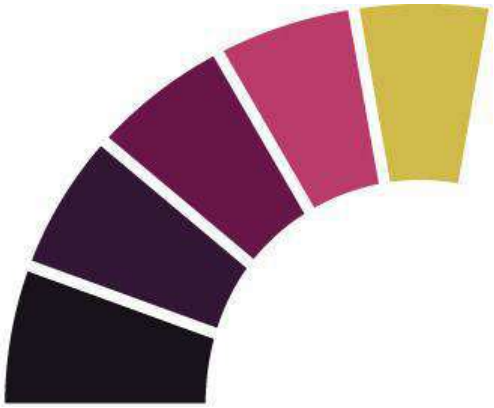
DRAINAGE & FLOOD RISK STATEMENT

Factory No 2
Symphony Group
Grimethorpe

Reference	**5161-JPG-XX-XX-RP-D-0620-S2-P01**
Date	**November 2019**
Version	**P01**

5 John Charles Way
LEEDS
LS12 6QA

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CONTENTS

Confidentiality Statement

Document History

1.0 Introduction 1

2.0 The Site 2

3.0 Existing Drainage and Sewer Network 2

4.0 Development Proposals 2

5.0 Flood Risk Assessment 3

5.1 Flooding from Surface Water 3
5.2 Flooding from Groundwater 3
5.3 Flooding from Sewers 4
5.4 Flooding from Reservoirs, Canals and Other Artificial Sources 4

6.0 Surface and Foul Water Drainage 5

6.1 Sustainable Urban Drainage Systems (SuDS) 5
6.2 Surface Water Drainage 5
6.3 Foul Water Drainage 6

7.0 Conclusions 7

APPENDICES

Appendix A Site Location Plan and Aerial Photograph

Appendix B Topographic Survey

Appendix C Drainage Record Plans and Yorkshire Water Correspondence

Appendix D Proposed Site Layout Plan

Appendix E Environment Agency Mapping

Appendix F Barnsley Council Correspondence

Appendix G Preliminary Surface Water Storage Assessment

CONFIDENTIALITY STATEMENT

This report is addressed to and may be relied upon by the following:

Symphony Group Limited
Pen Hill Estate
Park Spring Rd
Grimethorpe
BARNSLEY
S72 7EZ

This report has been prepared for the sole use and reliance of the above named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of JPG (Leeds) Limited. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

DOCUMENT HISTORY

Rev	Date	Revision Details	Status	Author(s)	Approved
P01	27.11.2019	First Issue	Information	MDP	

1.0 INTRODUCTION

JPG (Leeds) Limited has been instructed by Symphony Group Limited to prepare a Drainage and Flood Risk Statement for a proposed factory development for land at Park Springs Road, Grimethorpe, Barnsley.

The report will review the drainage and flood risk issues associated with the proposed development and recommend any mitigation which should take place as part of the development.

This document is prepared in accordance with the requirements of and in response to the Planning Practice Guidance & National Planning Policy Framework (NPPF) which states that those proposing particular developments are responsible for:

- Providing an assessment of whether any proposed development is likely to be affected by flooding and whether it will increase the flood risk elsewhere and of the measures proposed to deal with these effects and risks; and
- Satisfying the local planning authority that any flood risk to the development or additional risk arising from the proposal will be successfully managed with the minimum environmental effect, to ensure that the site can be developed and occupied safely.

NPPF defines flood zones as follows:

- Zone 1 – Low Probability – less than 1 in 1000 annual probability (< 0.1%) of river or sea flooding in any year.
- Zone 2 – Medium Probability – between a 1 in 100 and 1 in 1000 annual probability (1% - 0.1%) of river flooding or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year.
- Zone 3a – High Probability – 1 in 100 or greater annual probability (> 1%) of river flooding or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- Zone 3b – Functional Floodplain – 1 in 20 or greater annual probability (5%) of river flooding in any year. This is land on which water has to flow or be stored in times of flood.

A Flood Risk Assessment is required for all sites in excess of 1 ha within Zone 1 and all sites within Zones 2 and 3.

2.0 THE SITE

The site is located to the east of Park Springs Road, Grimethorpe, approximately 6 km north east of Barnsley town centre.

The approximate centre of the site is located at NGR 440262 408532.

The development site is located adjacent to an existing factory and covers an area of approximately 7.1 ha. To the north of the site are further development areas and the existing factory building is to the south. To the east is a development area and open land and wind turbine to the west.

Levels range from 43.5m on the western boundary to 39.0m on the eastern boundary where it meets the existing access road.

A topographic survey is provided in Appendix B.

3.0 EXISTING DRAINAGE AND SEWER NETWORK

JPG drainage record plans are provided in Appendix C and these indicate the following drainage infrastructure in close proximity to the site:

- A gravity surface water system installed as part of the original factory development.
- A 900 mm surface water tail in the south eastern corner of the site, noted for 'future development' with a catchment of 5.7 ha.
- A gravity foul system installed as part of the original factory development.
- A 150 mm foul water tail in the south eastern corner of the site, noted for 'future development'.

Grimethorpe Dike is located approximately 220m east of the site.

4.0 DEVELOPMENT PROPOSALS

It is proposed to re-develop to provide a factory and associated hardstanding and parking areas. A layout plan has been provided showing the development; this is referenced below, and a copy is provided in Appendix D.

- Garnett Netherwood Architects, Symphony Group PLC, Factory No 2, External Works Plan. Drawing No. 1711 (P) P02, dated 30 September 2019.

5.0 FLOOD RISK ASSESSMENT

Publicly available information on flooding obtained from the Environment Agency and from their website database is provided in Appendix E.

The site is located within Flood Zone 1. Flood Zone 1 comprises land assessed as at a low risk of flooding from a watercourse and/or sea with less than a 1:1000 annual probability of river or sea flooding.

NPPF Technical Guidance states that commercial use is appropriate in Flood Zone 1.

NPPF Technical Guidance states that flood risk should be considered from all sources, including:

- Surface Water.
- Groundwater.
- Flooding from sewers.
- Flooding from reservoirs, canals and other artificial sources.

5.1 Flooding from Surface Water

Review of the Environment Agency Risk of Flooding from Surface Water mapping indicates a potential extreme event overland flow route through the north western part of the site. There are also minor areas of localised low risk surface water flooding elsewhere on the site, associated with low areas in the topography.

Overall flood risk from surface water/overland flow is low.

There is a risk of overland flows through the north western part of the site from extreme events. The proposed development layout takes into account the overland flow route and careful design of levels and external works in this area will ensure the route is maintained.

Refer to Appendix E for surface water flood risk mapping.

5.2 Flooding from Groundwater

The Barnsley Council Strategic Flood Risk Assessment (SFRA) Level 1 states that as part of the SFRA preparation…. *'the Coal Authority were consulted with respect to the possibility of flooding caused by the re-emergence of minewaters from the formerly very important South Yorkshire mining region following the cessation of minewater pumping. These discussions indicated that The Coal Authority have a comprehensive network of groundwater monitoring boreholes across South Yorkshire and, by working in partnership with the Environment Agency and other local coal mining interests are developing a strategic forward plan to manage minewater levels to minimise the risk of re-emerging minewaters causing both flooding and/or initiating water quality problems in the major Sherwood Sandstone water resource aquifer'.*

Maps provided by the Coal Authority that identify areas where minewaters could re-emerge indicate that six proposed development sites/areas could be affected, however the development site is not in an area that could be affected.

The risk of flooding from groundwater is considered low.

5.3 Flooding from Sewers

Flooding from sewers will follow the flow paths indicated on the surface water flooding maps. The potential flood route in the north western part of the site is from natural run-off from the area to the west.

Given the fact that surface water infrastructure was installed as part of the original factory development and sized to cater for this future development plot, flood risk from sewers is considered to be low.

5.4 Flooding from Reservoirs, Canals and Other Artificial Sources

The site is not in an area at risk from flooding from a major reservoir.

Flood risk from reservoirs, canals and artificial sources is low.

6.0 SURFACE AND FOUL WATER DRAINAGE

The proposed site drainage will consist of a separate surface and foul water drainage system.

The following summarises the requirements for the discharge of surface and foul water from the site.

6.1 Sustainable Urban Drainage Systems (SuDS)

The drainage system for original factory development included a SuDS detention basin located to the south of the existing factory which was designed to cater for contributing catchment areas from future development sites.

The proposed development site will drain into the existing surface water drainage system and detention basin. Sustainable Urban Drainage System (SuDS) may be used in conjunction with conventional drainage systems to improve water quality as well as manage surface water discharge. This should be considered at the detailed design stage of the project.

The following audit has been carried out relating to suitability of SUDS systems:

Drainage Method	Description/Suitability	Proposal/Feasibility
1. Infiltration.	Methods unlikely to be feasibly due to ground conditions.	Not applicable
2. Ponds and wetlands.	Existing detention basin sized to cater for this site.	Applicable
3. Infiltration Basins.	Unlikely to be suitable due ground conditions.	Not applicable
4. Detention Basins.	Existing detention basin sized to cater for this site.	Applicable
5. Swale.	Suitable to convey and treat run-off– subject to detailed design.	Applicable.
6. French/Filter drain.	May be used to convey water.	Applicable.
7. Pervious/Permeable Pavement.	May be utilised - subject to detailed design.	Applicable.
8. Geocellular Systems/Tank systems.	May be utilised – subject to detailed design.	Applicable.
9. Oversized pipes.	May be used as surface water attenuation.	Applicable.
10. Box culverts.	May be used as surface water attenuation.	Applicable.
11. Purpose designed tanks.	May be used as surface water attenuation.	Applicable.

6.2 Surface Water Drainage

The disposal of surface water shall be in accordance with the Requirement H3 of Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway/infiltration system, watercourse and public sewer in that priority order.

The existing surface water drainage system drains to Grimethorpe Dike via a detention basin with a restricted discharge.

Record drawings indicate that the original detention basin was designed for the 1 in 100-year event.

Analysis of the original factory development impermeable areas (including the future development catchments), further development and the current proposed development has been undertaken to assess the capacity of the existing attenuation basin with regard to the current proposed development.

The analysis shows that the existing detention basin has capacity for the existing impermeable areas and the proposed factory No 2 development.

Consultation has been undertaken with Barnsley Council as Lead Local Flood Authority. At the time of drafting this report, a consultation response had not been received.

A copy of the preliminary surface water assessment is provided in Appendix G.

The proposed on-site drainage system shall be designed in accordance with the requirements of Sewers for Adoption and national non-statutory technical SuDS standards and shall demonstrate that:

- No surcharge of pipes occurs in the 1 in 2-year rainfall event.
- No surface flooding occurs in 1 in 30-year rainfall event.
- No flooding to buildings and adjacent properties occurs in 1 in 100-year rainfall event (including an allowance of for the effects of future climate change), as defined in NPPF Technical Guidance.

6.3 Foul Water Drainage

The existing foul drainage system included a 150 mm stub pipe connection for the development site.

Yorkshire Water has confirmed that foul flows can connect to the existing private drainage system, which in turn connects to the public sewer system. Yorkshire Water's pre-development response is included in Appendix C.

