plot levels set at the proposed FFL's. This surface was combined with topographic & Lidar data to create a proposed composite surface.
- A 1:100 year 60 minute rainfall event was applied to the surface, which assumes there is no underground drainage present (simulating a blockage scenario). The simulation was ran in 'Infoworks ICM' which has a Maxima function, displaying the highest water depth at each 1m² grid.
- The simulation results show no significant water building up within the site. The plot levels allow the flow of water from south to north without causing a flood risk by 'trapping' the water.
- Exceedance flows will collect between the northern site boundary and the existing warehouse, before being conveyed east and then north, replicating the existing exceedance scenario.

Conclusion

The drainage design seeks to address the requirements of both the LLFA and YW. The design:

- Discharges surface water flows into the public sewer as other methods have been discounted.
- Restricts flows to 2.5l/s using a hydrobrake and an attenuation tank, with no flooding for the 1:100 year +45% return period.
- Considers the maintainability of the drainage features, specifically the access and maintenance tasks and frequency.
- Considers the existing and proposed overland flood routing, ensuring the downstream land will not be impacted by the proposed development in a blockage/exceedance scenario.
- Considers the surface water drainage arrangements during the construction phase.

Based on the above, the LLFA should support the planning application (ref 2023/93597) as the comments and recommendations have been actioned.

Appendix A – Existing Site Information

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS, SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.

GENERAL KEY:

- LAND OWNERSHIP BOUNDARY
- MAJOR CONTOUR (1.0m)
- MINOR CONTOUR (0.25m)

SITE LOCATION:
HEATON GRANGE, BATLEY, WF17 6EN
EASTINGS:425044, NORTHINGS:423461

Stat	Purpose of Issue	Date	Auth
S2	FOR INFORMATION	26.06.24	WF

Rev	Description	By	Date	Chk'd	Auth
P01	FIRST ISSUE	MF	26.06.24	WF	WF

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Client: Mandale Homes

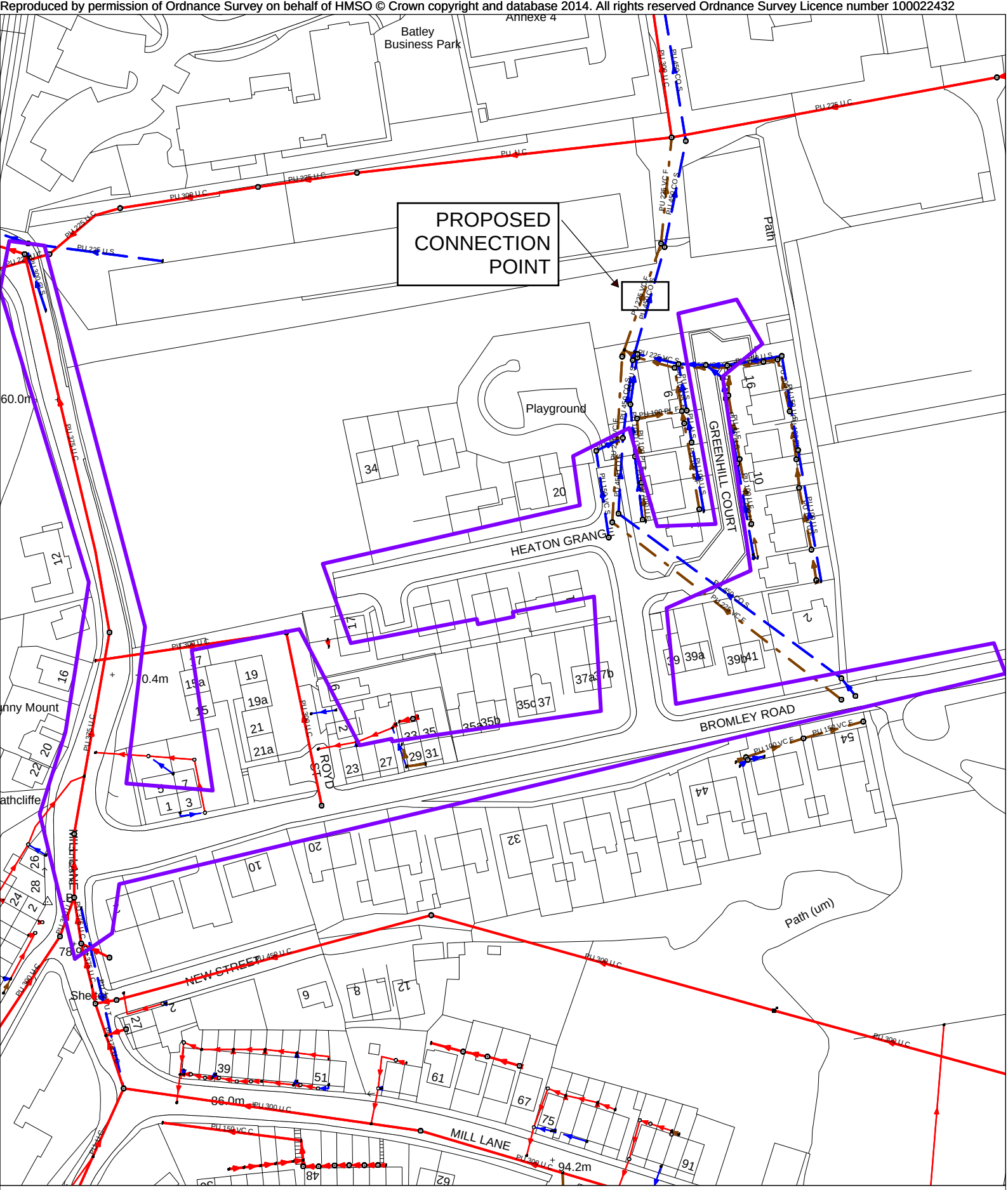
Project: HANGING HEATON
BATLEY

Title: SITE LOCATION & EXISTING GROUND LEVELS

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:500	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0004	P01

L:\12-24-Projects\24004-Mandale-Hanging Heaton, Batley\04_Project Delivery\02_Drawings\DR_2D Drawing\24004-LE-00-ZZ-DR-D-0004 - Site Location & Existing Levels .dwg



Public Waste Water Network 19/01/2024 13:10:19 OS Grid Coordinates: 424974 : 423260 Map Name : SE2423SE svcGISSafeMovePD

the corresponding plastic limits. The cohesive material can be assessed as having a **low** shrinkage potential in relation to NHBC Guidance Chapter 4.2.

9.4 Dry Density / Moisture Content Relationship

One sample (TP02, 0.40m) was subject to optimum moisture content (OMC) / dry density relationship testing using the 2.5kg rammer method. The OMC of the sample was 16% with maximum dry density of 1.80Mg/m^3.

9.5 pH and Sulphate Results

Three samples of natural soil from the boreholes were tested for acidity and soluble sulphate content to assess whether the material may be potentially aggressive to building fabric. The results of the testing for pH ranged from 5.5 to 7.7 indicating acidic to slightly alkaline conditions. Soluble sulphates were recorded at levels ranging from <10mg/l to 89mg/l.

9.6 Percolation Tests

Three percolation tests were carried out within the bases of TP01, TP02 and TP04. The results returned an inferred infiltration rates of 0.00 x 10^{-6} m/sec for each tests.

Given the results encountered and the significant thickness of low permeability cohesive deposits, soakaway drainage may not be suitable for the proposed development. Soakaway drainage, if incorporated, should be designed in accordance with BRE *Special Digest 365 – Soakaway Design*. The results are presented in Appendix D.

9.7 CBR Tests

CBR testing was undertaken within the trial pits at depths of 0.30mbgl and 0.60mbgl. The in-situ CBR results are detailed below in Table 4.

TABLE 4: SUMMARY OF CBR TESTING RESULTS

Trial Pit	0.30mbgl result (%)	0.60mbgl result (%)
TP01	3.8	+12
TP02	5.3	5.5
TP03	3.4 (M/G)	3.7 (M/G)
TP04	2.5 (M/G)	2.2 (M/G)
TP05	-	-
TP06	1.5 (M/G)	0.8 (M/G)
TP07	1.3 (M/G)	1.8 (M/G)
M/G notes tests was undertaken in made ground.		

Where made ground was present, a conservative equilibrium CBR of 2% should be adopted for design purposes unless recorded lower.

9.8 Mining Assessment

The ten times seam thickness rule states that where competent rock exceeds ten times the extracted seam thickness then no major crown holing should occur at the surface (Structural Foundations Manual; M. F. Atkinson, *Spon Press* 2003). If the competent rock cover is less than ten times the extracted seam thickness, then recommendations suggest the workings must be grouted using a mixture of pulverised fuel ash (PFA) and cement placed into the area under pressure. Should the overlying rock be weak and/or faulting, a ratio in excess of 10x may be required, whilst weak basement rock underlying the works could cause a separate collapse mechanism via pillars sinking. For certain developments, a ratio of less than 10x may be addressed via using rafts, however this would be dependent on approval from the regulatory authorities. This may not

Appendix B – Correspondence

Consultation Response from KC,
Lead Local Flood Authority

2023/93597 east of, Mill Lane, and Heaton Grange, Hanging Heaton, Batley, WF17 6EN

Reserved matters application pursuant to outline permission 2020/93777 for erection of residential development (19 dwellings)

Date Responded: 21/02/2024.
Responding Officer: Martin Stephenson
Responding Ref: 1

Documents reviewed by the LLFA:

Wardman Brown:

- Drawing Ref: L023113-102, Proposed Site Layout, Rev E dated 11/01/2024.

Lynas Engineers

- Drawing Ref: 24004-LE-00-ZZ-DR-D-0002, Proposed Drainage GA, Rev P01 dated 26/01/24.

Drainage Summary:

The surface water drainage from Plots 2, 3 & 4 should not connect directly into the MH in the road as the angle of deviation of the flow would be greater than 90 degrees. The drain should instead connect to the drain running parallel to Plot 4.

The off-site surface water discharge should be attenuated to the equivalent Greenfield Run-off Rate (5.0 l/s per ha) but subject to a minimum flow control device outlet diameter of 75mm.

The attenuation tank should be provided with an upstream silt trap type MH to minimise siltation within the tank and a low flow channel provide through the base of the tank. Access for inspection and maintenance of the tank should also be provided.

Hydraulic calculations must be supplied to demonstrate that the attenuation storage is sufficient to accommodate a 1 in 100 year (plus climate change allowance) rainfall event without off-site flooding.

Exceedance flood routing should be indicated on a plan to show that there will be no flooding to proposed or existing properties.

Kirklees Flood Management & Drainage as Lead Local Flood Authority SUPPORTS this application SUBJECT to the comments above and the recommended conditions set out below.

DR01 Drainage Details
Development shall not commence until a detailed design scheme detailing foul, surface water and land drainage, including agreed discharge rate with the LLFA indirectly or directly to watercourse, attenuation for the critical 1 in 100 + climate change rainfall event, attenuation construction details /design, plans and longitudinal sections, hydraulic calculations and phasing of drainage provision has been submitted to and approved in writing by the Local Planning Authority. The scheme shall include a risk assessment and method statement, in accordance with CDM Regulations 2015, for access to and into the attenuation structure, and the scheme shall include a maintenance and management plan for surface water infrastructure. No part of the development shall be occupied until such approved drainage scheme has been provided on the site to serve the development or each agreed phasing of the development and retained thereafter.

DR07 Overland Flow Routing
The development shall not commence until an assessment of the effects of 1 in 100 year storm events, with an additional allowance for climate change, blockage scenarios and exceedance events

on drainage infrastructure and surface water run-off pre and post development between the development and the surrounding area (both upstream and downstream of the development), has been submitted to and approved in writing by the Local Planning Authority. No part of the development shall be brought into use (dwellings shall not be occupied) until the works comprising the approved scheme have been completed and such approved scheme shall be retained thereafter.

DR10 Construction Phase Surface Water Flood Risk and Pollution prevention plan.
Development shall not commence until a scheme, detailing temporary surface water drainage for the construction phase (after soil and vegetation/site strip) has been submitted to and approved in writing by the Local Planning Authority. The scheme shall detail:

- phasing of the development and phasing of temporary drainage provision.
- include methods of preventing silt, debris and contaminants entering existing drainage systems and watercourses and how flooding of adjacent land is prevented.
- the strategy shall include a plan showing the location of the attenuation storage and supporting calculations, which shall be based on the critical 1 in 2-year storm. It should be assumed that once the site has been stripped that the percentage run-off will be 100 %. The maximum allowable off-site discharge rate shall not exceed 2.5 litres per second per ha, unless otherwise agreed with the LLFA.

The temporary works shall be implemented in accordance with the approved scheme and phasing. No phase of the development shall be commenced until the temporary works approved for that phase have been completed. The approved temporary drainage scheme shall be retained until the approved permanent surface water drainage system is in place and functioning in accordance with written notification to the Local Planning Authority.

Section 106 Unilateral Undertaking
In order for the LPA to fulfil their obligation to ensure the maintenance and management of surface water drainage systems for the lifetime of the site, a unilateral undertaking to set up a management company to carry out an approved maintenance and management scheme; including access to and into any structure in accordance with CDM regulations 2015; and an itinerary and schedule of maintenance and management tasks. Such an undertaking can cease if and when the infrastructure is formally adopted by the Statutory Undertaker and/or Highways Authority

Yorkshire Water Services
Developer Services
Pre-Development Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax:

Email:
planningconsultation@yorkshirewater.co. uk

Mathias Franklin
Head of Planning Services
Kirklees Metropolitan District Council
P.O. Box B93
Civic Centre
Huddersfield
HD1 2JR

Your Ref: 2023/93597
Our Ref: A000519

For telephone enquiries ring:
George Mullaney on 0345 120 8482

22nd February 2024

Dear Sir/Madam,

east of, Mill Lane, and Heaton Grange, Hanging Heaton, Batley, WF17 6EN - Reserved matters application pursuant to outline permission 2020/93777 for erection of residential development (19 dwellings)

Thank you for consulting Yorkshire Water regarding the above proposed development. We have the following comments:

Waste Water

Yorkshire Water object to the site landscaping as shown on the submitted drawing L023113-102 (revision E) dated 11/01/2024 that has been prepared by Wardman Brown because it appears to show new tree planting within 5 metres of the public sewer.

1) The layout details submitted on drawing L023113-102 (revision E) dated 11/01/2024 that has been prepared by Wardman Brown may require amendments. The following point should be addressed:

a) the submitted drawing appears to show new tree planting in close vicinity to the public 150mm foul water and surface water sewers crossing the site - no distance has been

specified, however there should be no new tree planting within 5 metres of public sewer assets

2) The drainage details submitted on drawing 24004 (revision P01) dated 26/01/2024 that has been prepared by Lynas Engineers require amendments. The following points should be addressed:

a) evidence should be submitted to show that other (than discharge to public sewer) means of surface water disposal have been considered and why they have been discounted
b) the submitted drawing should show surface water storage and flow control rate

3) On the Statutory Sewer Map, there is a 150 mm diameter public foul water and surface water sewer recorded to cross the site. It is essential that the presence of this infrastructure is taken into account in the design of the scheme.

a) It may not be acceptable to raise or lower ground levels over the sewer and we will not accept any inspection chambers on the sewer to be built over.
b) In this instance, Yorkshire Water would look for this matter to be controlled (by Requirement H4 of the Building Regulations 2010).
c) There should be no new tree/ shrub planting within 5 metres of these public assets.
d) A proposal by the developer to alter/divert a public sewer will be subject to Yorkshire Water's requirements and formal procedure in accordance with Section 185 Water Industry Act 1991.

Yours faithfully

George Mullaney
Development Control Technician

Appendix C – Design Drawings

STEPS NOTES

1. STEPS TO BE UNIFORM WITH A RISE OF 75mm-150mm AND A MINIMUM GOING OF 280mm.
2. STEPS TO HAVE SUITABLE TREAD NOSINGS.
3. NO INDIVIDUAL FLIGHT HAS A RISE OF MORE THAN 1800mm BETWEEN LANDINGS.
4. EVERY FLIGHT HAS A MINIMUM CLEAR WIDTH OF 900mm.
5. TOP AND BOTTOM AND, WHERE NECESSARY, INTERMEDIATE LANDINGS, ARE PROVIDED AND EVERY LANDING HAS A MINIMUM LENGTH OF 900mm.
6. EVERY FLIGHT WITH THREE OR MORE RISERS HAS A SUITABLE HANDRAIL TO ONE SIDE. THIS GRIPPABLE HANDRAIL IS 850-1000MM ABOVE THE PITCH LINE OF THE FLIGHT AND EXTENDS A MINIMUM OF 300MM BEYOND THE TOP AND BOTTOM NOSINGS.

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
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STREET LIGHTING TO BE DESIGNED BY OTHERS

EXISTING LEVELS RETAINED

PROPOSED LEVELS

EXISTING LEVELS RETAINED

EXACT EXISTING PLAYGROUND TIE IN LOCATION TBC BY LANDSCAPE ARCHITECT

Playground

POS

HEATON GRANGE

6 STEPS REQ

3 STEPS REQ

4 STEPS REQ

REFER TO S278 DRAWING FOR TIE IN DETAILS. EXISTING FOOTWAY LEVELS RETAINED WHERE POSSIBLE.

SERVICE STRIP

EMBANKMENT

CROSSING POINT PROVIDED TO ALLOW FOR FOOTWAY TO SERVICE STRIP TRANSITION.

DRAWING NOTES:

1. ALL FFL'S TO BE 150mm HIGHER THAN THE SURROUNDING GROUND LEVEL. BUILDING LEVELS TO LOCALLY RAMP UP 150mm AT THRESHOLD.

GENERAL KEY:

- LAND OWNERSHIP BOUNDARY
- SOFTSCAPE

LEVELS KEY:

- PROPOSED MAJOR CONTOUR (0.5m)
- PROPOSED MINOR CONTOUR (0.1m)
- PROPOSED FINISHED FLOOR LEVEL
- GARAGE LEVEL
- PROPOSED CARRIAGEWAY LEVEL
- PROPOSED SURFACE GRADIENT
- EXISTING LEVEL
- PROPOSED SPOT LEVEL
- PROPOSED UNDERBUILD
- PROPOSED RETAINING WALL
- PROPOSED FLAG ON EDGE
- ROAD CENTRE LINE & CHAINAGE REF
- PROPOSED CHANNEL DRAIN
- GULLY
- YARD GULLY

Rev	Description	By	Date	Chk'd	Auth
S2	FOR INFORMATION		26.06.24		WF
Stat	Purpose of Issue		Date		Auth
P01	FIRST ISSUE	MF	26.06.24	WF	WF

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Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: PROPOSED LEVELS GA

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF	WF	WF
		Date 26.06.24	Date 26.06.24	Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0005	P01

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STEPS NOTES

1. STEPS TO BE UNIFORM WITH A RISE OF 75mm-150mm AND A MINIMUM GOING OF 280mm.
2. STEPS TO HAVE SUITABLE TREAD NOSINGS.
3. NO INDIVIDUAL FLIGHT HAS A RISE OF MORE THAN 1800mm BETWEEN LANDINGS.
4. EVERY FLIGHT HAS A MINIMUM CLEAR WIDTH OF 900mm.
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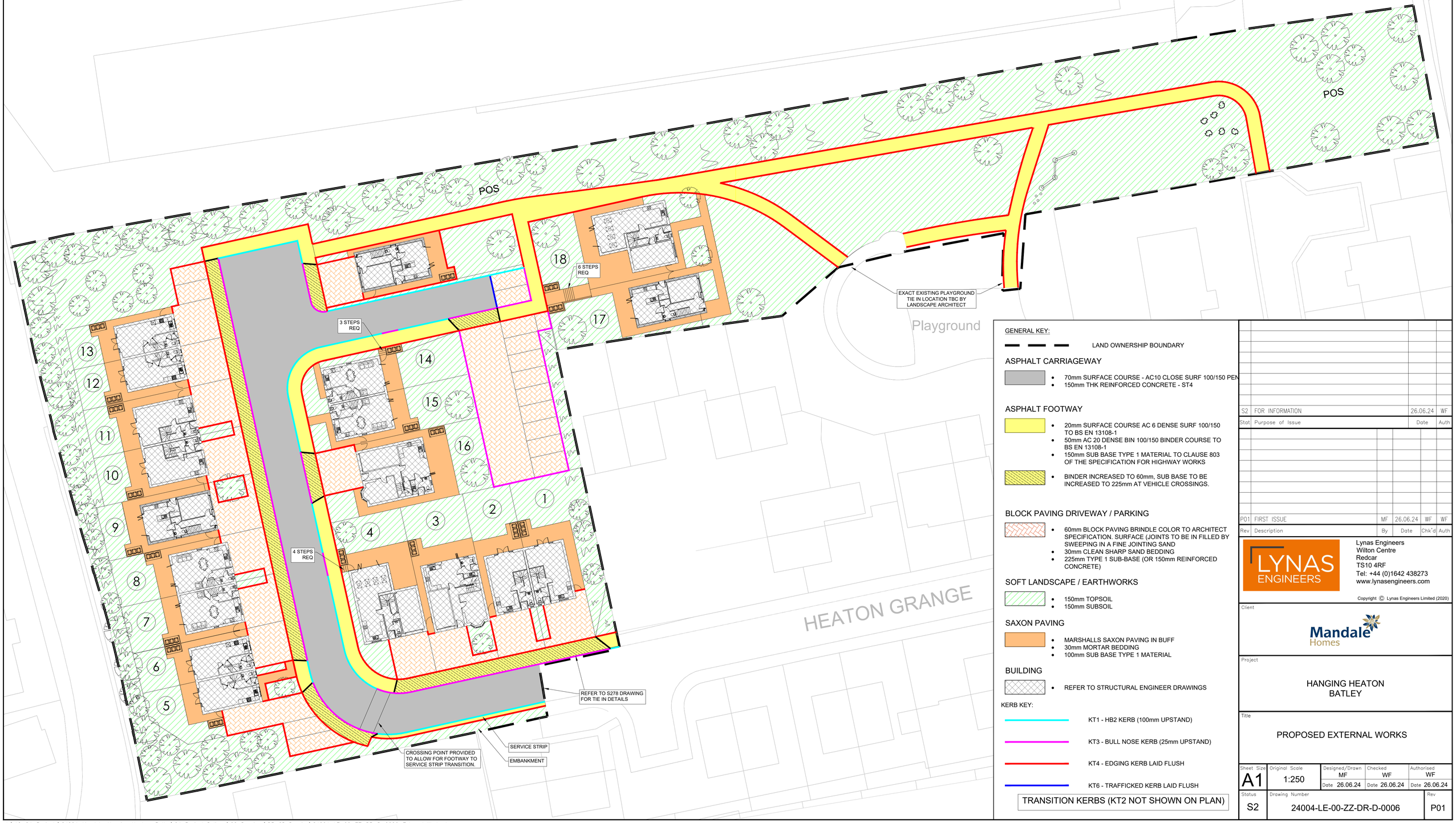

GENERAL KEY:

LAND OWNERSHIP BOUNDARY

ASPHALT CARRIAGEWAY

- 70mm SURFACE COURSE - AC10 CLOSE SURF 100/150 PEN
- 150mm THK REINFORCED CONCRETE - ST4

ASPHALT FOOTWAY

- 20mm SURFACE COURSE AC 6 DENSE SURF 100/150 TO BS EN 13108-1
- 50mm AC 20 DENSE BIN 100/150 BINDER COURSE TO BS EN 13108-1
- 150mm SUB BASE TYPE 1 MATERIAL TO CLAUSE 803 OF THE SPECIFICATION FOR HIGHWAY WORKS

- BINDER INCREASED TO 60mm, SUB BASE TO BE INCREASED TO 225mm AT VEHICLE CROSSINGS.

BLOCK PAVING DRIVEWAY / PARKING

- 60mm BLOCK PAVING BRINDLE COLOR TO ARCHITECT SPECIFICATION. SURFACE (JOINTS TO BE IN FILLED BY SWEEPING IN A FINE JOINTING SAND
- 30mm CLEAN SHARP SAND BEDDING
- 225mm TYPE 1 SUB-BASE (OR 150mm REINFORCED CONCRETE)

SOFT LANDSCAPE / EARTHWORKS

- 150mm TOPSOIL
- 150mm SUBSOIL

SAXON PAVING

- MARSHALLS SAXON PAVING IN BUFF
- 30mm MORTAR BEDDING
- 100mm SUB BASE TYPE 1 MATERIAL

BUILDING

- REFER TO STRUCTURAL ENGINEER DRAWINGS

KERB KEY:

KT1 - HB2 KERB (100mm UPSTAND)

KT3 - BULL NOSE KERB (25mm UPSTAND)

KT4 - EDGING KERB LAID FLUSH

KT6 - TRAFFICKED KERB LAID FLUSH

TRANSITION KERBS (KT2 NOT SHOWN ON PLAN)

Stat	Purpose of Issue	Date	Auth
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Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: PROPOSED EXTERNAL WORKS

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0006	P01

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GENERAL NOTES:

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GENERAL KEY:

LAND OWNERSHIP BOUNDARY

N

PROPOSED LEVELS

EXISTING LEVELS RETAINED

EXISTING LEVELS RETAINED

POS

POS

Playground

HEATON GRANGE

Section 1

Section 2

Section 3

Section 4

Road 01

Road 02

Road 02

Road 01

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Rev	Description	By	Date	Chk'd	Auth
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Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: SITE SECTIONS PLAN

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0017	P01

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SECTION 1
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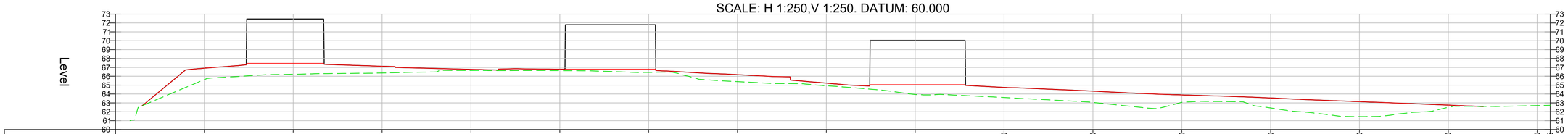


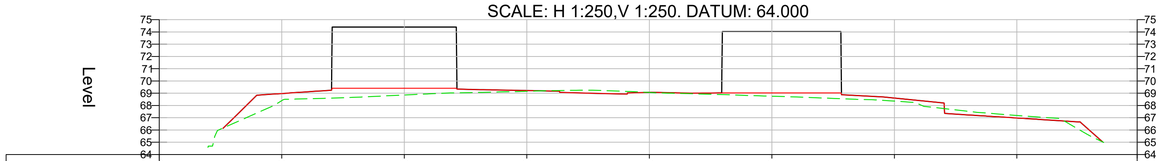
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	161.465
Existing Levels	65.629	66.224	66.371	66.652	66.636	66.440	65.400	64.932	63.949	63.603	63.055	63.064	62.430	61.449	62.500	62.697	62.726	
Proposed Levels	66.907	67.450	67.126	66.781	66.801	66.800	66.177	65.227	65.050	64.742	64.323	63.897	63.551	63.140	62.749			

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS, SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.

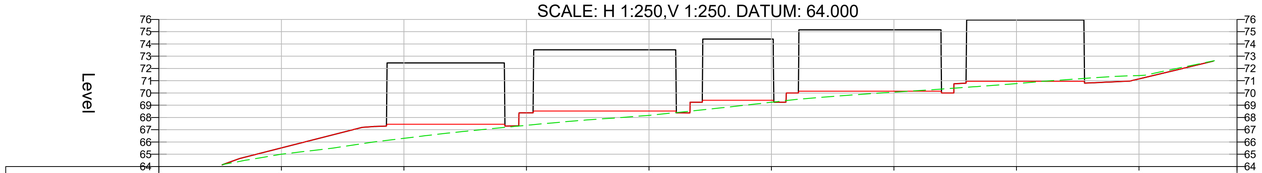
KEY:
- EXISTING GROUND
- PROPOSED GROUND
- BUILDING OUTLINE

SECTION 2
SCALE: H 1:250,V 1:250. DATUM: 64.000



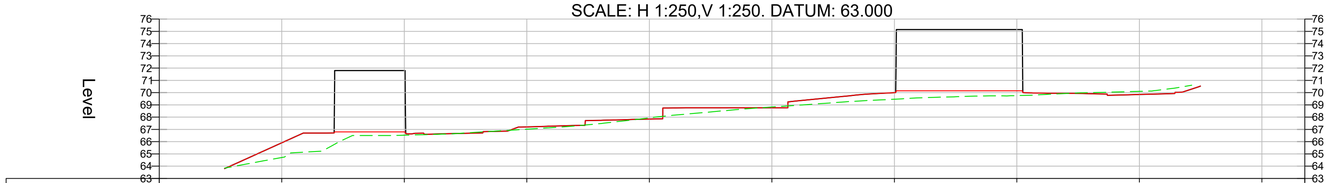
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	79.817
Existing Levels	68.397	68.856	69.159	69.058	68.752	68.355	67.180		
Proposed Levels	68.975	69.400	69.222	69.069	69.025	68.608	66.977		

SECTION 3
SCALE: H 1:250,V 1:250. DATUM: 64.000



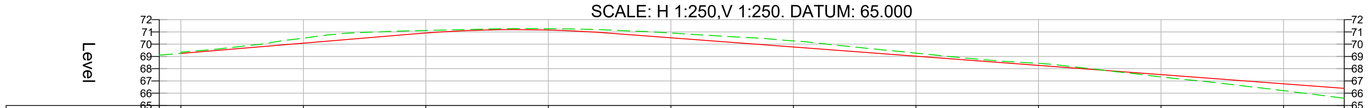
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	88.000
Existing Levels	65.001	66.299	67.359	68.171	69.242	70.070	70.764	71.424		
Proposed Levels	65.629	66.224	66.371	66.652	66.636	66.440	65.400	64.932	64.206	

SECTION 4
SCALE: H 1:250,V 1:250. DATUM: 63.000



Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	93.505
Existing Levels	64.706	66.526	67.013	67.942	68.826	69.464	69.757	70.107			
Proposed Levels	65.629	66.224	66.371	66.652	66.636	66.440	65.400	64.932	63.949	63.924	

ROAD 01
SCALE: H 1:250,V 1:250. DATUM: 65.000



Chainage	-01.761	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	94.954
Existing Levels	69.417	69.250	70.485	71.119	71.265	70.908	70.270	69.271	68.435	67.336	66.209	65.599
Proposed Levels		69.249	70.083	70.912	71.151	70.520	69.768	69.017	68.265	67.514	66.762	66.390
Level Difference		-0.001	-0.402	-0.207	-0.114	-0.388	-0.502	-0.254	-0.170	0.177	0.553	0.800
Horizontal Geometry		L =22.432		R: 8.750 L: 13.744		L =60.539						
Vertical Geometry		G =1:12 L =19.084		R =100.000 K =1.000 L =15.855		G =-1:13 L =60.052						

ROAD 02
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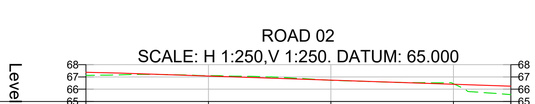

Chainage	00.000	10.000	20.000	30.000	34.685
Existing Levels	67.197	67.108	66.723	66.450	66.554
Proposed Levels	67.379	67.069	66.736	66.403	66.248
Level Difference	0.248	-0.038	0.007	-0.047	-0.683
Horizontal Geometry		L =34.685			
Vertical Geometry		G =-1:30 L =31.935			

Rev	Description	By	Date	Chk'd	Auth
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Stat	Purpose of Issue		Date		Auth
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Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: SITE SECTIONS

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	AS SHOWN	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0018	P01

DRAINAGE NOTES

1. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES.

2. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.

3. ALL PLOT DRAINAGE WITHIN THE SITE IS TO COMPLY WITH THE REQUIREMENTS OF BSEN752 AND BUILDING REGULATIONS PART H.

4. ALL PLOT DRAINAGE PIPES TO BE LAID IN TRENCHES BEDDED CLASS 'S' ON SINGLE SIZED AGGREGATE AND BACKFILLED WITH APPROVED SELECTED FILL (40mm DOWN) REUSED FROM EXCAVATED MATERIAL. UNDER BUILDINGS AND WHERE COVER TO INVERT IS LESS THAN 600mm UNDER TRAFFICKED AREAS, PIPES TO BE CAST IN CONCRETE (CLASS Z BEDDING).