7.0 CONCLUSIONS

This assessment has looked at the drainage and flood risk issues for a proposed factory development for land at Park Springs Road, Grimethorpe.

The site is in Flood Zone 1 and the risk of flooding from all sources is low. There is a risk of overland flow through the north western part of the site from extreme events. The proposed development layout takes into account the overland flow route and careful design of levels and external works in this area will ensure the route is maintained.

The drainage system for the original factory development included a SuDS detention pond located to the south of the existing factory which was designed to cater for contributing catchment areas from future development sites. Stub pipes have been provided on the existing surface water drainage system for future development.

Analysis of the existing impermeable areas and the current proposed development including an allowance for climate change has been undertaken. The analysis shows that the existing detention basin has capacity for the existing impermeable areas and the proposed Factory No 2 development.

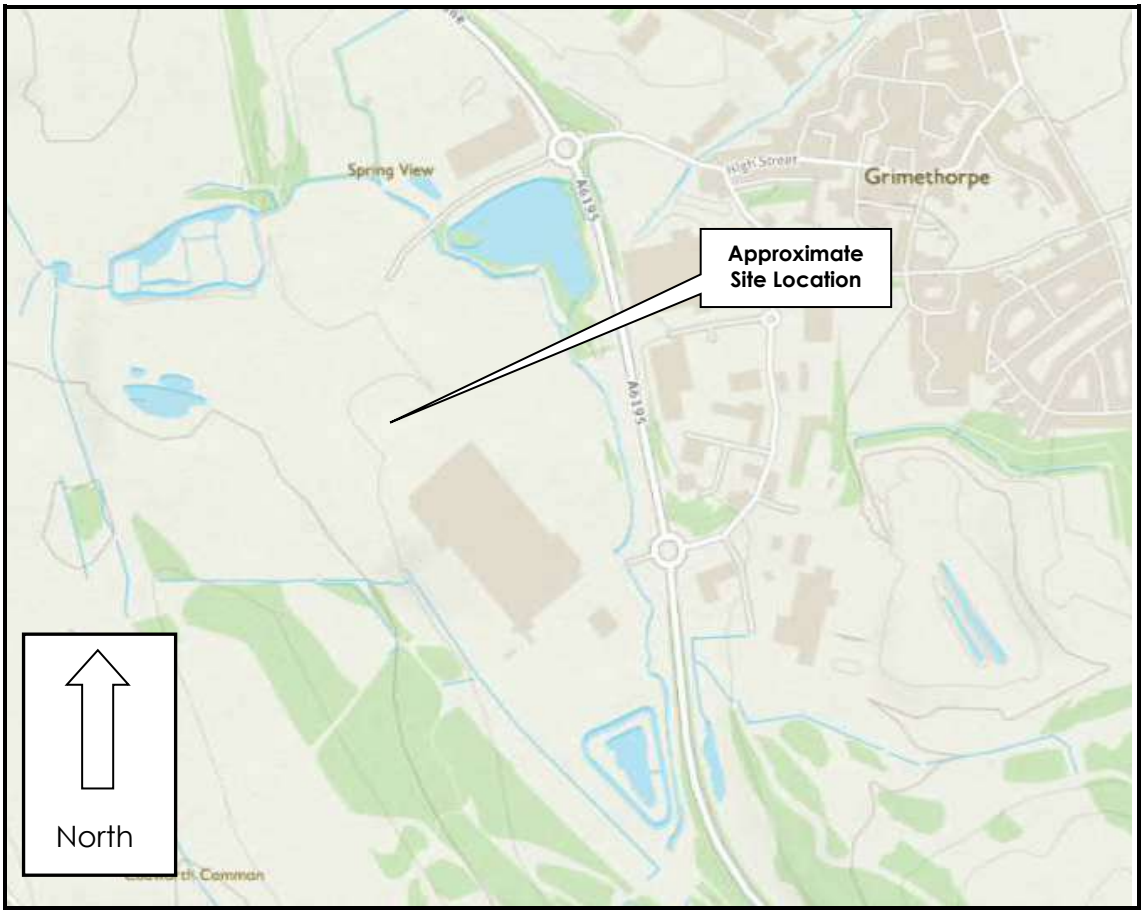
Foul flows will connect into the stub pipes provided on the existing foul gravity drainage system.



Matthew Potter
For and behalf of JPG (Leeds) Limited

November 2019

Appendix A Site Location Plan and Aerial Photograph

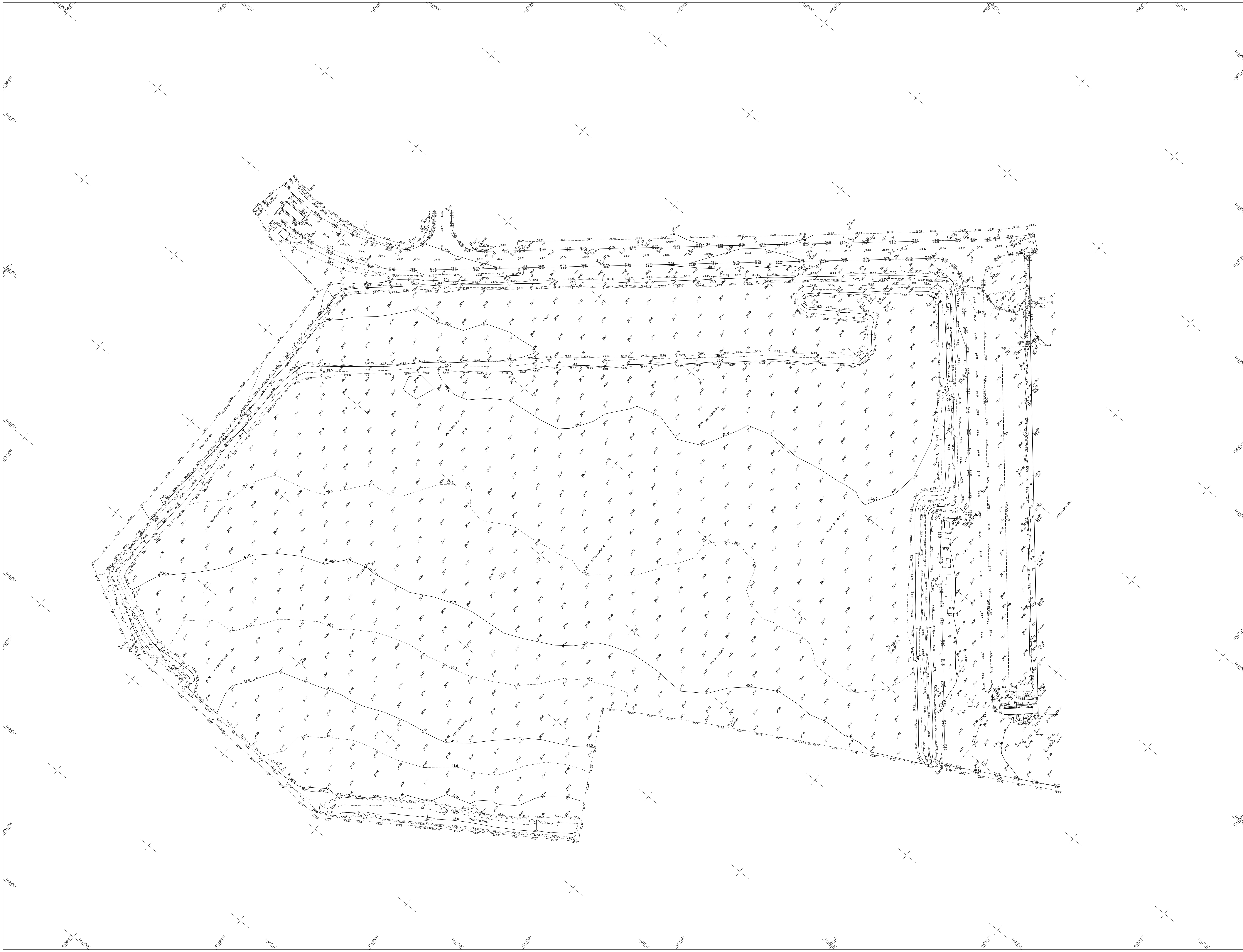


Site Location Plan	
Site	**Factory No 2, Grimethorpe**
Client	**Symphony Group Limited**
Job Number	**5161**
Scale	**NTS**



Aerial Photograph	
Site	**Factory No 2, Grimethorpe**
Client	**Symphony Group Limited**
Job Number	**5161**
Scale	**NTS**

Appendix B Topographic Survey



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Note:

The survey is plotted on a plane local Grid. Orientation to National Grid. All levels relate to Ordnance Datum, achieved using the OS National GPS Network.

Survey Control Markers established for Mapping purposes only and should not be used for Construction without the written approval of Survey Operations Ltd.

SURVEY STATIONS

Name	Easting	Northing	Height
SOD	440312.59	408360.80	38.48
SOE	440377.46	408419.77	39.02
SOF	440468.18	408495.45	38.46
SOG	440378.59	408599.81	38.78
TBM	440319.99	408397.93	41.00

STANDARD REFERENCE & ABBREVIATIONS

(AR)	Assumed Route	IL	Invert Level
AB	Air Brick	IP	Inlet Pipe
AV	Air Valve	KO	Kerb Outlet
B/W	Barbed Wire	LB	Letter Box
BAR	Barrier	LP	Lamp Post
BB	Belisha Beacon	MG	Multi-Girth
BH	Borehole	MH	Manhole
BL	Bed Level	MKR	Marker
BOL	Bollard	MP	Mooring Point
BS	Bus Stop	NP	Street Name Plate
BT Box	British Telecom Box	O/H	Overhead
BT	British Telecom IC	O/P	Open Paling
BRTW	Brick Retaining Wall	OE	Overhead Electric Wire
BW	Brick Wall	OP	Outfall Pipe
C/B	Close Boarded	OSBM	Ordnance Survey Bench Mark
C/I	Corrugated Iron	OT	Overhead Telecom Wire
C/P	Chestnut Paling	P/C	Post & Chain
CB	Control Box	P/R	Post & Rail
CBW	Concrete Block Wall	P/W	Post & Wire
CCTV	Closed Circuit TV	PAV	Paving
CD	Cable Duct	PB	Pillar Box
CEL	Cellar Light	PC	Pedestrian Crossing
CH/L	Chain Link	PP	Petrol Pump
CHY	Chimney	PT	Post or Pillar
CL	Cover Level	RE	Rodding Eye
CM	Cable Marker	RS	Road Sign
COL	Column	RTW	Retaining Wall
CONC	Concrete	RWP	Rain Water Pipe
CP	Catch Pit	SAP	Sapling
CRTW	Concrete Retaining Wall	SL	Sump Level
CTV	Cable Television	SoL	Soffit Level
CUL	Culvert	SP	Sign Post
CW	Concrete Block Wall	SPL	Springing Level
DC	Drainage Channel	SRTW	Stone Retaining Wall
DPC	Damp Proof Course	SV	Stop Valve (unspecified)
DR	Drain	SVP	Soil Vent Pipe
DSW	Dry Stone Wall	SW	Stone Wall
ECP	Electricity Cable Pit	TAC	Tactile Paving
EIC	Electricity Inspection Cover	TB	Traffic Bollard
EJ	Expansion Joint	TBM	Temporary Bench Mark
EJB	Electricity Junction Box	TCB	Telephone Call Box
EL SUB STN	Electricity Sub Station	TFR	Taken From Records
EL	Eaves Level	TIE	Anchor Point (Masts/Poles)
ELB	Electricity Box	TL	Traffic Light
EP	Electricity Pole	TLB	Traffic Light Control Box
ER	Earth Rod	TM	Ticket Machine
ETL	Electricity Transmission Line	TMC	Tarmac
FB	Flower Bed	TP	Telecommunications Pole
FH	Fire Hydrant	TPIT	Trial Pit
FL	Floor Level	TS	Trash Screen
FP	Flagpole	U/C	Under Construction
G*.*	Girth (of tree)	U/G	Underground
G	Gulley	UTL	Unable to Lift (MH,IC etc)
GAB	Gabion	UTS	Unable to Survey
GIP	Gas Inlet Pipe	VDP	Vehicle Detector Pad
GMKR	Gas Marker	VP	Vent Pipe
GST	Gas Stop Tap (Domestic)	W/M	Wire Mesh
GSV	Gas Stop Valve (Mains)	WL	Water Level
HSE	Housing	WM	Water Meter
Ht	Height	WO	Wash Out
HV	High Voltage	WP	Waste Pipe
I/R	Iron Railing	WST	Water Stop Tap (domestic)
IC	Inspection Cover	WSV	Water Stop Valve (mains)

Smith Street, Skelmersdale, Lancs. WN8 8LN
Tel: 01695 725662 Fax: 01695 51816
Email: mail@survops.co.uk — www.survops.co.uk

Client
Garnett Netherwood Architects

Drawing Title
Topographical Survey of Land at:
Pen Hill Estate
Grimethorpe

Scale(s)	1:200	Surveyor	SB
Date	Nov 19	Drawn	OKS
Job Number	19J168	Checked	SO

Sheet Size & Drg Number & Revision
A0 19J168/001

Appendix C Drainage Record Plans and Yorkshire Water Correspondence

YorkshireWater

Mr T Morley
Egorum Limited
West Field House
Worsendale Road
Bishop Wilton
York
YO42 1SA

Yorkshire Water Services
Developer Services
Sewerage Technical Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax: (01274) 372 834

Email:
technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

Your Ref:
Our Ref: V019497

23rd November 2019

Dear Mr Morley,

Symphony Kitchens, Park Spring Road, Grimethorpe, Barnsley, S72 7EZ - Pre-Planning Sewerage-Enquiry-Residential T640251

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records.

The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months.

Foul Water

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

Foul water domestic waste can discharge to the onsite drainage that in turn drains to the public foul sewer network.

Foul water from kitchens and/or food preparation areas of any restaurants and/or canteens etc. must pass through a fat and grease trap of adequate design before any discharge to the public sewer network.

Surface Water

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

It is understood that the development will discharge surface water to watercourse next to the site. This appears to be the obvious place for surface water disposal (if SuDS are not viable). Please note Yorkshire Water cannot provide plans of culverted watercourses or highway drains. To obtain plans please contact the Lead Local Flood Authority for more details.

Surface water run-off from communal parking (greater than 800 sq metres or more than 50 car parking spaces) and hardstanding must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator. It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

Surface water run-off from areas of vehicular parking and/or hardstanding etc. must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator.

It is imperative, however that surface water run-off from the forecourt of petrol stations, areas used for the delivery of fuel, areas used for and immediately adjacent to vehicle washing facilities and/or other similar areas where detergent is likely to be used is not discharged to any public surface water sewer network. Surface water from such areas must pass through an oil, petrol and grit interceptor/separator of adequate design before discharge to the public foul or combined sewer network. A trade effluent consent - that may be conditional and, amongst other things, place a restriction on the rate of discharge to public sewer - may be required for such discharges. The developer is advised to contact Yorkshire Water's Industrial Waste Section (telephone 0345 1242424) about any such proposal.

It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

Other Observation

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply on line or obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0345 120 84 82.

Under the provisions of section 111 of the Water Industry Act 1991 it is unlawful to pass into any public sewer (or into any drain or private sewer communicating with the public sewer network) any items likely to cause damage to the public sewer network interfere with the free flow of its contents or affect the treatment and disposal of its contents. Amongst other things this includes fat, oil, nappies, bandages, syringes, medicines, sanitary towels and incontinence pants. Contravention of the provisions of section 111 is a criminal offence.

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Yorkshire Water's Trade Effluent team must be consulted in respect of any proposed trade effluent discharge to the public sewer.

All the above comments are based upon the information and records available at the present time and is subject to formal planning approval agreement. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith.

Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely

We are open Monday to Friday 0800 – 1700 We are closed Bank Holidays and Weekends	**Chris Roberts** **Sewerage Technical Team** **Developer Services** **Tel: 0345 1 20 84 82**

37.5m
MILEFIELD LANE
Play Area
FB
Factory
FB
North View
KINGSWAY
Factory
FERRY MOOR ROUNDABOUT
ESS
36.8m
HIGH STREET
38.8m
Surgery
Spring View
FERRY MOOR LANE
Drain
Track
Pond
FERRYMOOR WAY
Ferry Moor
Pond
A 6195
Drain
Garage
El Sub Sta
Shelters
Sewage Works
Tank
Sinks
ACORN WAY
Acorn Ph
Business
Countr
Factory
LONG ROYD
PARK SPRING ROAD
SPRING VALE ROAD
Ward Bdy
Def
FB
SPRING HILL ROAD
Grove Park
ESS
Factory
GRIMETHORPE COLLIERY ROUNDABOUT
CLAYBURN ROAD
ESS
Track
Drain
Dismantled Railway
Drain
Helipad
El Sub Sta
Sewage Ppg Sta
Balancing Pond
Drain
A 6195
Water
Water
Drain
Dismantled Railway
PARK SPRING ROAD
Track
Track
Ward Bdy
Track

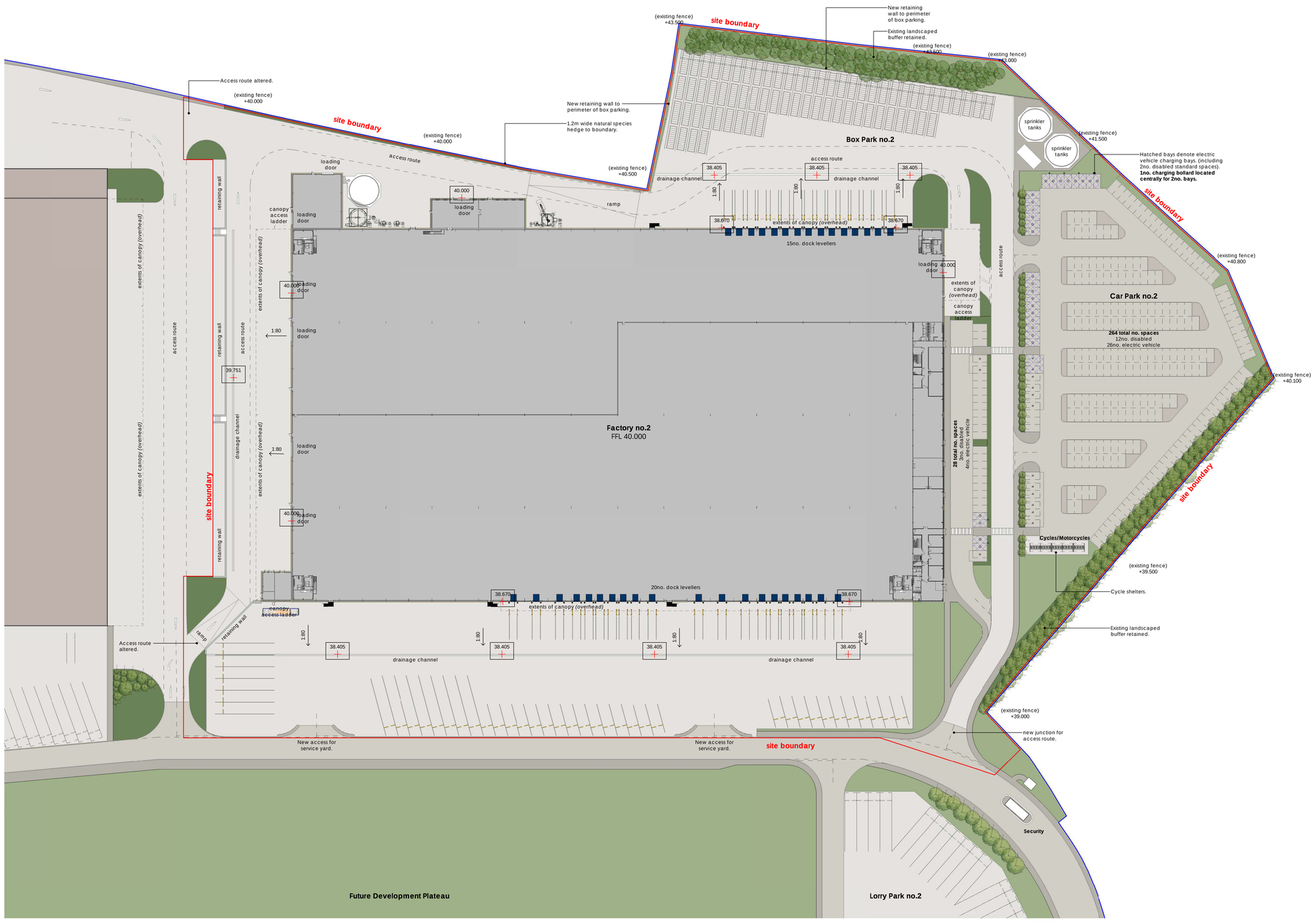
440395 : 408196	Map Name : SE3907NE
	Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : YorMap Advisor C ROBERTS Contact Tel : 87 2582
	Title
	Notes
Partial Key Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS	This plan is furnished as a general guide only and no warranty is to its correctness is given or implied. This plan must not be relied upon in the event of excavations or any other purposes due to the possible presence of sewers. No house or property connections are shown.
Date Req : 23/11/2019, 09:32:33	Date Gen : 23/11/2019, 09:32:59
Source : Sewer Network Enquiry	

UPN: Undefined Originator: C ROBERTS, YorMap, 87 2582

Appendix D Proposed Site Layout Plan

External Works GA Plan

1 : 500



GENERAL NOTES

This drawing is to be read in conjunction with all related drawings.
Do not scale from this drawing.
All dimensions must be checked and verified on site before commencing any work or producing shop drawings.
The originator should be notified immediately of any discrepancy.
This drawing is copyright and remains the property of Garnett Netherwood Architects Ltd.