5. SELECTED BACKFILL MATERIAL SHALL CONSIST OF UNIFORM EXCAVATED MATERIAL, FREE FROM STONES LARGER THAN 40mm, CLAY LUMPS LARGER THAN 75mm, TREE ROOTS, CONTAMINATED MATERIAL. SELECTED BACKFILL MATERIAL IS TO BE PLACED IN LAYERS NOT EXCEEDING 150mm THICKNESS. THE MATERIAL SHALL BE COMPACTED TO ACHIEVE NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN LABORATORY COMPACTION TESTS. SUFFICIENT TESTING SHALL BE CARRIED OUT, BY THE CONTRACTOR, TO DEMONSTRATE THIS IS ACHIEVED (NUMBER AND FREQUENCY OF TESTING TO BE AGREED). WHERE THE MOISTURE CONTENT OF THE MATERIAL PROHIBITS COMPLIANCE WITH THE ABOVE 6F1 OR SIMILAR IMPORTED MATERIAL SHALL BE USED.

6. CLASS Z CONCRETE ENCASEMENT REQUIRED WHERE VERTICAL CLEARANCE BETWEEN THE TWO PIPES IS LESS THAN 300mm.

7. ALL PIPEWORK WITHIN MANHOLES ARE TO BE LAID SOFFIT TO SOFFIT (UNO). ALL CHAMBER INVERT LEVELS ARE FOR THE OUTGOING PIPE LEVELS. BACKDROP PIPEWORK SHALL BE CONNECTED AT SOFFIT TO SOFFIT WITH THE RODDING ACCESS LEVEL SPECIFIED.

8. ALL DRAINS TO BE LAID IN ACCORDANCE WITH THE MANUFACTURERS GUIDANCE.

9. ALL DRAINAGE INSITU CONCRETE SHALL BE GEN3 (U.N.O).

10. ANY GRADIENTS OF DRAINS INDICATED ARE INDICATIVE ONLY AND THE CONTRACTOR SHALL INSTALL THE DRAINS TO THE SPECIFIED LEVELS SHOWN FOR EACH MANHOLE. CATCHPIT INVERT LEVELS ARE FOR THE OUTGOING PIPE WITH THE SUMP LEVEL SPECIFIED SEPARATELY.

11. CO-ORDINATE SETTING OUT INFORMATION FOR MANHOLES IS TO THE INTERSECTION THE DRAINS AND NOT THE CENTRE OF THE MANHOLE.

12. COVER LEVELS OF THE MANHOLES ARE PROVISIONAL AND SUBJECT TO ADJUSTMENT ON SITE TO SUIT THE FINISHED GROUND LEVELS. ALL EXTERNAL WORKS CONSTRUCTION AREAS TO BE AS LOCATED BY THE ARCHITECT.

13. GULLY GRATINGS AND STEEL CHANNEL COVERS ARE TO BE IN ACCORDANCE WITH BSEN124 AS FOLLOWS:
a) AREAS SUBJECT TO VEHICULAR OVERRUN: CLASS D400 MINIMUM.
b) AREAS NOT SUBJECT TO REGULAR VEHICLE OVERRUN (ADJACENT TO KERBS ETC): CLASS C250.
c) GULLY GRATES ADJACENT TO KERBS SHALL BE HINGED ON THE SIDE OF THE TRAFFIC DIRECTION (LEFT HAND SIDE).

14. ALL BRICKWORK IN CONNECTION WITH DRAINAGE IS TO BE SOLID CLASS B ENGINEERING BRICK TO BS3921.

15. ALL PRECAST CONCRETE PIPES, CHAMBER PRODUCTS AND ROAD GULLIES SHALL BE TO BS5911 AND BE KITEMARKED.

16. ALL DRAINAGE INSITU CONCRETE SHALL BE GEN3.

17. ALL INSITU AND CONCRETE PRODUCTS SHALL COMPLY WITH THE REQUIREMENTS FOR SULPHATE EXPOSURE IN ACCORDANCE WITH BRE SPECIAL DIGEST 1, CONCRETE IN AGGRESSIVE GROUND (2001) PART 1: TABLE 2.

18. UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE. NO DEBRIS SHALL BE PERMITTED TO ENTER THE EXISTING DRAINAGE SYSTEM.

19. CONSTRUCTION JOINTS IN CONCRETE SURROUND MUST NOT BE WITHIN 150MM OF CHAMBER/SHAFT RING JOINTS. ROCKER PIPES TO BE SURROUNDED WITH CONCRETE LOCATED 150mm MINIMUM 200mm MAXIMUM FROM THE FIRST FLEXIBLE JOINT TO THE MANHOLE WALL.

20. SOFT SPOTS IN THE TRENCH FORMATION SHALL BE REMOVED AND REPLACED WITH GRANULAR BEDDING UNLESS INSTRUCTED OTHERWISE.

21. LATERAL CONNECTIONS IN BETWEEN MANHOLE RUNS SHALL BE FORMED BY USING PURPOSE MADE JUNCTION FITTINGS. BEND FITTINGS SHALL BE PROVIDED WHERE APPROPRIATE TO DIRECT THE FLOW INTO MAIN RUNS.

22. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LIAISE WITH BUILDING CONTROL FOR APPROVALS, INTERIM INSPECTION, SNAGGING AND FINAL INSPECTIONS OF THEIR WORK.

23. AT THE CONCLUSION OF THE WORKS THE CONTRACTOR SHALL PROVIDE A MARKED UP DRAWING TO RECORD ANY AS BUILT VARIATIONS.

24. ALL ROOF RWDP TO BE 100Ø, ALL OTHER PLOT SURFACE WATER DRAINAGE TO BE 150Ø UNLESS STATED OTHERWISE. ALL PLOT FOUL WATER PIPES TO BE 100Ø UNLESS STATED OTHERWISE.

GENERAL NOTES:

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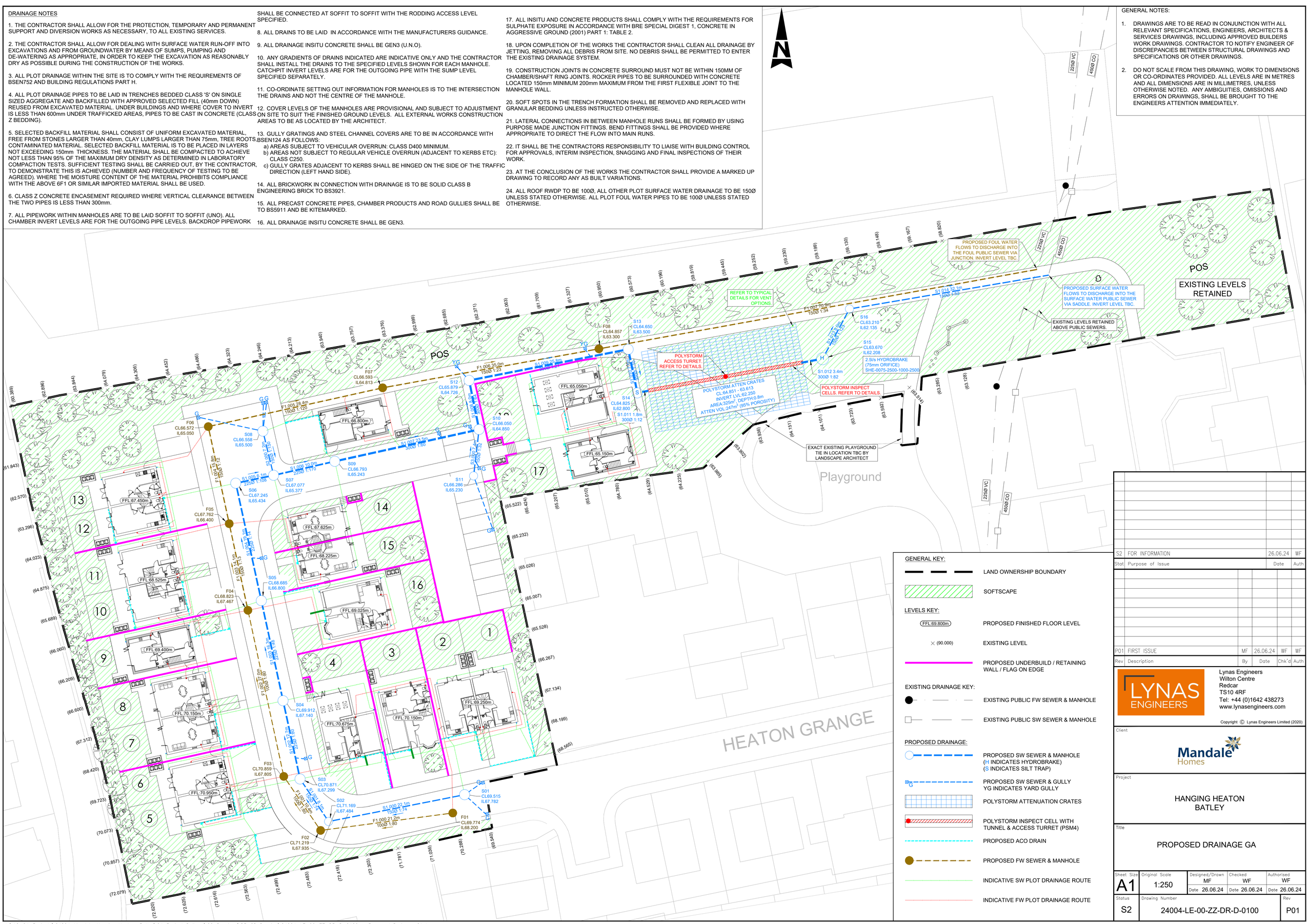

GENERAL KEY:

- LAND OWNERSHIP BOUNDARY
- SOFTSCAPE

LEVELS KEY:

- FFL.69.800m — PROPOSED FINISHED FLOOR LEVEL
- × (90.000) — EXISTING LEVEL
- PROPOSED UNDERBUILD / RETAINING WALL / FLAG ON EDGE

EXISTING DRAINAGE KEY:

- EXISTING PUBLIC FW SEWER & MANHOLE
- EXISTING PUBLIC SW SEWER & MANHOLE

PROPOSED DRAINAGE:

- PROPOSED SW SEWER & MANHOLE (H INDICATES HYDROBRAKE) (S INDICATES SILT TRAP)
- PROPOSED SW SEWER & GULLY YG INDICATES YARD GULLY
- POLYSTORM ATTENUATION CRATES
- POLYSTORM INSPECT CELL WITH TUNNEL & ACCESS TURRET (PSM4)
- PROPOSED ACO DRAIN
- PROPOSED FW SEWER & MANHOLE
- INDICATIVE SW PLOT DRAINAGE ROUTE
- INDICATIVE FW PLOT DRAINAGE ROUTE

Stat	Purpose of Issue	Date	Auth
S2	FOR INFORMATION	26.06.24	WF

Rev	Description	By	Date	Chk'd	Auth
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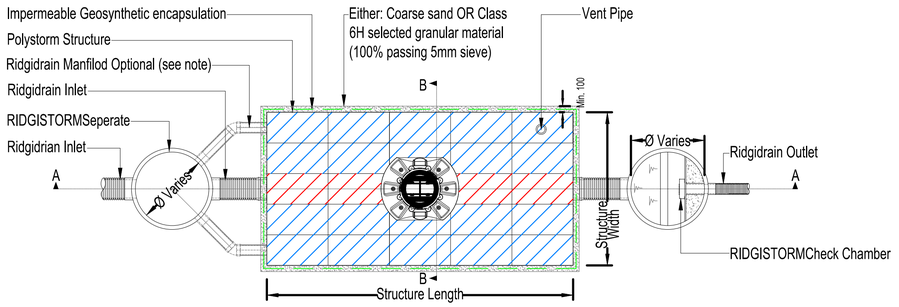
Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: PROPOSED DRAINAGE GA

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF	WF	WF
		Date 26.06.24	Date 26.06.24	Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0100	P01

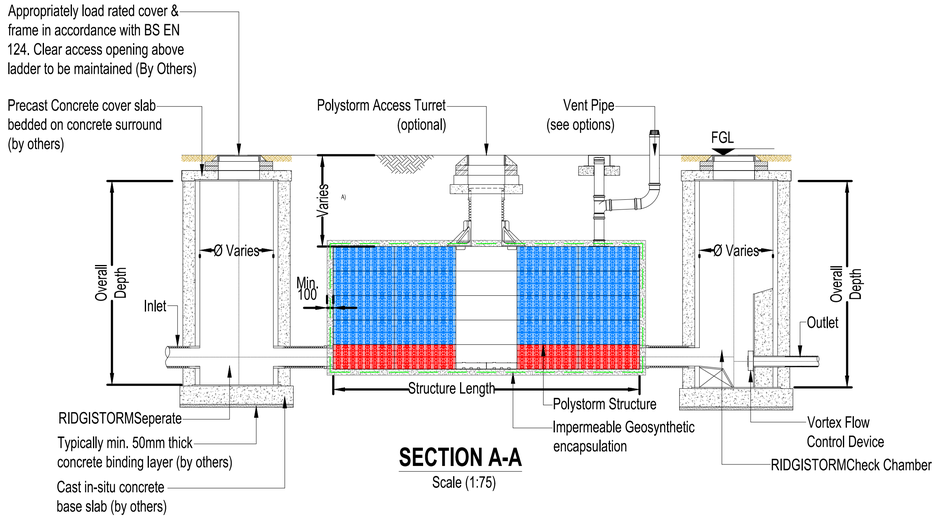


TYPICAL ATTENUATION TANK PLAN

(Scale 1:75)

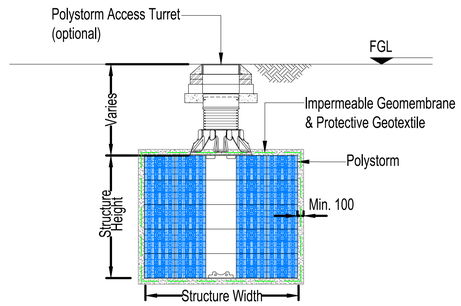
KEY:

- POLYSTORM (PSM1, 1A & 2 CELL)
- POLYSTORM (PSM4 CELL)



SECTION A-A

Scale (1:75)



SECTION B-B

Scale (1:75)

GENERAL NOTES:

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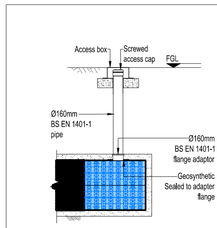
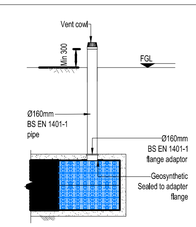
ATTENUATION NOTES:

1. DEPENDING ON CBR RATES, ATTENUATION TANK MAY REQUIRE 75mm CONCRETE BLINDING TO BASE.
2. ALL ACCESS COVERS AND SURROUNDS TO BE MINIMUM LOADING CLASS C250.
3. GROUND LEVEL ABOVE PROPOSED ATTENUATION TANK VARIES. FOR ADDITIONAL DETAILS OF GROUND LEVELS PLEASE REFER TO DRAWING 24004-LE-00-ZZ-DR-D-0005.



VENTILATION SYSTEM (OPTION 1)



VENTILATION SYSTEM (OPTION 2)

Stat	Purpose of Issue	Date	Auth
S2	FOR INFORMATION	26.06.24	WF

Rev	Description	By	Date	Chk'd	Auth
P01	FIRST ISSUE	MF	26.06.24	WF	WF

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Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: TYPICAL ATTENUATION TANK DETAILS

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	NTS	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0105	P01

Polystorm Inspect

Data Sheet

PRODUCT INFORMATION **P1** **ISSUE 2 - JAN 2016**

Product code: PSM4

The Polystorm Inspect cell is complementary to the Polystorm range of modular cell solutions. Its primary purpose is to provide a tunnel along the length of a fully installed Polystorm structure to enable access for inspection and maintenance. Polystorm Inspect is a high strength thermoplastic cell which evenly distributes its load through the Polystorm structure.
The tunnel end is left open by default but the unit can be closed off if required by clipping into place the moulded end plate. For purposes of identification the cell features a yellow centre section and end plate.