NORTH

SCALE

0 5 10 15 20 25 50m 1:500

REVISIONS

Rev.	Date	Description	Issued By	Checked By
A	16.10.2019	Alterations made to external levels following initial comments from client.	NB	NDB
B	18.11.2019	Site layout updated following receipt of topo survey.	NB	NDB
C	19.11.2019	Alterations made to car parking following comments from client.	NB	NDB
D	19.11.2019	Alterations made to Car Park No.2 following comment from client.	NB	NDB

DRAWING NOTES:

External lighting design subject to local authority approval.

All finishes to be on suitable substrate to structural engineer's design and specification.

New kerbs to be standard pre-cast concrete road kerbs – note all roads within the site affected by the proposed works are private roads and not adopted.

PAVING TYPE 1
FOOTPATHS WITHIN SITE
Black tarmacadam footpaths. Paving to adoptable paving standards and on sub-base to engineer's specification and to local authority approval.

PAVING TYPE 2
CAR PARKING WITHIN SITE
Black tarmacadam roads to be retained and altered to suit new layout. Paving to adoptable paving standards and on sub-base to engineer's specification.

PAVING TYPE 3
SERVICE YARDS AND ACCESS ROUTE
New concrete service yard and access routes on sub-base to engineer's specification.

PAVING TYPE 4
CAR PARKING WITHIN SITE
Islands formed with block paving laid in 90° herringbone pattern. (**Specification: TBC**). Paving to adoptable paving standards and on sub-base to engineer's specification.

RETAINING WALL
Concrete retaining walls to structural engineer's design withgalvanised steel keyclamp railings.

EXTERNAL STEPS
New flight of steps between levels constructed from painted galvanised steel structure with paved steps to match proposed paving.

LANDSCAPING TYPE 1
New turfed areas as indicated and subject to local authority approval.

LANDSCAPING TYPE 2
New areas of soft landscaping to tie-in with existing site and subject to local authority approval.

TREES
New trees within site. Species TBC.

CYCLE PARKING PROVISIONS
SHORT TERM STAY
Galvanised steel Sheffield Hoops to Local Authority approval.

CYCLE PARKING PROVISIONS
LONG TERM STAY
Galvanised steel Broxap Castleford cycle shelters or equal approved to local authority approval.

Client
The Symphony Group plc.

Project No. 1711
Project Ashes Phase 3

Drawing Title
(P) PLANNING
External Works Plan

Scale @ A0 1 : 500
Date 30.09.2019
Drawn by NB
Checked by NDB

Drawing Status
for Information

Drawing Number (P) P02
Revision D

46 The Calls, Leeds, LS2 7EY
T. 0113 244 8858
www.garnettnetherwood.com
GNA GARNETT NETHERWOOD ARCHITECTS

Appendix E Environment Agency Mapping



Risk of Flooding from Surface Water mapping - Extent from Environment Agency website (November 2019)

Appendix F Barnsley Council Correspondence

(awaiting response at time of drafting report)

Appendix G Preliminary Surface Water Storage Assessment

Project				Status		
Park Springs Road, Grimethorpe				PRELIMINARY		
Calcs: By TAM Checked	Date 20-11-19	Project ref.	Calc no.	Sheet no.	Rev 0	
Title						
Surface Water Storage – Preliminary Calculations						

Grid ref 440262 408532

Design Parameters

M5-60 = 19.0

Ratio R = 0.369

Record drawings indicate that the original detention basin was designed for the 1 in 100 year event.

Analysis of the original factory development impermeable areas (including the future development catchments), further development and the current proposed development has been undertaken to assess the capacity of the existing attenuation basin, to allow for the current proposed development.

Original design

Factory and hardstanding	105395m^2
Future development	131800m^2
Total	237195m^2

Further development

Original factory and hardstanding	105395m^2
Parking, hardstanding and showroom	28846m^2
Total	134241m^2

With current proposed development

Existing impermeable areas	134241m^2
Proposed factory No 2	71368m^2
30% allowance for climate change on Factory no 2	21410m^2
Total	205609m^2

With 30% allowance for climate change for the current proposed Factory No 2, the total contributing impermeable area is still less than the original design allowance of 237195m^2 Therefore, the detention basin has sufficient capacity for the current proposed factory No 2 development, with 305 allowance for climate change.

Project				Status		
Park Springs Road, Grimethorpe				PRELIMINARY		
Calcs: By TAM Checked	Date 20-11-19	Project ref.	Calc no.	Sheet no.	Rev 0	
Title						
Surface Water Storage – Preliminary Calculations						

Check for Climate Change applied to Existing Design

The planning application is for factory No 2 and therefore climate change allowances cannot be applied retrospectively.

However, as a check for exceedance events, quick storage calculations have been undertaken for the existing total impermeable area with the proposed Factory No 2 for the 1 in 100 year + 30% climate change event, to assess the capacity of the existing detention basin.

Attenuation Calculation

Original design

Factory and hardstanding	105395m^2
Future development	131800m^2
Total	237195m^2

- Restricted rate 145 l/s
- 1:100 Year Return Period = circa 11,120 m^3 approx design of original basin.

With current proposed development

Existing impermeable areas	134241m^2
Proposed factory No 2	71368m^2
Total	205609m^2

- Restricted rate 145l/s as per the existing detention basin
- 1:100 Year Return Period (+30% cc) = circa 12,946m^3.

Area of existing detention basin at 1 in 100 year level = approx 20,052m^2

Increase in volume = 12946-11120 = 1826m^3, = approx 90mm increase in water level, leaving over 200mm in freeboard.

Project				Status		
Park Springs Road, Grimethorpe				PRELIMINARY		
Calcs: By TAM Checked	Date 20-11-19	Project ref.	Calc no.	Sheet no.	Rev 0	
Title **Surface Water Storage – Preliminary Calculations**						

Summary

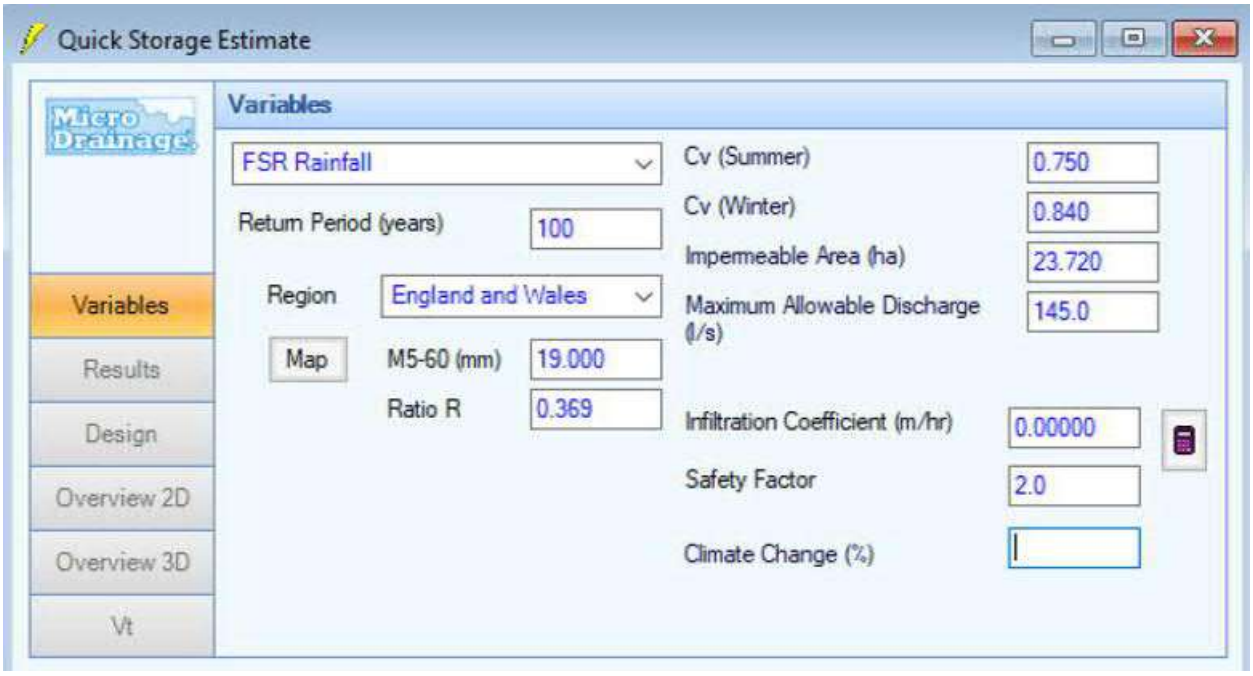
Assessment of existing impermeable areas and allowance for climate change on the proposed Factory No 2, confirms that the existing detention basin has sufficient capacity for the proposed development for the 1 in 100 year design storm.

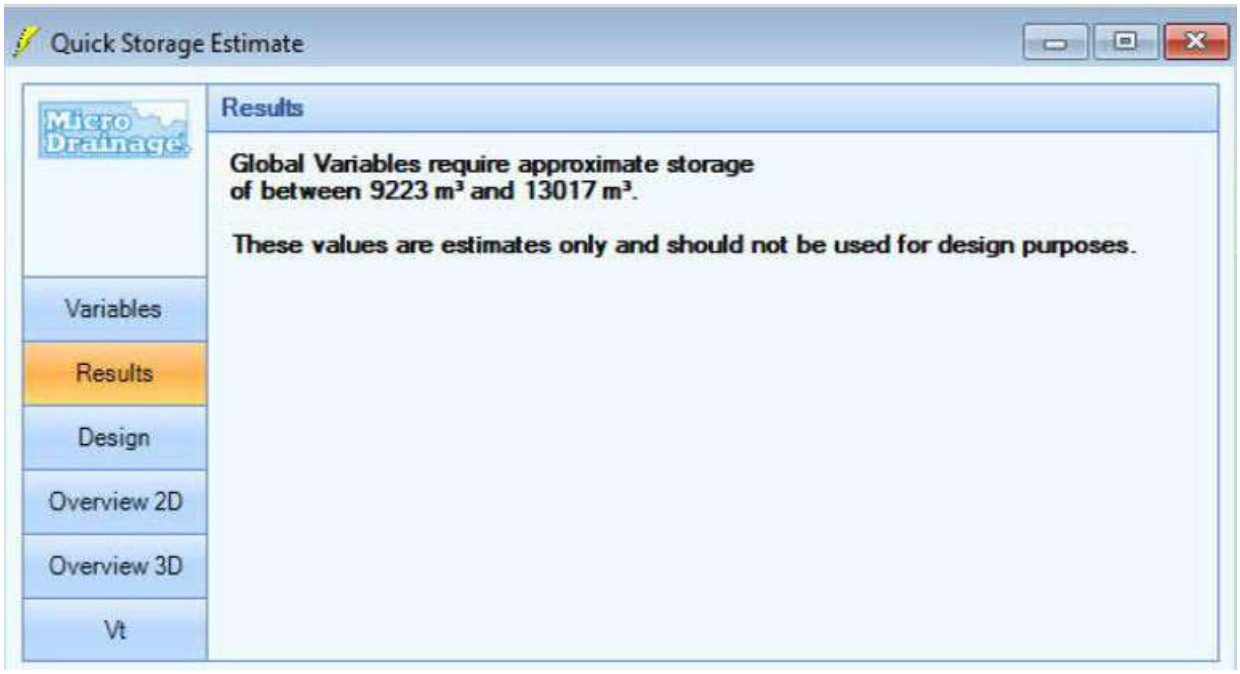
Applying climate change over the entire catchment as an assessment for exceedance events, confirms that the detention basin has sufficient capacity for the 1 in 100 year storm with a freeboard of approximately 200mm.

Any future development beyond Factory No 2 will require re-assessment of impermeable areas and the storage capacity of the detention basin and additional storage may be required depending on the extent of the development.

Project				Status	
Park Springs Road, Grimethorpe				PRELIMINARY	
Calcs: By TAM Checked	Date 20-11-19	Project ref.	Calc no.	Sheet no.	Rev 0
Title					
Surface Water Storage – Preliminary Calculations					

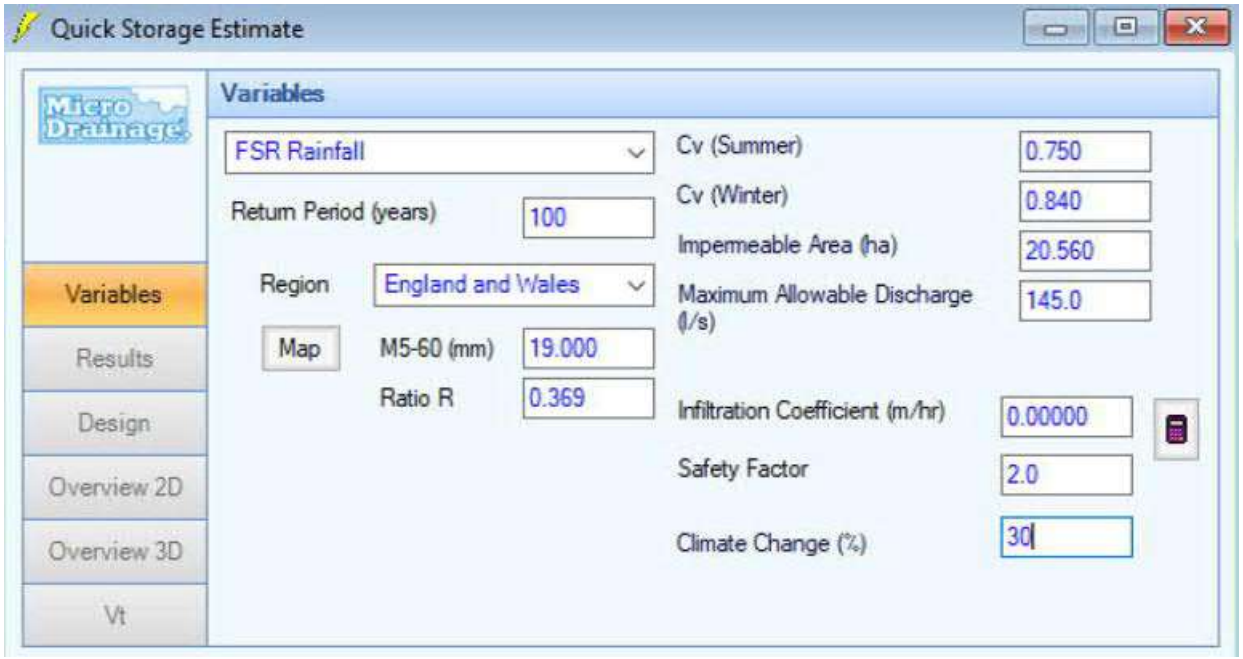
Surface Water Storage Estimate Original Design – 1 in 100 year

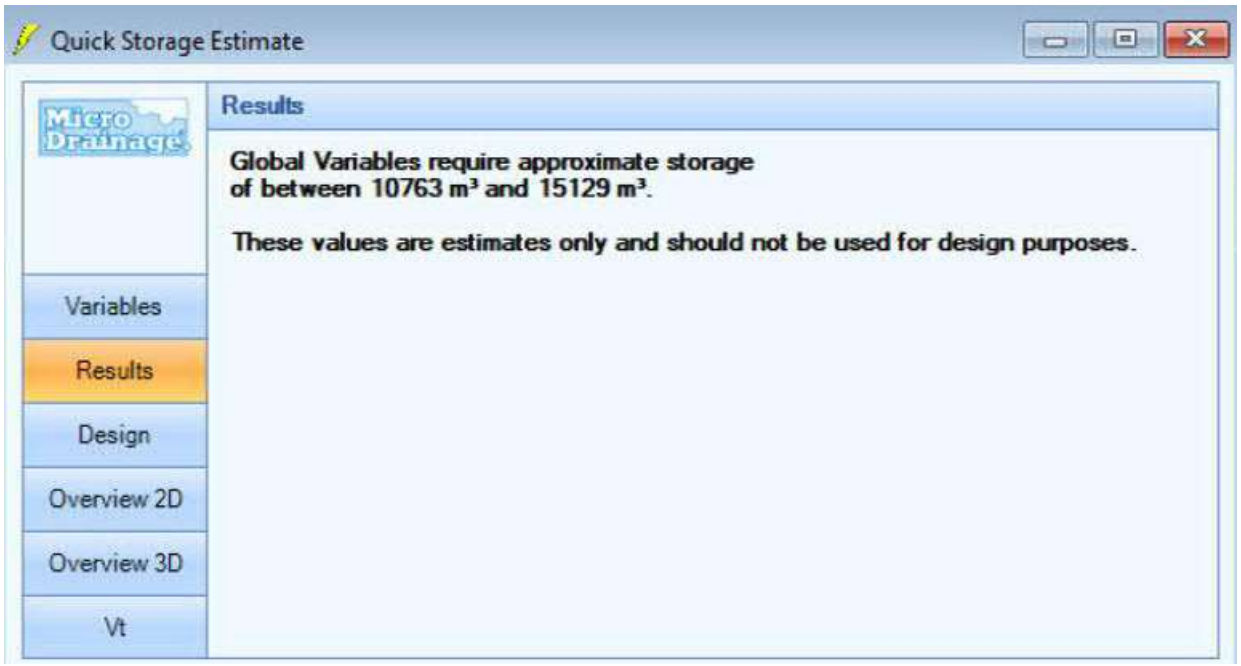




Project				Status	
Park Springs Road, Grimethorpe				PRELIMINARY	
Calcs: By TAM Checked	Date 20-11-19	Project ref.	Calc no.	Sheet no.	Rev 0
Title					
Surface Water Storage – Preliminary Calculations					

Surface Water Storage Estimate
Entire catchment with current proposed development Factory No 2
1 in 100 year plus climate change





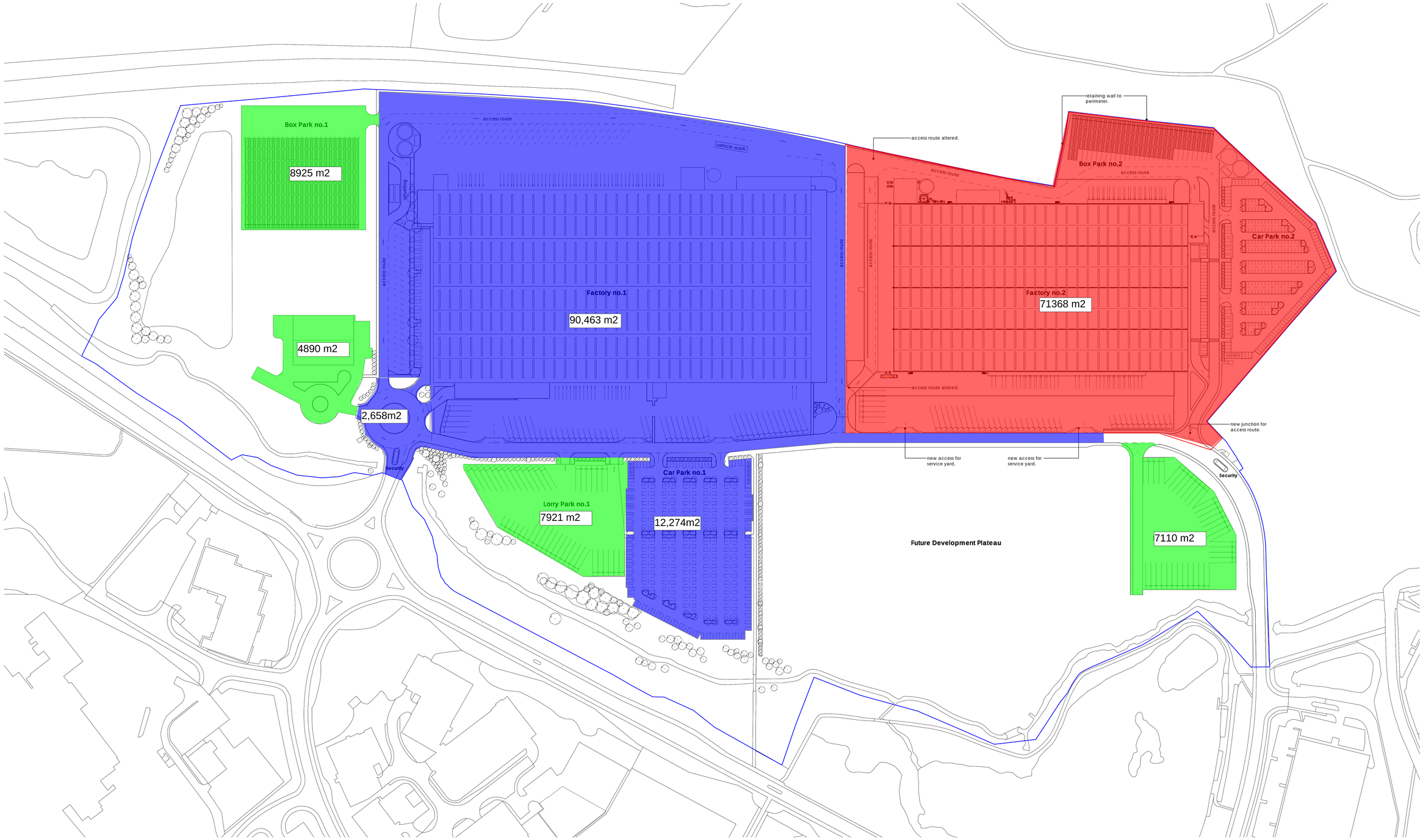
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NORTH

SCALE
0 10 20 30 40 50 100m 1:1000

REVISIONS
Rev. Date Description Issued By Checked By

Proposed Site Plan
1 : 1000



Impermeable area Assessment

Original design 10.54ha + 13.18ha future dev allownace = 23.72ha

Further development 2.88 ha

Existing = 10.54 + 2.88 = 13.42 ha

Impermeable area Assessment

Proposed Factory No 2 = 7.14 ha

Existing + Factory No 2 = 13.42 + 7.14 = 20.56 ha

Area Schedule:

Site Area:	71,100m²	(7.11Ha)
(red line boundary)		
GEA:	29,150m²	(313,770ft²)
GIA:		
Ground Floor	28,670m²	(308,604ft²)
First Floor	1,320m²	(14,209ft²)
Second Floor	960m²	(10,333ft²)
Total	**30,950m²**	**(333,146ft²)**

Parking Schedule:

Standard Spaces	284no.
Disabled Spaces	18no.
Total	**302no.**

Client
Symphony Group PLC.