Key Benefits

- Creates a horizontal tunnel running through the middle of the tank to provide access for inspection and maintenance, i.e. jetting and rodding
- Can be used with Polystorm Lite, Polystorm-R and Polystorm (cannot be used in the same layer as Polystorm Xtra as the Polystorm Inspect cell is deeper)
- Tunnel can be used as a flow inlet track achieving greater stormwater flow distribution within the unit
- Large access tunnel (height 320mm and width 172mm nominal) – allows maximum field of vision while maintaining the system's structural performance
- High strength to weight ratio
- Light weight cell allows easier handling and reduced Health and Safety risk
- Utilises the same Shear Connectors and Clips as the Polystorm range
- The tunnel restricts the dissipation of silt in to the overall structure making inspection and maintenance easier
- Polystorm Inspect cells with 225mm (PSM4CRD225) or 300mm (PSM4CRD300) inlets are available

Applications

Polystorm Inspect is designed to work with the rest of the Polystorm range within a layered hybrid system enabling an intelligently engineered attenuation or infiltration structure to be created. It is intended to be used from the inlet point of the Polystorm structure. If used other than along an inlet tract, the Polystorm Inspect end plate should be used to cap off the tunnel entrance. The most cost effective way to create a tank is to use a combination of Polystorm Inspect cells and other Polystorm modular cells.

UNIT TYPE	VALUE
PHYSICAL PROPERTIES	
Length	1m
Width	0.5m
Depth	0.4m
Total volume	0.2m³
Unit weight	11.6kg*
Cube storage volume	0.188m³ (188 litres)
Volumetric void ratio	94%
SHORT TERM COMPRESSIVE STRENGTH	
Vertical	Minimum 440kN/m²
Lateral	Minimum 63kN/m²
SHORT TERM DEFLECTION	
Short-term vertical deflection	Minimum 70.1kN/m²
LONG TERM DEFLECTION	
Estimated long term vertical deflection (creep)	0.6113Ln (design life in hrs)

Note: The table above is applicable to PSM4 without the end plate.
*Approximate weight
End plates to be purchased separately as required.

Please note: The use of Polystorm Inspect does not negate the requirement for a Silt Trap to be installed prior to the Polystorm structure. The use of a Silt Trap or other silt prevention device would always be recommended.

Technical Support

Detailed guidance and assistance is available.
For further information, please contact our Technical Team on **+44 (0) 1509 615100** or email **civils@polypipe.com**

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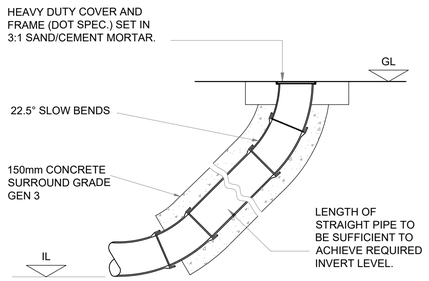
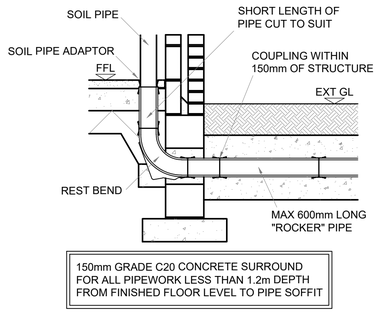
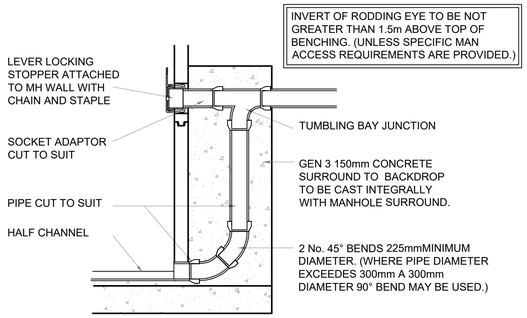
Polypipe



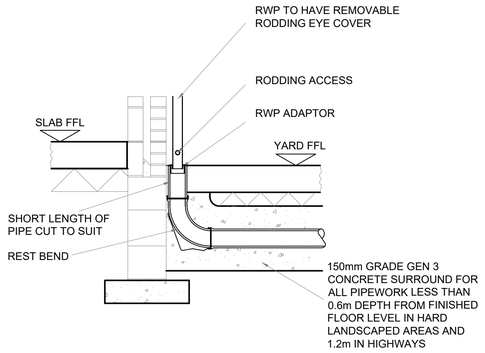
RODDING EYE DETAIL



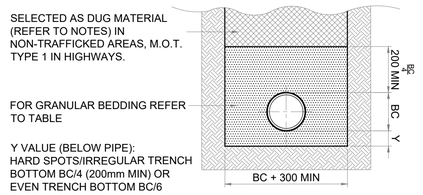
SOIL AND VENT PIPE CONNECTION



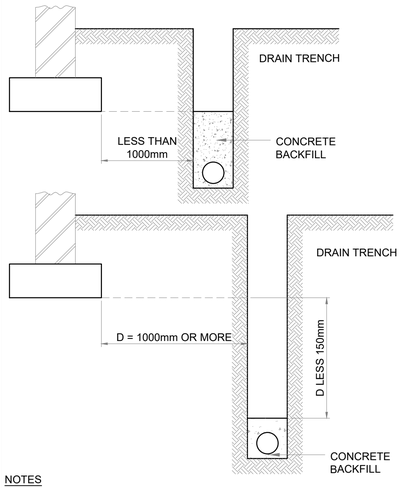
EXTERNAL VERTICAL BACKDROP



EXTERNAL RAINWATER PIPE CONNECTION



PIPE BEDDING CLASS S



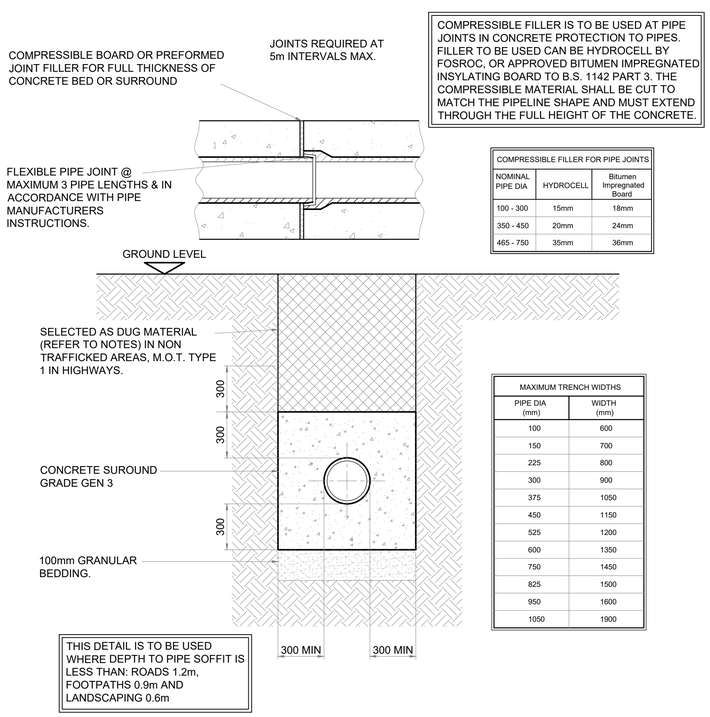
NOTES

1. CONCRETE TO BE GRADE GEN 3

2. JOINTS TO BE PROVIDED IN CONCRETE SURROUND AT NOT GREATER THAN 5.0m CENTRES. BUILDING REGULATIONS PART H1 PARA A11

3. WHERE THE TRENCH IS WITHIN 1m OF THE BUILDING THE TRENCH SHALL BE FILLED WITH CONCRETE UP TO THE LOWEST LEVEL OF THE FOUNDATIONS. WHERE THE TRENCH IS FURTHER THAN 1000mm FROM THE BUILDING, THE TRENCH SHALL BE FILLED WITH CONCRETE UP TO A LEVEL, BELOW THE LOWEST LEVEL OF THE FOUNDATION, EQUAL TO THE DISTANCE FROM THE BUILDING LESS 150mm.

PIPE RUNS ADJACENT TO BUILDING



COMPRESSIBLE FILLER FOR PIPE JOINTS		
NOMINAL PIPE DIA	HYDROCELL	Bitumen Impregnated Board
100 - 300	15mm	18mm
350 - 450	20mm	24mm
465 - 750	35mm	36mm

MAXIMUM TRENCH WIDTHS	
PIPE DIA (mm)	WIDTH (mm)
100	600
150	700
225	800
300	900
375	1050
450	1150
525	1200
600	1350
750	1450
825	1500
950	1600
1050	1900

CLASS 'Z' PIPE BEDDING

BS EN 1610:1997 Annex B Table B.15 Coarse Aggregate - Pipe Bedding								
Sieve Size (mm)	Percentage by mass passing BS sieves for nominal sizes							
	Graded Aggregate (mm)				Single-sized Aggregate (mm)			
	40 to 5	20 to 5	14 to 5	40	20	14	10	
50.0	100	-----	-----	100	-----	-----	-----	
37.5	90 - 100	100	-----	85 - 100	100	-----	-----	
20.0	35 - 70	90 - 100	100	0 - 25	85 - 100	100	-----	
14.0	-----	-----	90 - 100	-----	-----	85 - 100	100	
10.0	10 - 40	30 - 60	50 - 85	0 - 5	0 - 25	0 - 50	85 - 100	
5.0	0 - 5	0 - 10	0 - 10	-----	0 - 5	0 - 10	0 - 25	
2.36	-----	-----	-----	-----	-----	-----	0 - 5	

RIGID PIPES BEDDING GRADING

BASED ON BS EN 1610 : 1997 TABLE B.15
FOR RIGID PIPES THE BEDDING SHOULD BE SINGLE SIZE MATERIAL OR GRADED MATERIAL FROM 5MM UP TO A MAX SIZE OF 10MM FOR 100MM PIPES; 14MM FOR 150MM PIPES; 20MM FOR 225MM TO 600MM PIPES; 40MM FOR OVER 675MM PIPES

DRAINAGE NOTES

1. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES.

2. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.

3. ALL PLOT DRAINAGE WITHIN THE SITE IS TO COMPLY WITH THE REQUIREMENTS OF BSEN752 AND BUILDING REGULATIONS PART H.

4. ALL PLOT DRAINAGE PIPES TO BE LAID IN TRENCHES BEDDED CLASS 'S' ON SINGLE SIZED AGGREGATE AND BACKFILLED WITH APPROVED SELECTED FILL (40mm DOWN) REUSED FROM EXCAVATED MATERIAL. UNDER BUILDINGS AND WHERE COVER TO INVERT IS LESS THAN 600mm UNDER TRAFFICKED AREAS, PIPES TO BE CAST IN CONCRETE (CLASS Z BEDDING).

5. SELECTED BACKFILL MATERIAL SHALL CONSIST OF UNIFORM EXCAVATED MATERIAL, FREE FROM STONES LARGER THAN 40mm, CLAY LUMPS LARGER THAN 75mm, TREE ROOTS, CONTAMINATED MATERIAL. SELECTED BACKFILL MATERIAL IS TO BE PLACED IN LAYERS NOT EXCEEDING 150mm THICKNESS. THE MATERIAL SHALL BE COMPACTED TO ACHIEVE NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN LABORATORY COMPACTION TESTS. SUFFICIENT TESTING SHALL BE CARRIED OUT, BY THE CONTRACTOR, TO DEMONSTRATE THIS IS ACHIEVED (NUMBER AND FREQUENCY OF TESTING TO BE AGREED). WHERE THE MOISTURE CONTENT OF THE MATERIAL PROHIBITS COMPLIANCE WITH THE ABOVE 6F1 OR SIMILAR IMPORTED MATERIAL SHALL BE USED.

6. CLASS Z CONCRETE ENCASEMENT REQUIRED WHERE VERTICAL CLEARANCE BETWEEN THE TWO PIPES IS LESS THAN 300mm.

7. ALL PIPEWORK WITHIN MANHOLES ARE TO BE LAID SOFFIT TO SOFFIT (UNO). ALL CHAMBER INVERT LEVELS ARE FOR THE OUTGOING PIPE LEVELS. BACKDROP PIPEWORK SHALL BE CONNECTED AT SOFFIT TO SOFFIT WITH THE RODDING ACCESS LEVEL SPECIFIED.

8. ALL DRAINS TO BE LAID IN ACCORDANCE WITH THE MANUFACTURERS GUIDANCE.

9. ALL DRAINAGE INSITU CONCRETE SHALL BE GEN3 (U.N.O).

10. ANY GRADIENTS OF DRAINS INDICATED ARE INDICATIVE ONLY AND THE CONTRACTOR SHALL INSTALL THE DRAINS TO THE SPECIFIED LEVELS SHOWN FOR EACH MANHOLE. CATCHPIT INVERT LEVELS ARE FOR THE OUTGOING PIPE WITH THE SUMP LEVEL SPECIFIED SEPARATELY.

11. CO-ORDINATE SETTING OUT INFORMATION FOR MANHOLES IS TO THE INTERSECTION THE DRAINS AND NOT THE CENTRE OF THE MANHOLE.

12. COVER LEVELS OF THE MANHOLES ARE PROVISIONAL AND SUBJECT TO ADJUSTMENT ON SITE TO SUIT THE FINISHED GROUND LEVELS. ALL EXTERNAL WORKS CONSTRUCTION AREAS TO BE AS LOCATED BY THE ARCHITECT.

13. GULLY GRATINGS AND STEEL CHANNEL COVERS ARE TO BE IN ACCORDANCE WITH BSEN124 AS FOLLOWS:
   a) AREAS SUBJECT TO VEHICULAR OVERRUN: CLASS D400 MINIMUM.
   b) AREAS NOT SUBJECT TO REGULAR VEHICLE OVERRUN (ADJACENT TO KERBS ETC): CLASS C250.
   c) GULLY GRATES ADJACENT TO KERBS SHALL BE HINGED ON THE SIDE OF THE TRAFFIC DIRECTION (LEFT HAND SIDE).

14. ALL BRICKWORK IN CONNECTION WITH DRAINAGE IS TO BE SOLID CLASS B ENGINEERING BRICK TO BS3921.

15. ALL PRECAST CONCRETE PIPES, CHAMBER PRODUCTS AND ROAD GULLIES SHALL BE TO BS5911 AND BE KITEMARKED.

16. ALL DRAINAGE INSITU CONCRETE SHALL BE GEN3.

17. ALL INSITU AND CONCRETE PRODUCTS SHALL COMPLY WITH THE REQUIREMENTS FOR SULPHATE EXPOSURE IN ACCORDANCE WITH BRE SPECIAL DIGEST 1, CONCRETE IN AGGRESSIVE GROUND (2001) PART 1: TABLE 2.

18. UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE. NO DEBRIS SHALL BE PERMITTED TO ENTER THE EXISTING DRAINAGE SYSTEM.

19. CONSTRUCTION JOINTS IN CONCRETE SURROUND MUST NOT BE WITHIN 150MM OF CHAMBER/SHAFT RING JOINTS. ROCKER PIPES TO BE SURROUNDED WITH CONCRETE LOCATED 150mm MINIMUM 200mm MAXIMUM FROM THE FIRST FLEXIBLE JOINT TO THE MANHOLE WALL.

20. SOFT SPOTS IN THE TRENCH FORMATION SHALL BE REMOVED AND REPLACED WITH GRANULAR BEDDING UNLESS INSTRUCTED OTHERWISE.

21. LATERAL CONNECTIONS IN BETWEEN MANHOLE RUNS SHALL BE FORMED BY USING PURPOSE MADE JUNCTION FITTINGS. BEND FITTINGS SHALL BE PROVIDED WHERE APPROPRIATE TO DIRECT THE FLOW INTO MAIN RUNS.

22. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LIAISE WITH BUILDING CONTROL FOR APPROVALS, INTERIM INSPECTION, SNAGGING AND FINAL INSPECTIONS OF THEIR WORK.

23. AT THE CONCLUSION OF THE WORKS THE CONTRACTOR SHALL PROVIDE A MARKED UP DRAWING TO RECORD ANY AS BUILT VARIATIONS.

24. ALL ROOF RWDP TO BE 100Ø, ALL OTHER PLOT SURFACE WATER DRAINAGE TO BE 150Ø UNLESS STATED OTHERWISE. ALL PLOT FOUL WATER PIPES TO BE 100Ø UNLESS STATED OTHERWISE.