Project No. Project
1711 Factory No. 2

Drawing Title
(P) PLANNING
Site Plan As Proposed

Scale @ A0 1 : 1000
Date 30.09.2019
Drawn by NB
Checked by NDB

Drawing Status
for Information

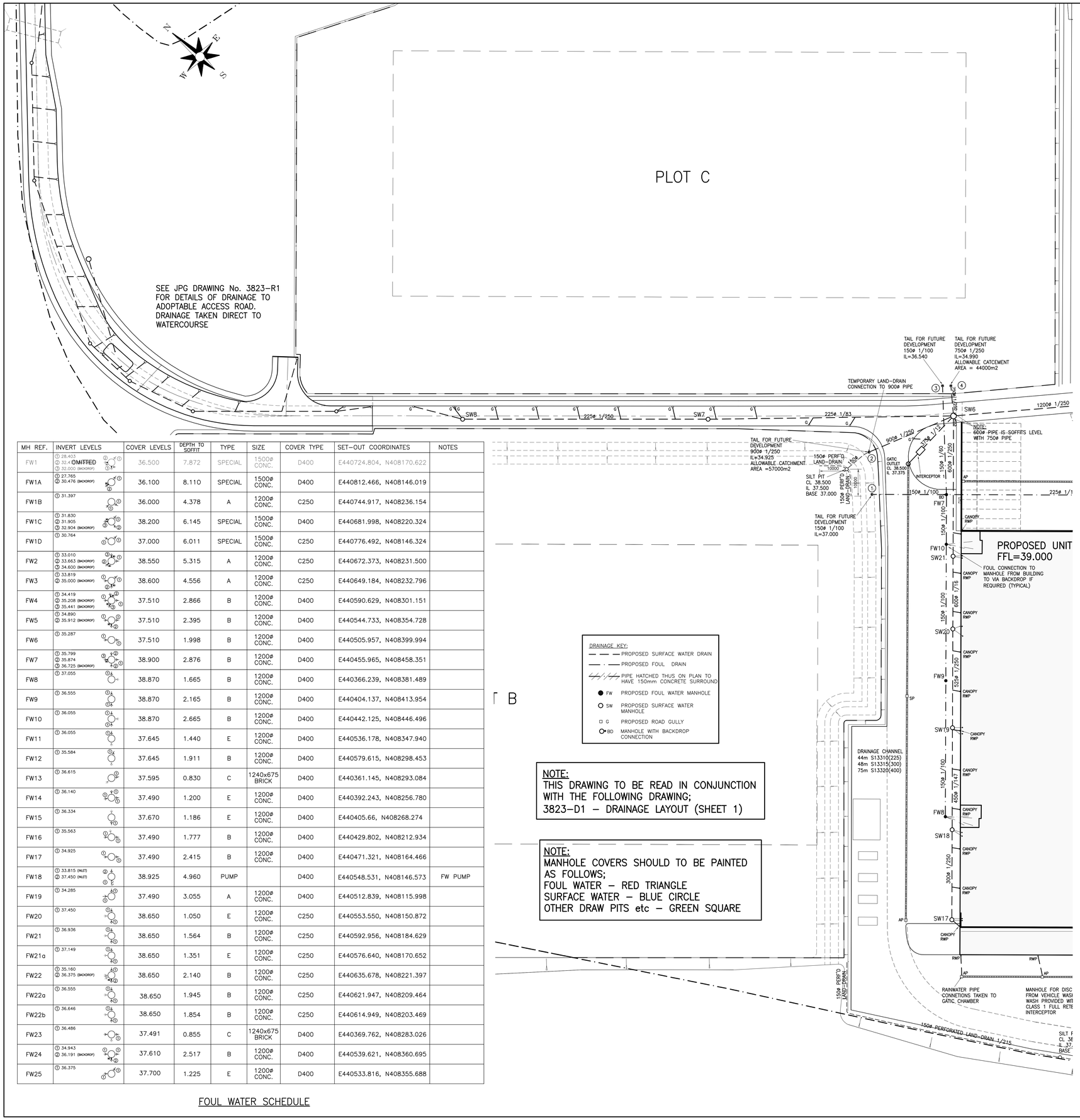
Drawing Number Revision
(P) P01

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GNA GARNETT NETHERWOOD ARCHITECTS

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N O T E S



MH REF.	INVERT LEVELS	COVER LEVELS	DEPTH TO SOFFIT	TYPE	SIZE	COVER TYPE	SET-OUT COORDINATES	NOTES
FW1	① 28.403 ② 32.400 ~~OMITTED~~ ③ 32.000 (BACKDROP)	36.500	7.872	SPECIAL	1500ø CONC.	D400	E440724.804, N408170.622	
FW1A	① 27.765 ② 30.476 (BACKDROP)	36.100	8.110	SPECIAL	1500ø CONC.	D400	E440812.466, N408146.019	
FW1B	① 31.397	36.000	4.378	A	1200ø CONC.	C250	E440744.917, N408236.154	
FW1C	① 31.830 ② 31.905 ③ 32.904 (BACKDROP)	38.200	6.145	SPECIAL	1500ø CONC.	D400	E440681.998, N408220.324	
FW1D	① 30.764	37.000	6.011	SPECIAL	1500ø CONC.	C250	E440776.492, N408146.324	
FW2	① 33.010 ② 33.663 (BACKDROP) ③ 34.600 (BACKDROP)	38.550	5.315	A	1200ø CONC.	C250	E440672.373, N408231.500	
FW3	① 33.819 ② 35.000 (BACKDROP)	38.600	4.556	A	1200ø CONC.	C250	E440649.184, N408232.796	
FW4	① 34.419 ② 35.208 (BACKDROP) ③ 35.441 (BACKDROP)	37.510	2.866	B	1200ø CONC.	D400	E440590.629, N408301.151	
FW5	① 34.890 ② 35.912 (BACKDROP)	37.510	2.395	B	1200ø CONC.	D400	E440544.733, N408354.728	
FW6	① 35.287	37.510	1.998	B	1200ø CONC.	D400	E440505.957, N408399.994	
FW7	① 35.799 ② 35.874 ③ 36.725 (BACKDROP)	38.900	2.876	B	1200ø CONC.	D400	E440455.965, N408458.351	
FW8	① 37.055	38.870	1.665	B	1200ø CONC.	D400	E440366.239, N408381.489	
FW9	① 36.555	38.870	2.165	B	1200ø CONC.	D400	E440404.137, N408413.954	
FW10	① 36.055	38.870	2.665	B	1200ø CONC.	D400	E440442.125, N408446.496	
FW11	① 36.055	37.645	1.440	E	1200ø CONC.	D400	E440536.178, N408347.940	
FW12	① 35.584	37.645	1.911	B	1200ø CONC.	D400	E440579.615, N408298.453	
FW13	① 36.615	37.595	0.830	C	1240x675 BRICK	D400	E440361.145, N408293.084	
FW14	① 36.140	37.490	1.200	E	1200ø CONC.	D400	E440392.243, N408256.780	
FW15	① 36.334	37.670	1.186	E	1200ø CONC.	D400	E440405.66, N408268.274	
FW16	① 35.563	37.490	1.777	B	1200ø CONC.	D400	E440429.802, N408212.934	
FW17	① 34.925	37.490	2.415	B	1200ø CONC.	D400	E440471.321, N408164.466	
FW18	① 33.815 (INLET) ② 37.450 (INLET)	38.925	4.960	PUMP		D400	E440548.531, N408146.573	FW PUMP
FW19	① 34.285	37.490	3.055	A	1200ø CONC.	D400	E440512.839, N408115.998	
FW20	① 37.450	38.650	1.050	E	1200ø CONC.	C250	E440553.550, N408150.872	
FW21	① 36.936	38.650	1.564	B	1200ø CONC.	C250	E440592.956, N408184.629	
FW21a	① 37.149	38.650	1.351	E	1200ø CONC.	C250	E440576.640, N408170.652	
FW22	① 35.160 ② 36.375 (BACKDROP)	38.650	2.140	B	1200ø CONC.	C250	E440635.678, N408221.397	
FW22a	① 36.555	38.650	1.945	B	1200ø CONC.	C250	E440621.947, N408209.464	
FW22b	① 36.646	38.650	1.854	B	1200ø CONC.	C250	E440614.949, N408203.469	
FW23	① 36.486	37.491	0.855	C	1240x675 BRICK	D400	E440369.762, N408283.026	
FW24	① 34.943 ② 36.191 (BACKDROP)	37.610	2.517	B	1200ø CONC.	D400	E440539.621, N408360.695	
FW25	① 36.375	37.700	1.225	E	1200ø CONC.	D400	E440533.816, N408355.688	

FOUL WATER SCHEDULE

MH REF.	INVERT LEVELS	COVER LEVELS	DEPTH TO SOFFIT	TYPE	SIZE	COVER TYPE	SET-OUT COORDINATES	NOTES
SW1	① 32.728 ② 32.878 ③ 33.478	36.500	2.422	B	2400ø CONC.	D400	E440735.197, N408163.151	
SW2	① 33.216 ② 33.816 ③ 34.266	38.375	3.959	A	2400ø CONC.	C250	E440680.014, N408227.224	
SW3	① 33.472 ② 34.297	38.190	3.518	A	2400ø CONC.	D400	E440651.017, N408284.596	
SW4	① 33.842	37.990	2.948	B	2400ø CONC.	D400	E440590.514, N408355.224	
SW5	① 34.208 ② 34.380	37.990	2.582	B	2400ø CONC.	D400	E440530.912, N408424.800	
SW6	① 34.496 ② 35.321 ③ 34.796 ④ 35.471 ⑤ 34.946	37.960	2.264	B	3000ø CONC.	D400	E440479.520, N408475.238	
SW7	① 36.540	38.830	2.065	B	1200ø CONC.	D400	E440419.834, N408542.602	
SW8	① 36.900	38.415	1.290	E	1200ø CONC.	D400	E440361.053, N408610.755	
SW9	① 33.975 ② 35.775 (BACKDROP)	38.375	3.800	A	1500ø CONC.	C250	E440668.945, N408217.789	
SW10	① 35.675 ② 36.810 (BACKDROP) ③ 37.075 (BACKDROP)	38.101	1.826	B	1500ø CONC.	D400	E440600.585, N408159.249	
SW11	① 36.027 ② 36.102	38.200	1.573	B	1500ø CONC.	C250	E440533.326, N408101.650	
SW12	① 35.900	38.675	2.175	B	1800ø CONC.	C250	E440635.638, N408224.484	DOUBLE OPEN GRATE COVER TYPE
SW12a	① 35.424 ② 35.799	38,650	2.626	B	1500ø CONC.	C250	E440645.147, N408225.073	
SW12b	① 36.335	37.610	1.050	E	1200ø CONC.	D400	E440586.596, N408293.423	
SW13	① 36.040 ② 36.115	38.675	2.035	B	1800ø CONC.	C250	E440608.982, N408201.649	DOUBLE OPEN GRATE COVER TYPE
SW14	① 36.259 ② 36.334	38.675	1.891	B	1800ø CONC.	C250	E440581.566, N408178.164	DOUBLE OPEN GRATE COVER TYPE
SW15	① 36.478 ② 36.628	38.675	1.747	B	1800ø CONC.	C250	E440554.150, N408154.678	DOUBLE OPEN GRATE COVER TYPE
SW16	① 36.760	38.350	1.290	E	1800ø CONC.	D400	E440529.039, N408133.167	DOUBLE OPEN GRATE COVER TYPE
SW17	① 37.650	38.900	0.950	C	1240x675 BRICK	C250	E440339.181, N408355.018	DOUBLE OPEN GRATE COVER TYPE
SW18	① 37.372 ② 37.522	38.950	1.128	E	1800ø CONC.	D400	E440364.242, N408376.486	DOUBLE OPEN GRATE COVER TYPE
SW19	① 37.042 ② 37.117	38.950	1.383	B	1800ø CONC.	D400	E440392.646, N408400.818	DOUBLE OPEN GRATE COVER TYPE
SW20	① 36.823 ② 36.898	38.950	1.527	B	1800ø CONC.	D400	E440420.174, N408424.400	DOUBLE OPEN GRATE COVER TYPE
SW21	① 35.152	38.950	3.198	A	1800ø CONC.	D400	E440440.432, N408441.753	DOUBLE OPEN GRATE COVER TYPE
SW22	① 35.915 ② 36.950 (BACKDROP)	38.200	1.621	B	1500ø CONC.	C250	E440554.760, N408120.005	