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.

2. DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS, SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.

Stat	Purpose of Issue	Date	Auth
S2	FOR INFORMATION	26.06.24	WF

Rev	Description	By	Date	Chk'd	Auth
P01	FIRST ISSUE	MF	26.06.24	WF	WF

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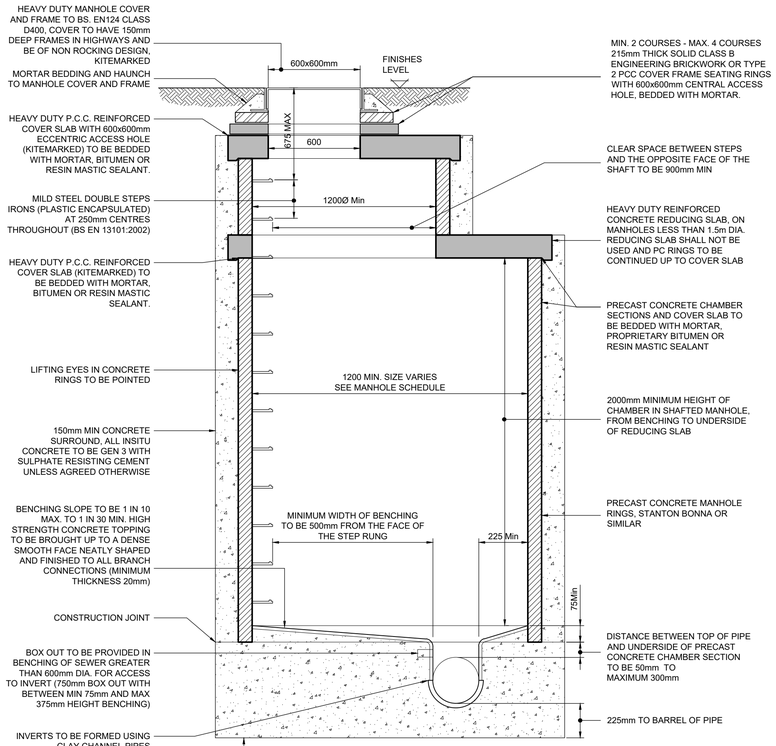
Client: Mandale Homes

Project: HANGING HEATON BATLEY

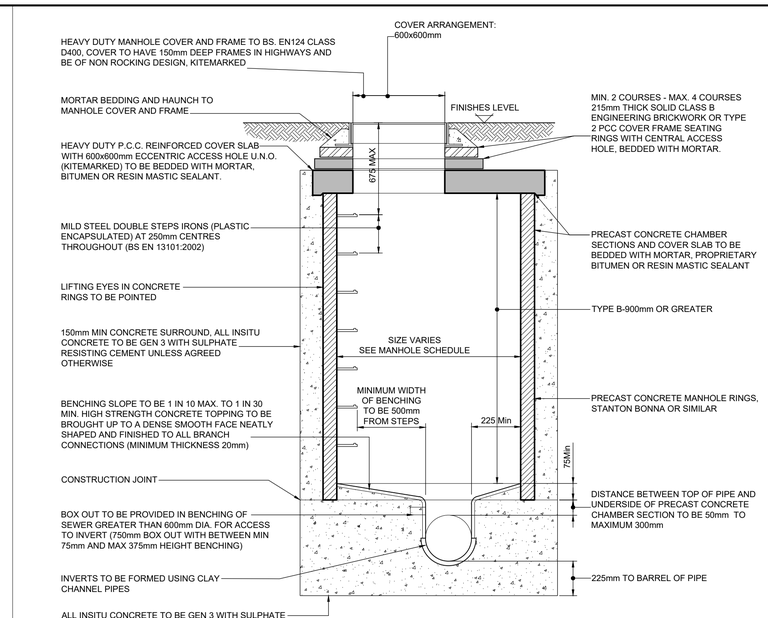
Title: PROPOSED DRAINAGE DETAILS SHEET 1

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

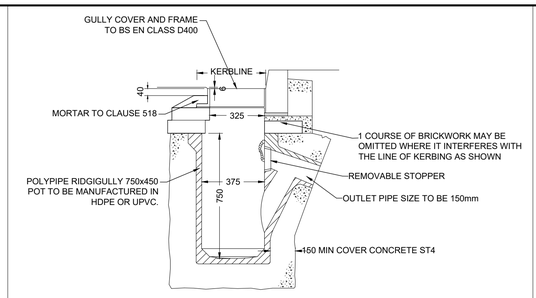
Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0110	P01



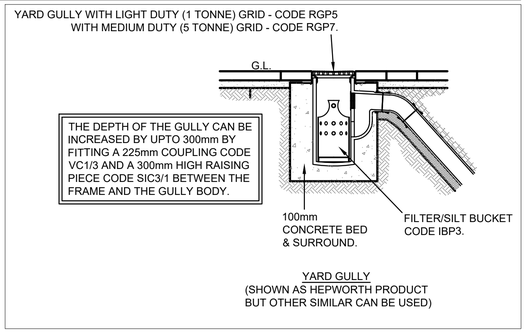
SECTION
MANHOLE TYPE A
FOR USE WHERE DEPTH FROM COVER TO SOFFIT IS BETWEEN 3.0m & 6.0m



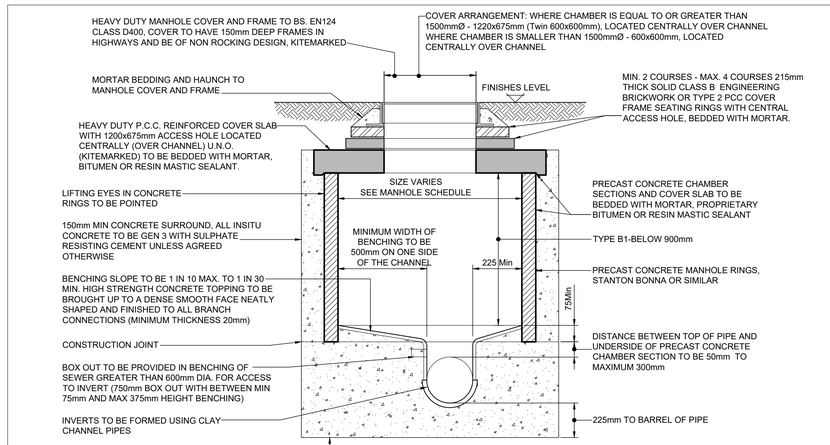
SECTION
MANHOLE TYPE B - DEPTH 1.5-3.0m SOFFIT



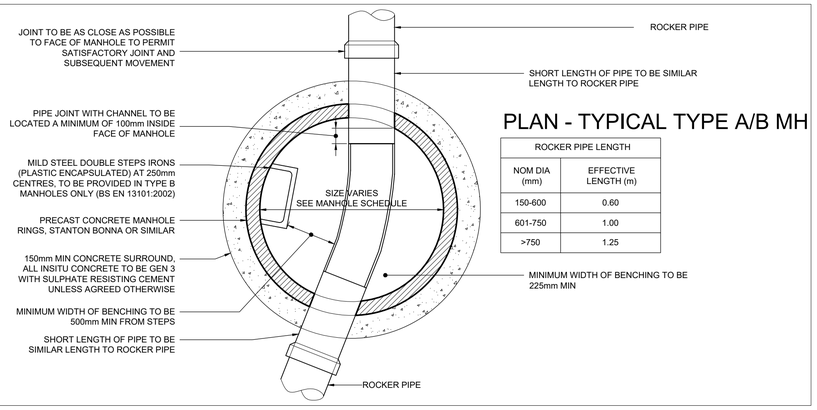
TYPICAL PLASTIC ROAD GULLY DETAIL



YARD GULLY
(SHOWN AS HEPWORTH PRODUCT BUT OTHER SIMILAR CAN BE USED)

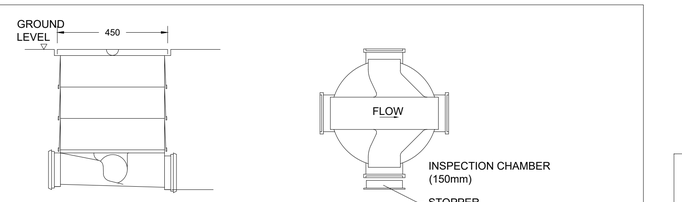


SECTION
MANHOLE TYPE C - DEPTH 1-1.5m SOFFIT



PLAN - TYPICAL TYPE A/B MH

ROCKER PIPE LENGTH	
NOM DIA (mm)	EFFECTIVE LENGTH (m)
150-600	0.60
601-750	1.00
>750	1.25



NOTES

1. CAST IRON COVER AND PLASTIC FRAME ARE SUITABLE FOR USE WHERE WHEEL LOADS DO NOT EXCEED 1.5 TONNES.

2. FOR HEAVY LOADING INSTALLATIONS, CHAMBER TO SURROUNDED WITH 150mm THICK CONCRETE AND COVER REPLACED WITH APPROPRIATE LOADING CLASSIFICATION COVER.

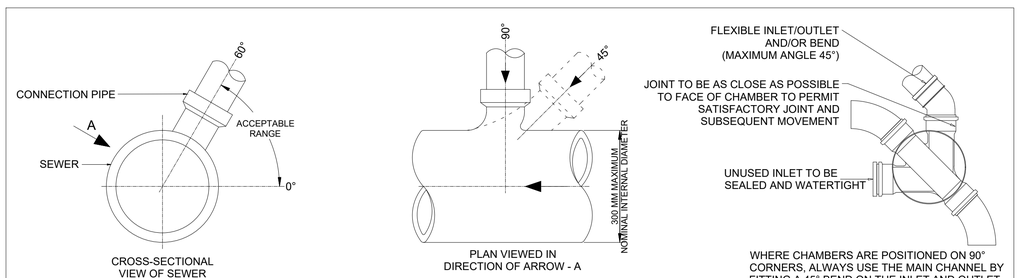
3. WHERE SIDE BRANCHES ARE NOT TO BE USED STOPPER TO BE INSERTED TO BLANK OFF CONNECTION

4. CHAMBER SIZES ARE MINIMUM REQUIRED. SEE PLAN LAYOUT FOR VARIATIONS, IF ANY.

5. ALL INSPECTION CHAMBERS WITH A DEPTH GREATER THAN 1.2m TO HAVE A 350mm DIAMETER REDUCING PLATE LOCATED BENEATH COVER AND FRAME TO PREVENT ACCESS.

PRECAST CONCRETE TO BS 5911:PART 2 AND BS8301 KITEMARKED, UP TO 1.0 METRE DEEP POLYPROPYLENE INSPECTION CHAMBERS TO BS 7158, BS EN 124 KITEMARKED, MIN. 450mm DIAMETER UPTO 2.0m DEEP BY HEPWORTH OR SIMILAR APPROVED

POLY-PROPOLENE INSPECTION CHAMBER (PPIC)



CONNECTIONS TO NETWORK

DRAINAGE NOTES

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3. ALL PLOT DRAINAGE WITHIN THE SITE IS TO COMPLY WITH THE REQUIREMENTS OF BSEN752 AND BUILDING REGULATIONS PART H.

4. ALL PLOT DRAINAGE PIPES TO BE LAID IN TRENCHES BEDDED CLASS 'S' ON SINGLE SIZED AGGREGATE AND BACKFILLED WITH APPROVED SELECTED FILL (40mm DOWN) REUSED FROM EXCAVATED MATERIAL. UNDER BUILDINGS AND WHERE COVER TO INVERT IS LESS THAN 600mm UNDER TRAFFICKED AREAS, PIPES TO BE CAST IN CONCRETE (CLASS Z BEDDING).

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   c) GULLY GRATES ADJACENT TO KERBS SHALL BE HINGED ON THE SIDE OF THE TRAFFIC DIRECTION (LEFT HAND SIDE).

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19. CONSTRUCTION JOINTS IN CONCRETE SURROUND MUST NOT BE WITHIN 150MM OF CHAMBER/SHAFT RING JOINTS. ROCKER PIPES TO BE SURROUNDED WITH CONCRETE LOCATED 150mm MINIMUM 200mm MAXIMUM FROM THE FIRST FLEXIBLE JOINT TO THE MANHOLE WALL.

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2. DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS, SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.

Stat	Purpose of Issue	Date	Auth
S2	FOR INFORMATION	26.06.24	WF

Rev	Description	By	Date	Chk'd	Auth
P01	FIRST ISSUE	MF	26.06.24	WF	WF

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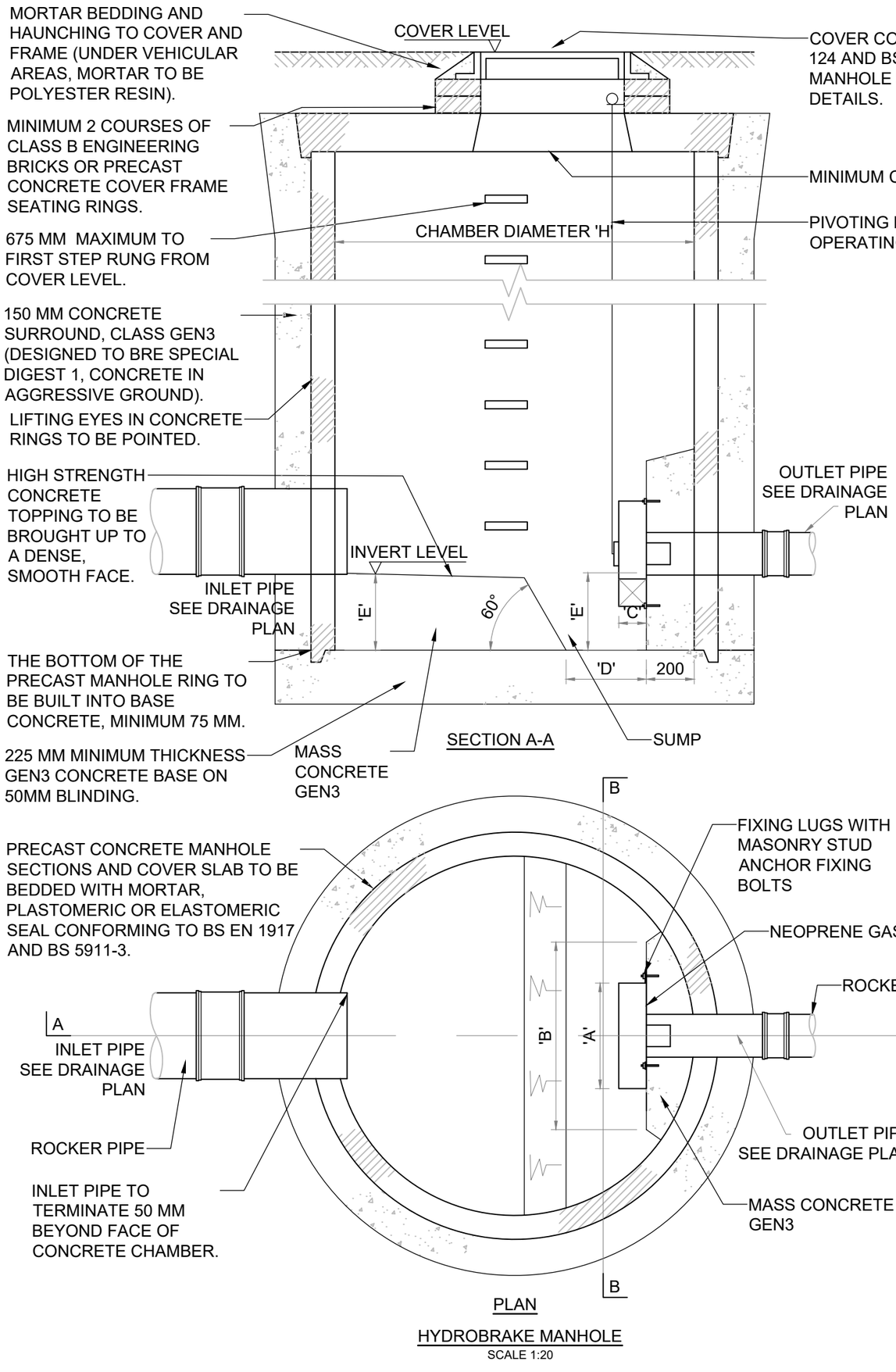
Client: Mandale Homes

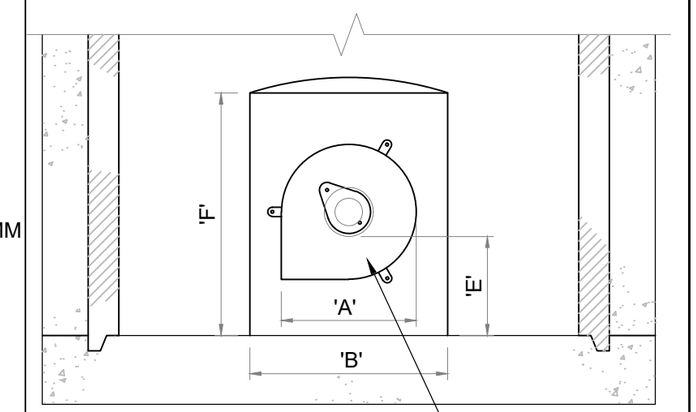
Project: HANGING HEATON BATLEY

Title: PROPOSED DRAINAGE DETAILS SHEET 2

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF Date 26.06.24	WF Date 26.06.24	RL Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0111	P01





HYDROBRAKE TECHNICAL SPECIFICATION

GRADE 304 STAINLESS STEEL VORTEX FLOW CONTROL UNIT WITH INTEGRAL STAINLESS STEEL PIVOTING BYPASS DOOR ALLOWING CLEAR LINE OF SIGHT THROUGH TO OUTLET, C/W STAINLESS STEEL OPERATING ROPE. STAINLESS STEEL FIXINGS AND NEOPRENE GASKET SEAL TO OUTLET.