SURFACE WATER SCHEDULE

ALL OPEN GRATE COVERS TO HAVE A MINIMUM CLEAR WATERWAY AREA OF 0.32m2

TAIL No	SETTING OUT COORDINATES				
	DESIGN COORDINATES	AS-BUILT COORDINATES	DESIGN INV LEVEL	AS-BUILT INV LEVEL	DRAIN TYPE
①	E440438.006, N408479.316		37.000		FOUL WATER
②	E440448.986, N408490.138		34.925		SURFACE WATER
③	E440485.477, N408485.742		37.125		FOUL WATER
④	E440487.458, N408483.409		34.990		SURFACE WATER
⑤	E440623.598, N408343.872		35.738		FOUL WATER
⑥	E440664.615, N408296.257		34.369		SURFACE WATER
⑦	E440678.190, N408237.179		33.743		FOUL WATER
⑧	E440683.994, N408230.652		34.316		SURFACE WATER
⑨	E440674.739, N408193.424		32.185		FOUL WATER
⑩	E440731.292, N408164.224		33.490		SURFACE WATER

PIPE TAIL SETTING OUT COORDINATES

(THE CONTRACTORS IS TO PROVIDE AS BUILT TAIL INVERT LEVELS AND COORDINATES)

NOTE:
1. ALL COVER LEVELS TO MANHOLES ARE APPROXIMATE & ARE TO SUIT ARCHITECTS FINISHED LEVEL SCHEME.
2. GATIC CHANNELS MANUFACTURED & SUPPLIED BY ELKINGTON GATIC-TEL 01304 203545. MANUFACTURERS TO DESIGN/SIZE UP CHANNELS. ALTERNATIVE CHANNELS MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER.
3. REFER TO ARCHITECT AND/OR ROOFING CONTRACTORS DRAWINGS FOR ALL ABOVE GROUND DRAINAGE DETAILS. ALL INTERNAL DRAINAGE TO ARCHITECTS DETAILS.

INTERCEPTORS:		
INTERCEPTOR No.	CATCHMENT AREA (m^2)	TYPE
①	6200 m^2 (SW)	BYPASS
②	41160 m^2 (SW)	BYPASS
③	13500 m^2 (SW)	BYPASS
④	CAPACITY 7500 LITRES	FULL RETENTION

NOTES
ALL INTERCEPTORS TO HAVE 100mm STEP ACROSS INVERTS
ALL INTERCEPTORS TO BE CLASS 1, BYPASS TYPE.
PROVIDE TURRET & FILTER EXTRACTION DEVICE EXTENSION TO ALLOW ACCESS FROM FINISHED GROUND LEVEL.
INTERCEPTORS TO BE PROVIDED WITH AN OIL LEVEL MONITOR & ALARM, CONTRACTOR TO PROVIDE ELECTRIC SUPPLY TO MONITOR

INTERCEPTOR TABLE

REV	DESCRIPTION	DATE	BY
M	FW24 & FW25 ADDED	14.06.07	AF
L	MANHOLE FW23 ADDED TO DRAINAGE SCHEDULE	25.05.07	AF
K	FW1 OMITTED, FW1B – FW1D ADDED	29.01.07	AF
J	LAND-DRAIN TO PLOT B REVISED	22.01.07	AF
H	MANHOLES FW21, FW21a, FW22a REPOSITIONED TO SUIT INTERNAL FW DRAINAGE, SW17-SW21 REPOSITIONED TO SUIT SIPHONIC DOWNPIPE POSITIONS	14.12.06	AF
G	INVERT LEVELS TO FW4, FW5, FW7 REVISED	04.12.06	AF
F	MANHOLES SW12-SW15, SW18-SW22 FW9, FW10, FW13, FW15 FW20-FW22 MOVED, MANHOLES FW21a, FW22a, FW22b, SW12a & SW12b ADDED	03.11.06	AF
E	PC RINGS SIZES SW12-SW21 & FW1 REVISED, FW1A ADDED	18.10.06	AF
D	COVER LEVELS TO YARDS REVISED, MH SETOUT REVISED TO SUIT ARCH'T SET OUT PLAN (29.09.06). INTERCEPTOR TABLE UPDATED SW17 MANHOLE TYPE REVISED	07.10.06	AF
C	DRAINAGE DETAILS ADDED AROUND BUILDING	02.10.06	RPB
B	COVER LEVELS UPDATED TO SUIT LATEST LEVELS SCHEME	28.09.06	RAK
A	SETOUT COORDS REVISED GULLIES ADDED TO ACCESS ROAD	21.09.06	AMF

Job Title
PROJECT ASHES
GRIMETHORPE

Drawing Title.
DRAINAGE LAYOUT
(SHEET 2 OF 2)

Architect
GARNETT NETHERWOOD ARCHITECTS

JORDAN PRITCHARD GORMAN
Consulting Civil & Structural Engineers
2 Gemini Business Park
Sheepscar Way Leeds LS7 3JB
Tel 0113 262 8818 Fax 262 6075

Checked	Date	Scale	Drawn
	04.09.06	1:500	AMF

Drawing No 3823-D2 M

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N O T E S

DRAINAGE KEY:

- PROPOSED SURFACE WATER DRAIN
- PROPOSED FOUL DRAIN
- FW PROPOSED FOUL WATER MANHOLE
- SW PROPOSED SURFACE WATER MANHOLE
- G PROPOSED ROAD GULLY
- BD MANHOLE WITH BACKDROP CONNECTION

PROPOSED UNIT
FFL=39.000

PLOT D

NOTE:
THIS DRAWING TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWING;
3823–D2 – DRAINAGE LAYOUT (SHEET 2)

NOTE:
MANHOLE COVERS SHOULD TO BE PAINTED AS FOLLOWS;
FOUL WATER – RED TRIANGLE
SURFACE WATER – BLUE CIRCLE
OTHER DRAW PITS etc – GREEN SQUARE

REV	DESCRIPTION	DATE	BY
N	TRANSPORT POD MOVED, FW24 & FW25 ADDED	14.06.07	AF
M	MANHOLE FW23 ADDED TO PLAN	25.05.07	AF
L	GULLY ADDED ADJACENT SPRINKLER TANK	20.02.07	AF
K	ADDITIONAL SUMP PUMP ADDED TO OFFICE, CANOPY RWP's REVISED TO GRID 37, FOUL DRAIN FW1 OMITTED FW18 – FW10 ADDED	29.01.07	AF
J	SUMP PUMP ADDED TO SERVER ROOM, MANHOLE COVER COLOUR NOTES ADDED	12.01.07	AF
H	MANHOLES FW21, FW21a, FW22a REPOSITIONED TO SUIT INTERNAL FW DRAINAGE, SW17–SW21 REPOSITIONED TO SUIT SIPHONIC DOWNPIPE POSITIONS	14.12.06	AF
G	INVERT LEVELS TO FW4, FW5, FW7 & FUTURE TAIL REVISED	04.12.06	AF
F	GATIC CHANNEL REFERENCES ADDED	28.11.06	RAK
E	MANHOLES SW12–SW15, SW18–SW22 FW9, FW10, FW13, FW15 FW20–FW22 MOVED, MANHOLES FW21a, FW22a, FW22b, SW12a & SW12b ADDED CANOPY RWP's ADDED	03.11.06	AF
D	NOTES ADDED TO DRAIN RUN FW1–FW1A	18.10.06	AMF
C	FUEL AREA DRAINAGE UPDATED GATICS ADDED TO OFFICE CAR PARK/YARD, FW18 (PUMP) MOVED, RUN FW20–FW3 SIZE CHANGED, LAND–DRAINAGE ADDED	07.10.06	AMF
B	DRAINAGE DETAILS ADDED AROUND BUILDING	02.10.06	RPB
A	GULLIES ADDED TO ROUNDABOUT	27.09.06	AMF

Job Title
PROJECT ASHES
GRIMETHORPE

Drawing Title.
DRAINAGE LAYOUT
(SHEET 1 OF 2)

Architect
GARNETT NETHERWOOD ARCHITECTS

JORDAN PRITCHARD GORMAN
Consulting Civil & Structural Engineers
2 Gemini Business Park
Sheepscar Way Leeds LS7 3JB
Tel 0113 262 8818 Fax 262 6075

Checked	Date	Scale	Drawn
	04.09.06	1:500	AMF

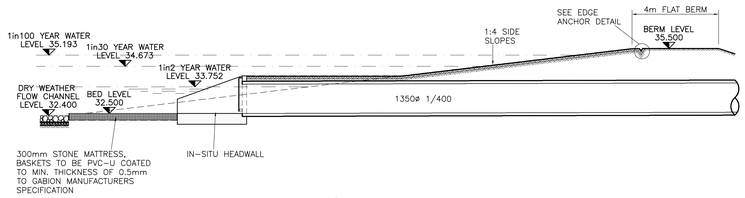
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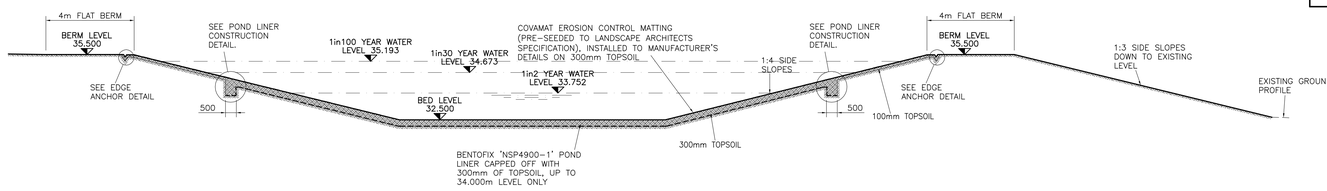
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N O T E S



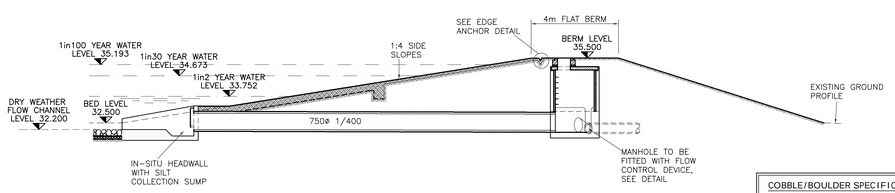
SECTION THRO' POND INLET (SECTION A–A)

(1:100)



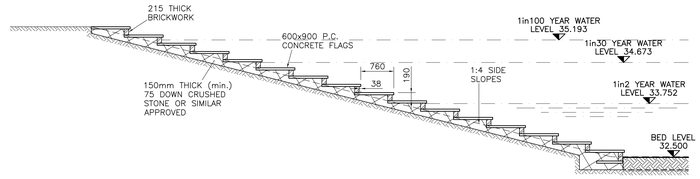
SECTION THRO' ATTENUATION POND (SECTION B–B)

(1:100)



SECTION THRO' POND OUTLET & FLOW CONTROL (SECTION C–C)

(1:100)



SECTION THRO' ACCESS STAIRS TO POND

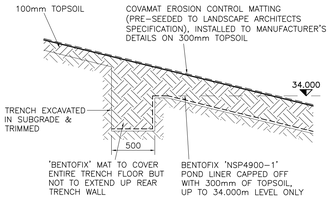
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COBBLE/BOULDER SPECIFICATION TO DRY WEATHER CHANNEL

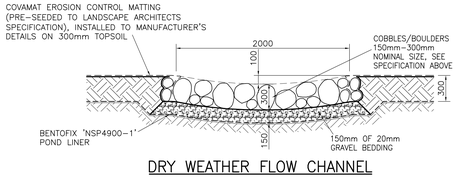
1. STONE MUST BE HARD, DENSE AND HOMOGENEOUS AND FREE FROM FOREIGN MATTER. IT MUST BE RESISTANT TO THE EFFECTS OF FROST AND HAVE A NOMINAL SIZE OF 150mm - 300mm.

2. THE STONE SHALL BE HAND PACKED AND WELL RAMMED LEAVING THE MINIMUM OF VOIDS AND PLACED TO THE CORRECT BATTER PROFILE.

3. THE FOLLOWING PROPERTIES SHALL APPLY TO THE STONE:-
(i) AGGREGATE CRUSHING VALUE NOT GREATER THAN 26%.
(ii) MAGNESIUM SULPHATE SOUNDNESS NOT GREATER THAN 26%.
(iii) WATER ABSORPTION VALUE NOT GREATER THAN 3%.

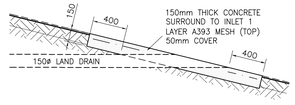


POND LINER CONSTRUCTION DETAIL.



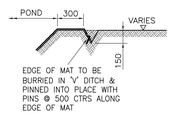
DRY WEATHER FLOW CHANNEL

(1:25)



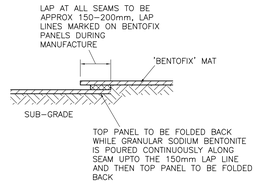
LAND DRAIN INLET INTO POND

(1:25)

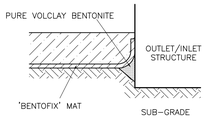


EDGE ANCHOR DETAIL

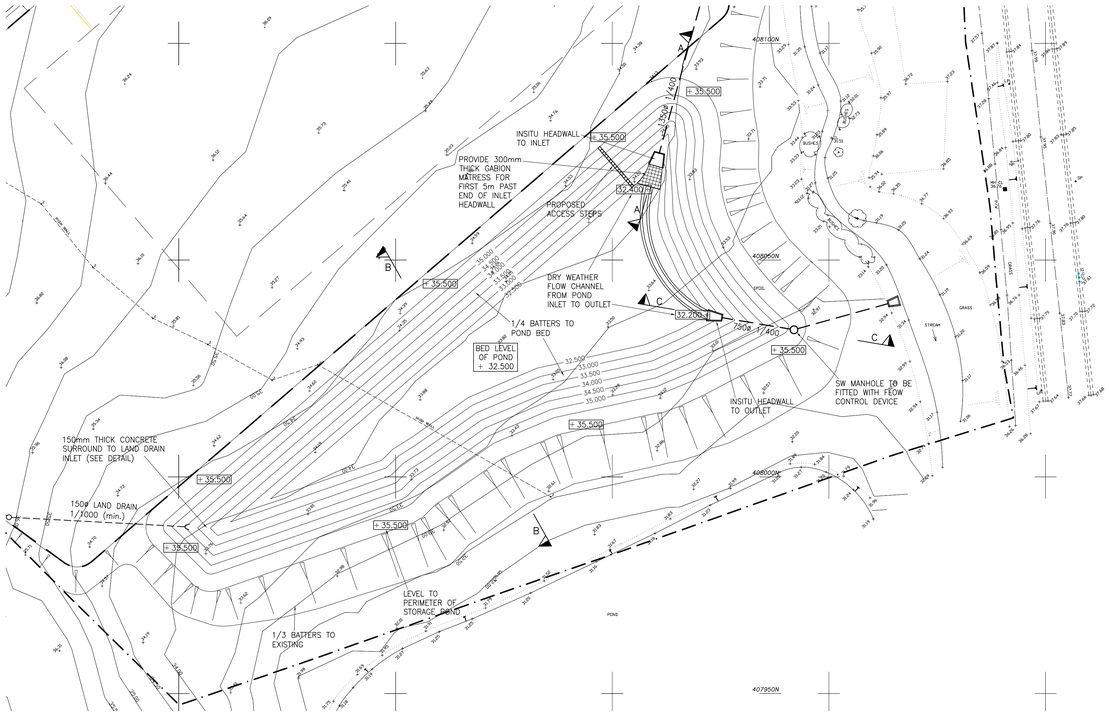
(1:25)



BENTOFIX' LAP DETAIL.



'BENTOFIX' SEALING DETAIL TO CONCRETE STRUCTURES



ATTENUATION POND PLAN

(1:500)

REV	DESCRIPTION	DATE	BY	CK
B	POSITION OF POND ACCESS STEPS REVISED	09.02.07	RK	AMF
A	STONE SPEC TO DRY WEATHER CHANNEL ADDED	01.02.06	RAK	AMF

Job Title
PROJECT ASHES
GRIMETHORPE

Drawing Title.
POND LAYOUT & DETAILS

Architect
GARNETT NETHERWOOD ARCHITECTS

JORDAN PRITCHARD GORMAN
Consulting Civil & Structural Engineers
2 Gemini Business Park
Sheepscar Way Leeds LS7 3JB
Tel 0113 262 8816 Fax 262 6075

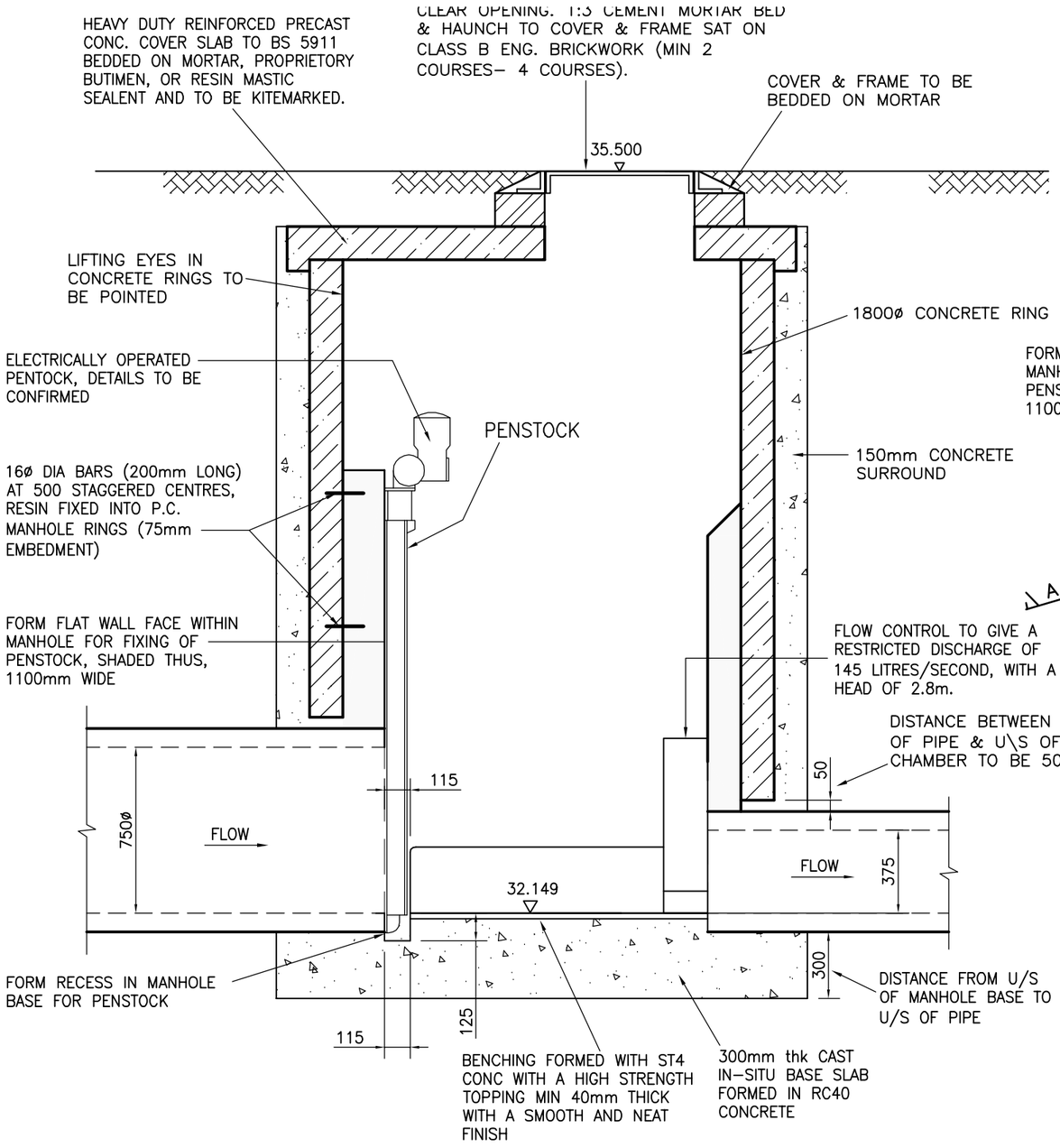
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	28.09.06	1:500 1:25, 1:10	RPB

Drawing No 3823–D4 B