Manhole Reference:	S15		
Cover Level (m):	63.670	Invert Level (m):	62.208
Hydrobrake Reference:	SHE-0075-2500-1000-2500		
Design Head (m):	1.0m		
Design Flow (l/s):	2.5		
Inlet Pipe diameter (mm):	300		
Outlet Pipe diameter (mm):	150		
Dimension 'A' (mm):	440	Dimension 'E' (mm):	320
Dimension 'B' (mm):	645	Dimension 'F' (mm):	785
Dimension 'C' (mm):	85	Dimension 'G' (mm):	N/A
Dimension 'D' (mm):	170	Dimension 'H' (mm):	1800

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS, SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.
3. FOR PROPOSED DRAINAGE LAYOUT REFER TO DRAWING 24004-LE-00-ZZ-DR-D-0100.
4. PROPRIETARY PRODUCTS SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS DETAILS AND SPECIFICATION.

Stat	Purpose of Issue	Date	Auth
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Rev	Description	By	Date	Chk'd	Auth
P01	FOR INFORMATION	MF	26.06.24	WF	MF

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Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: PROPOSED HYDROBRAKE CONTROL MANHOLE DETAIL

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A3	1:20	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0112	P01

Appendix D – Hydraulic Calculations

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.

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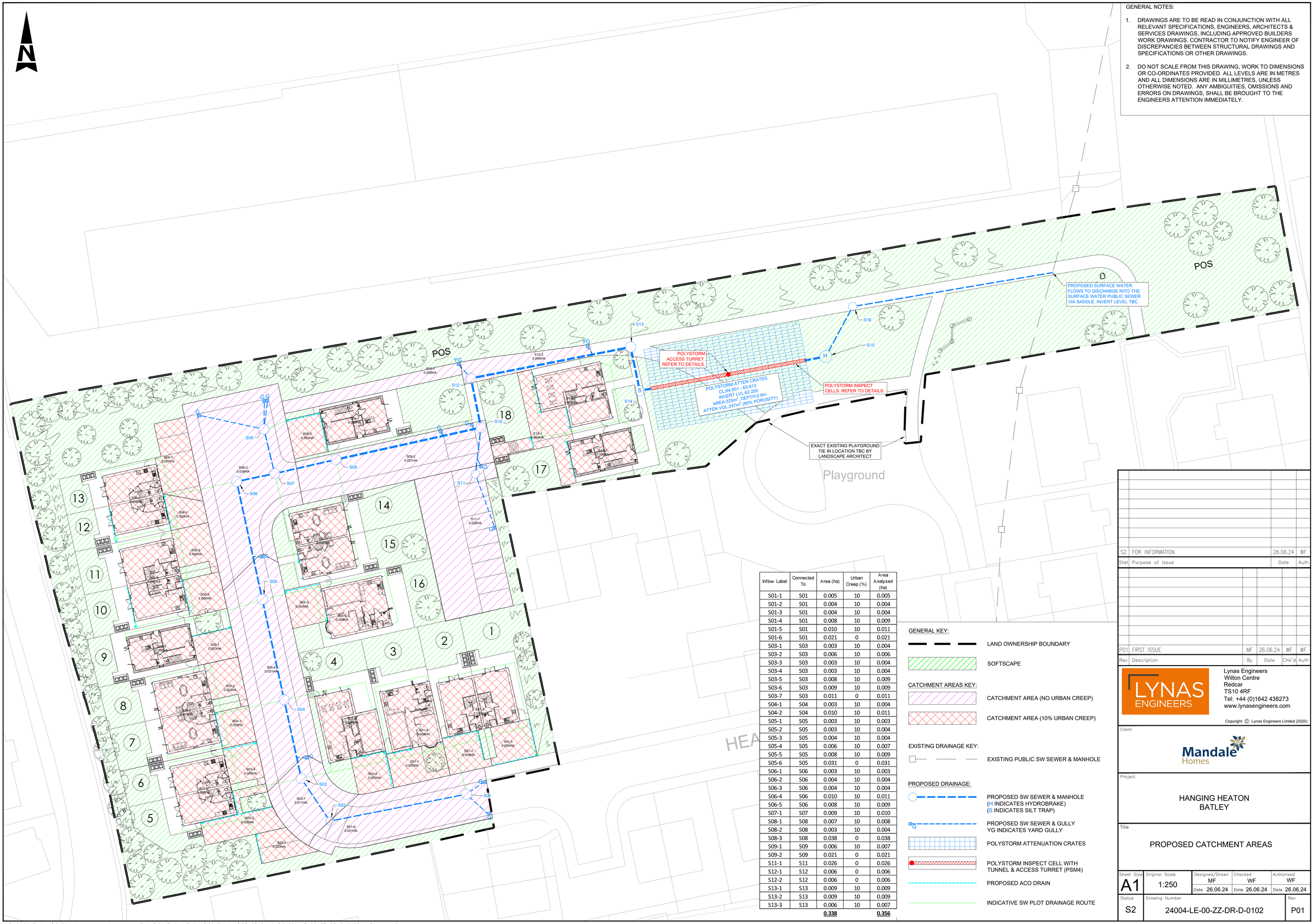

Inflow Label	Connected To	Area (ha)	Urban Creep (%)	Area Analysed (ha)
S01-1	S01	0.005	10	0.005
S01-2	S01	0.004	10	0.004
S01-3	S01	0.004	10	0.004
S01-4	S01	0.008	10	0.009
S01-5	S01	0.010	10	0.011
S01-6	S01	0.021	0	0.021
S03-1	S03	0.003	10	0.004
S03-2	S03	0.006	10	0.006
S03-3	S03	0.003	10	0.004
S03-4	S03	0.003	10	0.004
S03-5	S03	0.008	10	0.009
S03-6	S03	0.009	10	0.009
S03-7	S03	0.011	0	0.011
S04-1	S04	0.003	10	0.004
S04-2	S04	0.010	10	0.011
S05-1	S05	0.003	10	0.003
S05-2	S05	0.003	10	0.004
S05-3	S05	0.004	10	0.004
S05-4	S05	0.006	10	0.007
S05-5	S05	0.008	10	0.009
S05-6	S05	0.031	0	0.031
S06-1	S06	0.003	10	0.003
S06-2	S06	0.004	10	0.004
S06-3	S06	0.004	10	0.004
S06-4	S06	0.010	10	0.011
S06-5	S06	0.008	10	0.009
S07-1	S07	0.009	10	0.010
S08-1	S08	0.007	10	0.008
S08-2	S08	0.003	10	0.004
S08-3	S08	0.038	0	0.038
S09-1	S09	0.006	10	0.007
S09-2	S09	0.021	0	0.021
S11-1	S11	0.026	0	0.026
S12-1	S12	0.006	0	0.006
S12-2	S12	0.006	0	0.006
S13-1	S13	0.009	10	0.009
S13-2	S13	0.009	10	0.009
S13-3	S13	0.006	10	0.007
		0.338		**0.356**

GENERAL KEY:

- LAND OWNERSHIP BOUNDARY
- SOFTSCAPE

CATCHMENT AREAS KEY:

- CATCHMENT AREA (NO URBAN CREEP)
- CATCHMENT AREA (10% URBAN CREEP)

EXISTING DRAINAGE KEY:

- EXISTING PUBLIC SW SEWER & MANHOLE

PROPOSED DRAINAGE:

- PROPOSED SW SEWER & MANHOLE (H INDICATES HYDROBRAKE) (S INDICATES SILT TRAP)
- PROPOSED SW SEWER & GULLY YG INDICATES YARD GULLY
- POLYSTORM ATTENUATION CRATES
- POLYSTORM INSPECT CELL WITH TUNNEL & ACCESS TURRET (PSM4)
- PROPOSED ACO DRAIN
- INDICATIVE SW PLOT DRAINAGE ROUTE

Stat	Purpose of Issue	Date	Auth
S2	FOR INFORMATION	26.06.24	WF

Rev	Description	By	Date	Chk'd	Auth
P01	FIRST ISSUE	MF	26.06.24	WF	WF

LYNAS ENGINEERS
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Client: Mandale Homes

Project: HANGING HEATON BATLEY

Title: PROPOSED CATCHMENT AREAS

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status: S2

Drawing Number: 24004-LE-00-ZZ-DR-D-0102

Rev: P01

L:\12-24-Projects\24004-Mandale-Hanging Heaton, Batley\04_Project Delivery\02_Drawings\DR_2D Drawing\24004-LE-00-ZZ-DR-D-0102 - Proposed Catchment Areas.dwg

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: SW1	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)	Downstream Cover Level (m)	Downstream Invert Level (m)	Lock	Flow Restriction (L/s)
S1.000	22.072	Pipe	74.000		0.6	150	69.515	67.782	71.169	67.484	All	
S1.001	8.144	Pipe	74.000		0.6	150	71.169	67.484	70.871	67.374	All	
S1.002	12.746	Pipe	80.000		0.6	225	70.871	67.299	69.912	67.140	All	
S1.003	16.307	Pipe	47.961		0.6	225	69.912	67.140	68.685	66.800	All	
S1.004	19.122	Pipe	13.999		0.6	225	68.685	66.800	67.245	65.434	All	
S1.005	6.150	Pipe	107.889		0.6	225	67.245	65.434	67.077	65.377	All	
S2.000	7.237	Pipe	150.000		0.6	150	66.558	65.500	67.077	65.452	All	
S1.006	9.994	Pipe	170.000		0.6	225	67.077	65.377	66.793	65.318	All	
S1.007	23.522	Pipe	59.853		0.6	300	66.793	65.243	66.050	64.850	All	
S3.000	7.443	Pipe	32.361		0.6	150	66.286	65.230	66.050	65.000	All	
S1.008	7.957	Pipe	64.208		0.6	300	66.050	64.850	65.879	64.726	All	
S1.009	25.803	Pipe	21.046		0.6	300	65.879	64.726	64.650	63.500	All	
S1.010	7.093	Pipe	10.133		0.6	300	64.650	63.500	64.825	62.800	All	
S1.011	1.776	Pipe	11.839		0.6	300	64.825	62.800	64.747	62.650	All	
S1.012	3.430	Pipe	82.493		0.6	300	63.806	62.250	63.670	62.208	All	
S1.013	9.000	Pipe	122.518		0.6	150	63.670	62.208	63.210	62.135	All	2.5
S1.014	32.148	Pipe	52.369		0.6	150	63.210	62.135	62.860	61.521	All	

FLOW RESTRICTED TO 2.5l/s

Hanging Heaton, Batley:	Date:		
M2, M30. M100+45% Sim Results	26/06/2024		
	Designed by:	Checked by:	Approved By:
	matthew		
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: SW1			

LYNAS ENGINEERS

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
S01-1	S01		Time of Concentration	0.005	100	10	110	0.005
S01-2	S01		Time of Concentration	0.004	100	10	110	0.004
S01-3	S01		Time of Concentration	0.004	100	10	110	0.004
S01-4	S01		Time of Concentration	0.008	100	10	110	0.009
S01-5	S01		Time of Concentration	0.010	100	10	110	0.011
S01-6	S01		Time of Concentration	0.021	100	0	100	0.021
S03-1	S03		Time of Concentration	0.003	100	10	110	0.004
S03-2	S03		Time of Concentration	0.006	100	10	110	0.006
S03-3	S03		Time of Concentration	0.003	100	10	110	0.004
S03-4	S03		Time of Concentration	0.003	100	10	110	0.004
S03-5	S03		Time of Concentration	0.008	100	10	110	0.009
S03-6	S03		Time of Concentration	0.009	100	0	100	0.009
S03-7	S03		Time of Concentration	0.011	100	10	110	0.012
S04-1	S04		Time of Concentration	0.003	100	10	110	0.004
S04-2	S04		Time of Concentration	0.010	100	10	110	0.011
S05-1	S05		Time of Concentration	0.003	100	10	110	0.003
S05-2	S05		Time of Concentration	0.003	100	10	110	0.004
S05-3	S05		Time of Concentration	0.004	100	10	110	0.004
S05-4	S05		Time of Concentration	0.006	100	10	110	0.007
S05-5	S05		Time of Concentration	0.008	100	10	110	0.009
S05-6	S05		Time of Concentration	0.031	100	0	100	0.031
S06-1	S06		Time of Concentration	0.003	100	10	110	0.003
S06-2	S06		Time of Concentration	0.004	100	10	110	0.004
S06-3	S06		Time of Concentration	0.004	100	10	110	0.004
S06-4	S06		Time of Concentration	0.010	100	10	110	0.011
S06-5	S06		Time of Concentration	0.008	100	10	110	0.009
S07-1	S07		Time of Concentration	0.009	100	10	110	0.010
S08-1	S08		Time of Concentration	0.007	100	10	110	0.008
S08-2	S08		Time of Concentration	0.003	100	10	110	0.004
S08-3	S08		Time of Concentration	0.038	100	0	100	0.038
S09-1	S09		Time of Concentration	0.006	100	10	110	0.007
S09-2	S09		Time of Concentration	0.021	100	0	100	0.021
S11-1	S11		Time of Concentration	0.026	100	0	100	0.026
S12-1	S12		Time of Concentration	0.006	100	0	100	0.006
S12-2	S12		Time of Concentration	0.006	100	0	100	0.006
S13-1	S13		Time of Concentration	0.009	100	10	110	0.009
S13-2	S13		Time of Concentration	0.009	100	10	110	0.009
S13-3	S13		Time of Concentration	0.006	100	10	110	0.007
TOTAL		**0.0**		**0.338**				**0.356**

10% URBAN CREEP APPLIED TO PLOT AREAS.

THIS IS THE RESULTANT AREA ANALYSED

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Use Catchment Values
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

Wizard

Type: FSR

Region	England And Wales
M5-60 (mm)	19.0
Ratio R	0.350
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000
30.0	0.000
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW1	Company Address:		

Wizard: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	Wizard: 2 years: +0 %: 360 mins: Winter	62.414	62.414	0.164	0.164	9.3	50.665	0.000	0.000	2.3	69.976	79.534	OK

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW1	Company Address:		

Wizard: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	Wizard: 30 years: +0 %: 360 mins: Winter	62.593	62.593	0.343	0.343	16.9	105.894	0.000	0.000	2.6	92.090	57.225	OK

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW1	Company Address:		

Wizard: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	Wizard: 100 years: +45 %: 720 mins: Winter	63.024	63.024	0.774	0.774	18.8	239.025	0.000	0.000	2.6	176.514	3.447	OK

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW1	Company Address:		

Wizard: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S1.000	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S01	S02	69.515	67.852	0.071	4.178	1.1	0.42	8.7	OK
S1.001	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S02	S03	71.169	67.555	0.068	4.170	1.0	0.4	8.2	OK
S1.002	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S03	S04	70.871	67.384	0.082	7.729	1.2	0.27	15.5	OK
S1.003	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S04	S05	69.912	67.218	0.072	8.836	1.6	0.23	17.4	OK
S1.004	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S05	S06	68.685	66.866	0.118	13.207	1.2	0.19	26.3	OK
S1.005	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S06	S07	67.245	65.605	0.181	15.618	0.9	0.59	29.6	OK
S2.000	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S08	S07	66.558	65.592	0.105	3.791	0.6	0.53	7.7	OK
S1.006	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S07	S09	67.077	65.569	0.177	20.178	1.1	0.93	37.0	OK
S1.007	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S09	S10	66.793	65.358	0.122	22.271	1.5	0.28	40.6	OK
S3.000	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S11	S10	66.286	65.269	0.038	1.982	1.2	0.13	4.2	OK
S1.008	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S10	S12	66.050	64.979	0.110	24.225	1.8	0.31	43.4	OK
S1.009	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S12	S13	65.879	64.818	0.086	25.088	2.6	0.18	44.4	OK
S1.010	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S13	S14	64.650	63.581	0.092	27.016	2.6	0.14	47.7	OK
S1.011	Wizard: 2 years: +0 %: 15 mins: Winter	Pipe	S14	Cellular Storage	64.825	62.904	0.090	27.001	2.6	0.14	47.1	OK
S1.012	Wizard: 2 years: +0 %: 360 mins: Winter	Pipe	Cellular Storage	S15	63.806	62.414	0.185	69.976	0.2	0.02	2.3	OK
S1.013	Wizard: 2 years: +0 %: 360 mins: Winter	Pipe	S15	S16	63.670	62.414	0.036	69.735	0.7	0.15	2.3	Surcharged
S1.014	Wizard: 2 years: +0 %: 360 mins: Winter	Pipe	S16	Saddle Outlet	63.210	62.167	0.031	69.683	0.9	0.1	2.3	OK

FLOW RESTRICTED TO ≤2.5l/s

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW1	Company Address:		

Wizard: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S1.000	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S01	S02	69.515	67.890	0.108	7.910	1.2	0.79	16.4	OK
S1.001	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S02	S03	71.169	67.593	0.103	7.901	1.2	0.75	15.6	OK
S1.002	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S03	S04	70.871	67.424	0.120	14.633	1.4	0.51	29.5	OK
S1.003	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S04	S05	69.912	67.254	0.104	16.735	1.9	0.44	33.2	OK
S1.004	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S05	S06	68.685	66.893	0.225	25.018	1.3	0.36	50.5	OK
S1.005	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S06	S07	67.245	65.908	0.225	29.595	1.4	1.13	56.4	Surcharged
S2.000	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S08	S07	66.558	65.834	0.150	7.192	0.7	0.86	12.5	Surcharged
S1.006	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S07	S09	67.077	65.785	0.225	38.250	1.7	1.74	69.2	Surcharged
S1.007	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S09	S10	66.793	65.413	0.180	42.229	1.7	0.53	76.1	OK
S3.000	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S11	S10	66.286	65.285	0.053	3.745	1.4	0.25	7.9	OK
S1.008	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S10	S12	66.050	65.039	0.160	45.946	2.1	0.59	81.6	OK
S1.009	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S12	S13	65.879	64.856	0.124	47.596	3.0	0.34	83.6	OK
S1.010	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S13	S14	64.650	63.618	0.137	51.260	2.9	0.26	89.9	OK
S1.011	Wizard: 30 years: +0 %: 15 mins: Winter	Pipe	S14	Cellular Storage	64.825	62.955	0.131	51.244	3.0	0.27	88.7	OK
S1.012	Wizard: 30 years: +0 %: 30 mins: Winter	Pipe	Cellular Storage	S15	63.806	62.457	0.228	7.233	0.4	0.02	2.9	OK
S1.013	Wizard: 30 years: +0 %: 480 mins: Winter	Pipe	S15	S16	63.670	62.590	0.037	120.806	0.7	0.16	2.5	Surcharged
S1.014	Wizard: 30 years: +0 %: 120 mins: Winter	Pipe	S16	Saddle Outlet	63.210	62.168	0.032	29.557	0.9	0.1	2.5	OK

FLOW RESTRICTED TO ≤2.5l/s

Hanging Heaton, Batley: M2, M30. M100+45% Sim Results	Date: 26/06/2024		
	Designed by: matthew	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW1	Company Address:		

Wizard: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S1.000	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S01	S02	69.515	68.229	0.150	14.791	1.5	1.25	25.8	Surcharged
S1.001	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S02	S03	71.169	67.718	0.150	14.803	1.4	1.19	24.5	Surcharged
S1.002	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S03	S04	70.871	67.487	0.177	27.426	1.5	0.87	50.5	OK
S1.003	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S04	S05	69.912	67.307	0.178	31.357	1.9	0.76	57.0	OK
S1.004	Wizard: 100 years: +45 %: 15 mins: Summer	Pipe	S05	S06	68.685	66.937	0.225	41.913	2.0	0.57	79.3	OK
S1.005	Wizard: 100 years: +45 %: 15 mins: Summer	Pipe	S06	S07	67.245	66.523	0.225	49.601	2.3	1.85	92.7	Surcharged
S2.000	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S08	S07	66.558	66.419	0.150	13.503	1.3	1.63	23.6	Flood Risk
S1.006	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S07	S09	67.077	66.260	0.225	71.779	3.0	2.99	118.7	Surcharged
S1.007	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S09	S10	66.793	65.526	0.297	79.256	1.9	0.91	130.8	OK
S3.000	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S11	S10	66.286	65.311	0.121	7.011	1.2	0.5	15.6	OK
S1.008	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S10	S12	66.050	65.161	0.247	86.251	2.3	1.02	141.3	Surcharged
S1.009	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S12	S13	65.879	64.910	0.180	89.354	3.3	0.6	146.7	OK
S1.010	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S13	S14	64.650	63.677	0.206	96.242	3.1	0.46	160.5	OK
S1.011	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S14	Cellular Storage	64.825	63.034	0.191	96.225	3.4	0.49	159.5	OK
S1.012	Wizard: 100 years: +45 %: 30 mins: Winter	Pipe	Cellular Storage	S15	63.806	62.651	0.300	8.339	0.4	0.03	3.7	Surcharged
S1.013	Wizard: 100 years: +45 %: 240 mins: Summer	Pipe	S15	S16	63.670	62.873	0.037	56.956	0.7	0.16	2.5	Surcharged
S1.014	Wizard: 100 years: +45 %: 15 mins: Winter	Pipe	S16	Saddle Outlet	63.210	62.168	0.032	3.067	0.9	0.1	2.5	OK

FLOW RESTRICTED
TO ≤2.5l/s

Appendix E – Construction Surface Water Management Plan

Introduction

Lynas Engineers have been appointed by Mandale to undertake a 'Construction Surface Water Management Plan' (CSWMP) for a proposed residential site off Heaton Grange, Batley, WF17 6EN.

The requirement for a CSWMP is based on the duty to ensure that surface water quality and quantity is managed throughout the construction process, to mitigate impacts off site. A CWSMP drawing has been attached to support this technical note.

Construction Surface Water Management Plan

The CSWMP summary below is also available of the Appended plan drawing.

- Contractor roles and responsibilities for the scheme are to be confirmed upon the appointment of the principal contractor.
- The proposed management plan utilises items from the proposed permanent works. Additional temporary measures are proposed to collect and reticulate surface water.
- Final discharge will be controlled using the permanent flow control device.
- Pollution and water quality are managed by use of a perimeter ditch for collection and reticulation.
- Additional filtration protection is provided by installing straw bales at the ditch outlets.
- Exceedance flows will runoff north after traveling through the silt barriers. This mimics the existing exceedance route and therefore any exceedance flows from the development will not impact the existing downstream scenario.
- The contractor shall register with the environment agency flood alert warning system.
- The contractor's accreditation and environmental policies will be confirmed on appointment of a principal contractor.
- As part of the first phase, the permanent attenuation tank will be constructed and downstream connection into the public sewer. This allows flows to be attenuated with the same resilience as the finished site, which has been designed for a 1:100 year return period +45%.

Maintenance and Remediation Schedule

The maintenance schedule summary below is also available on the plan drawing within Appendix A.

At weekly intervals and following periods of heavy rainfall the contractor will walk the length of the silt fence, straw bales and storage and note the following:

- Monitor the build-up of silt, noting any significant accumulations.
- Inspect for damage and wear and tear due to water/silt. This includes all installed items.
- Inspect for weed growth/infestation.
- Inspect for damage by animals.

All damage shall be rectified immediately. Wear and tear shall be monitored and repaired before any significant problems arise. Significant silt build up shall be removed. In any case regular silt removal will be undertaken to prevent significant build up occurring over time.

INDICATIVE SECTION - SILT FENCE & DITCH (1:50)

INDICATIVE SECTION - STRAW BALE SILT PROTECTION (1:50)

CONSTRUCTION SURFACE WATER MANAGEMENT PLAN:

1. CONTRACTOR ROLES AND RESPONSIBILITIES FOR THE SCHEME ARE TO BE CONFIRMED UPON THE APPOINTMENT OF THE PRINCIPAL CONTRACTOR.
2. THE PROPOSED MANAGEMENT PLAN UTILISES ITEMS FROM THE PROPOSED PERMANENT WORKS. ADDITIONAL TEMPORARY MEASURES ARE PROPOSED TO COLLECT AND RETICULATE SW.
3. CONSENT TO DISCHARGE WILL BE REQUIRED FROM THE LEAD LOCAL FLOOD AUTHORITY.
4. FINAL DISCHARGE WILL BE CONTROLLED USING THE PERMANENT FLOW CONTROL DEVICES.
5. POLLUTION AND WATER QUALITY ARE MANAGED BY USE OF A PERIMETER DITCH FOR COLLECTION AND RETICULATION.
6. ADDITIONAL FILTRATION PROTECTION IS PROVIDED BY INSTALLING STRAW BALES AROUND THE DITCH OUTLET(S).
7. THE EXISTING EXCEEDANCE ROUTE WILL NOT BE IMPACTED BY THE TEMPORARY WORKS.
8. THE CONTRACTOR SHALL REGISTER WITH THE ENVIRONMENT AGENCY FLOOD ALERT WARNING SYSTEM.
9. THE CONTRACTORS ACCREDITATION AND ENVIRONMENTAL POLICIES WILL BE CONFIRMED ON APPOINTMENT OF A PRINCIPAL CONTRACTOR.

MAINTENANCE & REMEDIATION SCHEDULE:

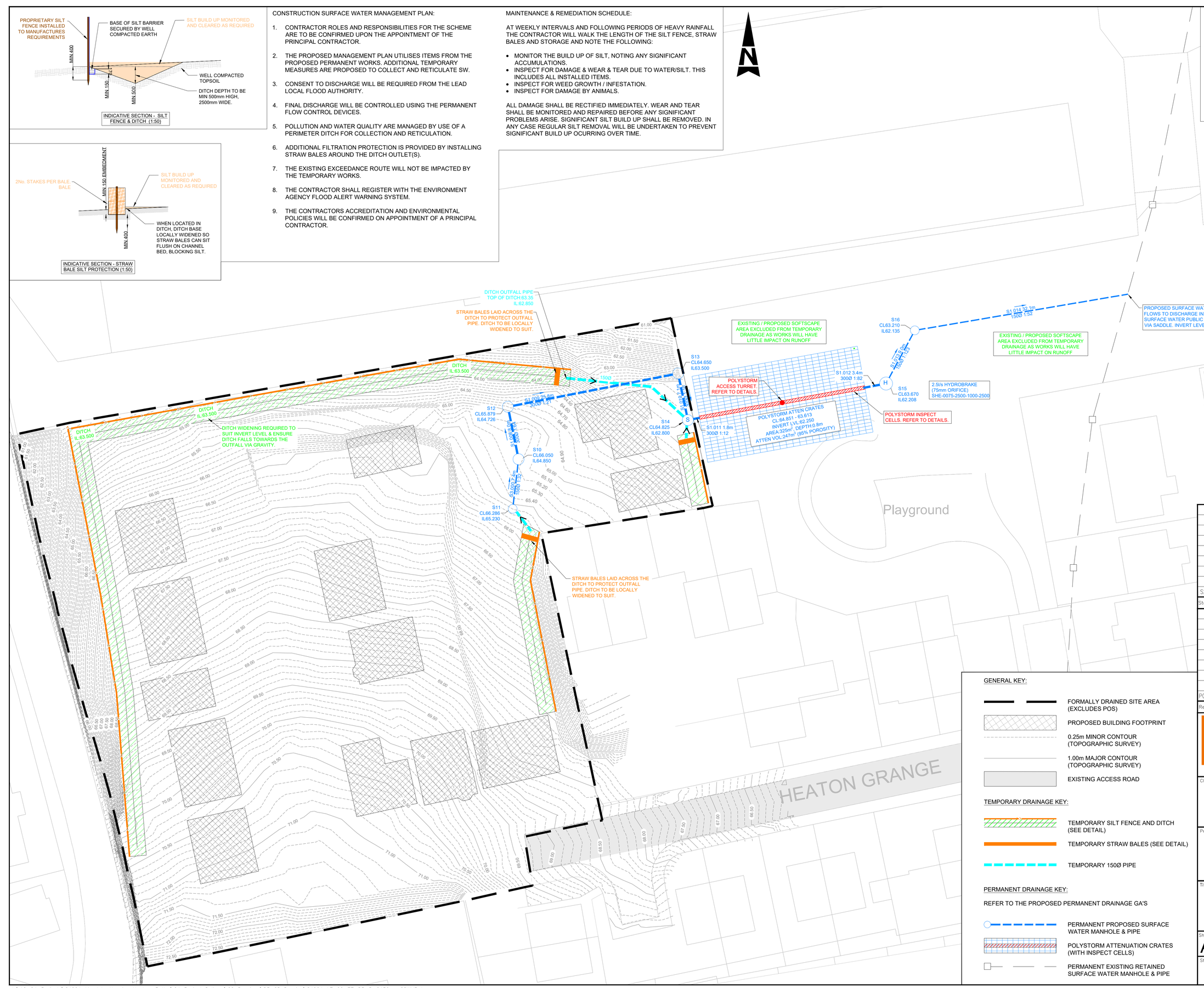
AT WEEKLY INTERVALS AND FOLLOWING PERIODS OF HEAVY RAINFALL THE CONTRACTOR WILL WALK THE LENGTH OF THE SILT FENCE, STRAW BALES AND STORAGE AND NOTE THE FOLLOWING:

- MONITOR THE BUILD UP OF SILT, NOTING ANY SIGNIFICANT ACCUMULATIONS.
- INSPECT FOR DAMAGE & WEAR & TEAR DUE TO WATER/SILT. THIS INCLUDES ALL INSTALLED ITEMS.
- INSPECT FOR WEED GROWTH / INFESTATION.
- INSPECT FOR DAMAGE BY ANIMALS.

ALL DAMAGE SHALL BE RECTIFIED IMMEDIATELY. WEAR AND TEAR SHALL BE MONITORED AND REPAIRED BEFORE ANY SIGNIFICANT PROBLEMS ARISE. SIGNIFICANT SILT BUILD UP SHALL BE REMOVED. IN ANY CASE REGULAR SILT REMOVAL WILL BE UNDERTAKEN TO PREVENT SIGNIFICANT BUILD UP OCURRING OVER TIME.

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS, SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.



GENERAL KEY:

- FORMALLY DRAINED SITE AREA (EXCLUDES POS)
- PROPOSED BUILDING FOOTPRINT
- 0.25m MINOR CONTOUR (TOPOGRAPHIC SURVEY)
- 1.00m MAJOR CONTOUR (TOPOGRAPHIC SURVEY)
- EXISTING ACCESS ROAD

TEMPORARY DRAINAGE KEY:

- TEMPORARY SILT FENCE AND DITCH (SEE DETAIL)
- TEMPORARY STRAW BALES (SEE DETAIL)
- TEMPORARY 150Ø PIPE

PERMANENT DRAINAGE KEY:

REFER TO THE PROPOSED PERMANENT DRAINAGE GA'S

- PERMANENT PROPOSED SURFACE WATER MANHOLE & PIPE
- POLYSTORM ATTENUATION CRATES (WITH INSPECT CELLS)
- PERMANENT EXISTING RETAINED SURFACE WATER MANHOLE & PIPE

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Rev	Description	By	Date	Chk'd	Auth
P01	FIRST ISSUE	MF	26.06.24	WF	WF

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Client: Mandale Homes

Project: HANGING HEATON BATLEY

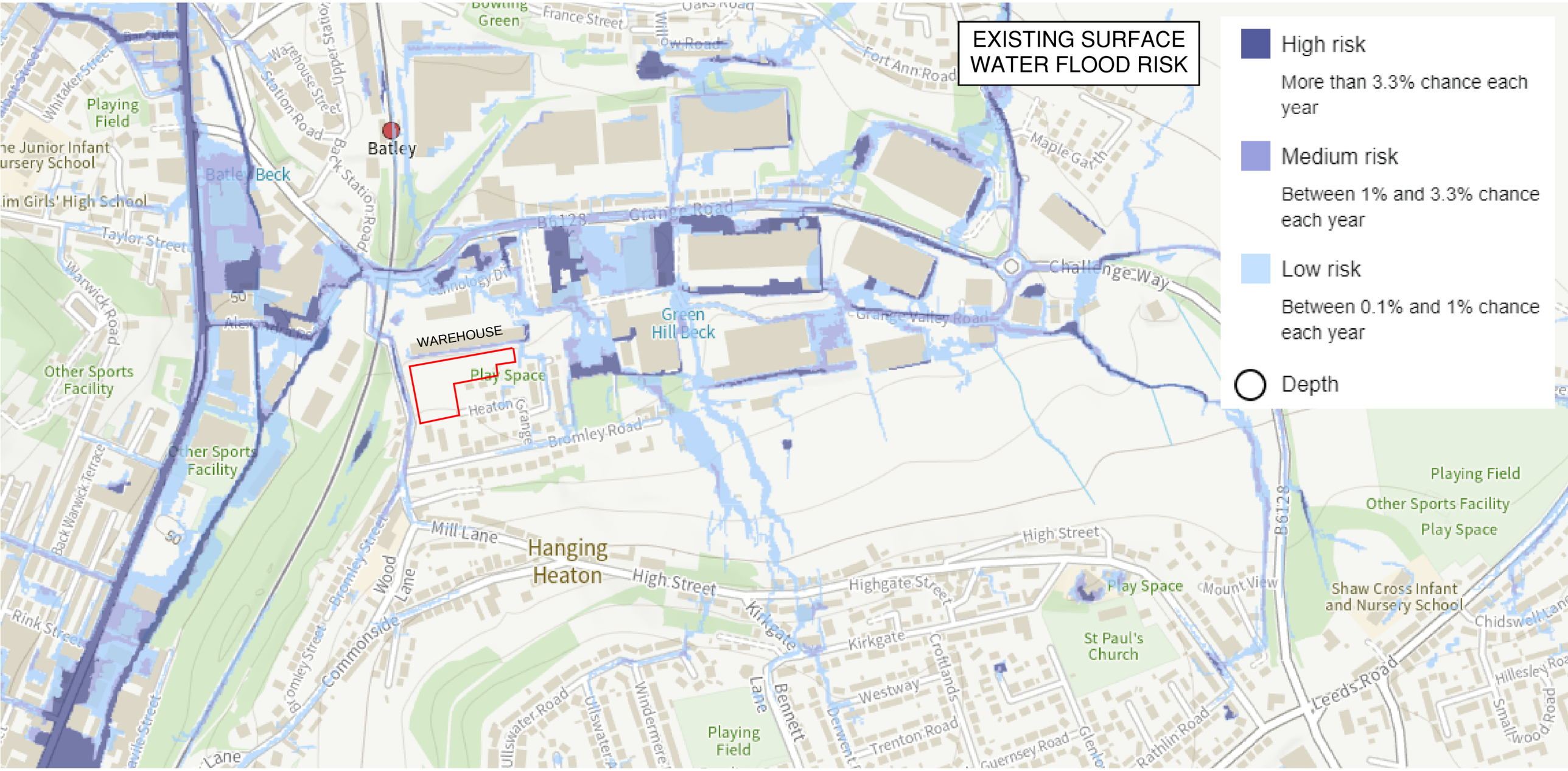
Title: CONSTRUCTION SURFACE WATER MANAGEMENT PLAN

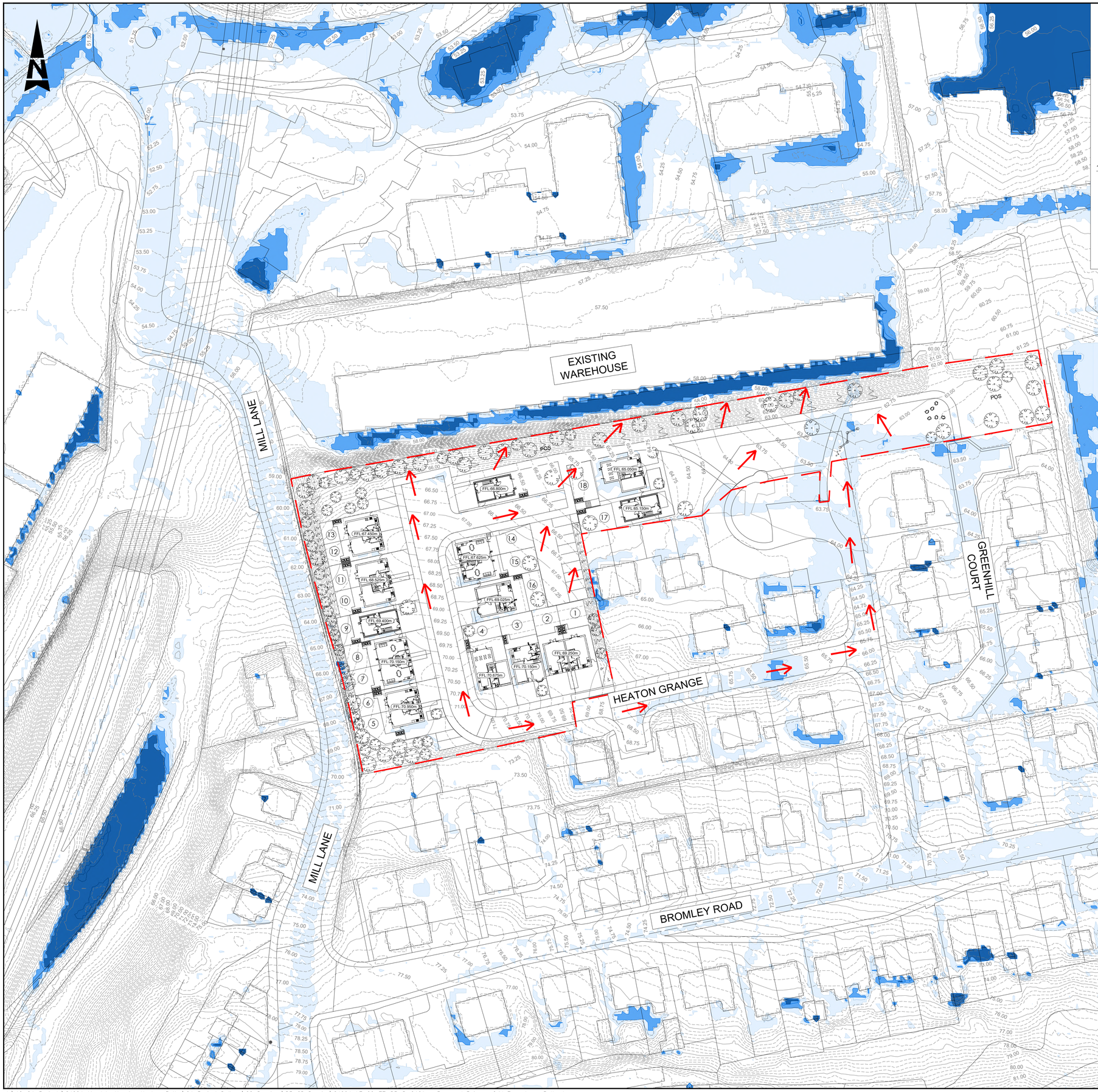
Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0150	P01

L:\12-24-Projects\24004-Mandale-Hanging Heaton, Batley\04_Project Delivery\02_Drawings\DR_2D Drawing\24004-LE-00-ZZ-DR-D-0150 - CSWMP.dwg

Appendix F – Overland Flow Analysis


EXISTING SURFACE WATER FLOOD RISK
High risk
More than 3.3% chance each year
Medium risk
Between 1% and 3.3% chance each year
Low risk
Between 0.1% and 1% chance each year
Depth
WAREHOUSE
Batley
Batley Beck
Green Hill Beck
Hanging Heaton
Bowling Green
France Street
Willow Road
Oaks Road
Fort Ann Road
Maple Garth
Challenge Way
Grange Road
B6128
Grange Valley Road
Station Road
Back Station Road
Upper Station Road
Whitaker Street
Playing Field
Taylor Street
Warwick Road
Back Warwick Terrace
Other Sports Facility
Play Space
Heaton Grange
Bromley Road
Bromley Street
Mill Lane
Commonside
Wood Lane
High Street
Highgate Street
Kirkgate
Lane
Bennett
Westway
Croftlands
Trenton Road
Guernsey Road
Rathlin Road
St Paul's Church
Mount View
Shaw Cross Infant and Nursery School
Leeds Road
Chidswell Lane
Hillesley Road
Smallwood Road
Ullswater Road
Windermere
Rink Street
Lane



RAIN ON GRID NOTES

1. FFL'S ARE A MINIMUM 150mm ABOVE SURROUNDING GROUND LEVELS.
2. A PROPOSED SURFACE WAS CREATED WITH THE BUILDING LEVEL SET AT THE PROPOSED FFL LEVEL. THIS SURFACE WAS COMBINED WITH TOPOGRAPHIC & LIDAR DATA TO CREATE A PROPOSED COMPOSITE SURFACE.
3. A **1:100** YEAR 60 MINUTE RAINFALL EVENT WAS APPLIED TO THE SURFACE, WHICH ASSUMES THERE IS NO UNDERGROUND DRAINAGE PRESENT. THE SIMULATION WAS RAN IN 'INFOWORKS ICM' WHICH HAS A 'MAXIMA' FUNCTION, WHICH DISPLAYS THE HIGHEST WATER DEPTH AT EACH $1m^2$ GRID, AT ANY POINT OF THE STORM (ANALYSED AT 5 MINUTE INTERVALS).

1:100 YEAR RAIN ON GRID KEY

- 0.025 - 0.150m WATER DEPTH
- 0.150 - 0.300m WATER DEPTH
- 0.300 - 1.000m WATER DEPTH
- EXCEEDANCE FLOW DIRECTION

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
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GENERAL KEY:

- LAND OWNERSHIP BOUNDARY
- MAJOR CONTOUR (1.0m)
- MINOR CONTOUR (0.25m)

DRAWING TO BE READ IN CONJUNCTION WITH THE DRAINAGE TECHNICAL NOTE & ALL SUDS DETAILS

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Project: HANGING HEATON BATLEY

Title: PROPOSED GROUND M100 RAIN ON GRID - EXCEEDANCE ROUTE

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L:\12-24-Projects\24004-Mandale-Hanging Heaton, Batley\04_Project Delivery\02_Drawings\DR_2D Drawing\24004-LE-00-ZZ-DR-D-0161 - Proposed Rain on Grid Exceedance Paths.dwg

Appendix G – Access & Maintenance

GENERAL KEY:

PHASE 1 - LAND OWNERSHIP SITE BOUNDARY

PHASE 2 - LAND OWNERSHIP SITE BOUNDARY

SOFTSCAPE

EXISTING DRAINAGE KEY:

EXISTING PUBLIC SW SEWER & MANHOLE

PROPOSED DRAINAGE:

PROPOSED SW SEWER & MANHOLE
(H INDICATES HYDROBRAKE)
(S INDICATES SILT TRAP)

PROPOSED SW SEWER & GULLY
YG INDICATES YARD GULLY

POLYSTORM ATTENUATION CRATES

POLYSTORM INSPECT CELL WITH
TUNNEL & ACCESS TURRET (PSM4)

ACCESS:

CARRIAGEWAY

FOOTWAY / RESTRICTED ACCESS

SILT TRAPS TO BE CLEANED:

HYDROBRAKE / SILT TRAP WITH SUMP

GULLY WITH SUMP

SUDS MAINTENANACE TO BE CARRIED OUT IN ACCORDANCE WITH THE SCHEDULE IN THE 'SUDS MAINTENANCE & MANAGEMENT PLAN'.

GENERAL NOTES:

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.
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N

POS

POLYSTORM ACCESS TURRET. REFER TO DETAILS.

POLYSTORM ATTEN CRATES
CL:64.851 - 63.613
INVERT LVL:62.250
AREA:325m² DEPTH:0.8m
ATTEN VOL:247m³ (95% POROSITY)

2.5l/s HYDROBRAKE
(75mm ORIFICE)
SHE-0075-2500-1000-2500

POLYSTORM INSPECT CELLS. REFER TO DETAILS.

PROPOSED SURFACE WATER FLOWS TO DISCHARGE INTO THE SURFACE WATER PUBLIC SEWER VIA SADDLE. INVERT LEVEL TBC.

EXACT EXISTING PLAYGROUND TIE IN LOCATION TBC BY LANDSCAPE ARCHITECT

Playground

HEATON GRANGE

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S2	FOR INFORMATION		26.06.24		WF
P01	FIRST ISSUE	MF	26.06.24	WF	WF

Stat Purpose of Issue — Date — Auth

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Client: Mandale Homes

Project: HANGING HEATON
BATLEY

Title: DRAINAGE ACCESS & MAINTENANCE PLAN

Sheet Size	Original Scale	Designed/Drawn	Checked	Authorised
A1	1:250	MF Date 26.06.24	WF Date 26.06.24	WF Date 26.06.24

Status	Drawing Number	Rev
S2	24004-LE-00-ZZ-DR-D-0151	P01

L:\12-24-Projects\24004-Mandale-Hanging Heaton, Batley\04_Project Delivery\02_Drawings\DR_2D Drawing\24004-LE-00-ZZ-DR-D-0151 - Drainage Maintenance & Access Plan.dwg

Attenuation Tank Site Inspection Log	
Site Name / Location	Heaton Grange, Batley
Maintenance Responsibility	Mandale Developments
Date:	
Weather Conditions (circle all that are applicable); Wet / Dry / Windy / Calm	

Activity	Frequency	Tick if Activity Carried Out	Comments
Remove debris from the catchment surface	Monthly		
Remove sediment from upstream silt trap and downstream hydrobrake manholes	Annually		
CCTV survey inside of the tank to check for sediment build-up and remove if necessary	Annually		
Inspection of Inlets / Outlets and repair where necessary	Annually		

Observations	Tick if Observed		Comments
Visible pollutants		**Foul water (sewage)**	
		Grey water (detergent odour & Frothy)	
		Other	**Detail:**
Blockage to inlet / Outlet			
Sediment Build Up			
Damage to Tank			

Attenuation Tank Photograph Log	
Photo Description	**Photo Reference**
Silt trap manhole	
Hydrobrake manhole	
CCTV Data	
General surface condition	
Additional Work Undertaken / Other Comments	
Supervisor Name:	Supervisor Signature:

Ancillary Drainage Log	
Site Name / Location	Heaton Grange, Batley
Maintenance Responsibility	Mandale Developments
Date:	
Weather Conditions (circle all that are applicable); Wet / Dry / Windy / Calm	

Activity	Frequency	Tick if Activity Carried Out	Comments
Check road gully pots and outlets for debris/blockages	Quarterly		
Check manhole covers are secure/safe	Quarterly		
Check Catch-pit manholes are cleared of excessive silt/debris	Quarterly		
CCTV inspection of drainage pipes.	Yearly		

Supervisor Name:	Supervisor Signature: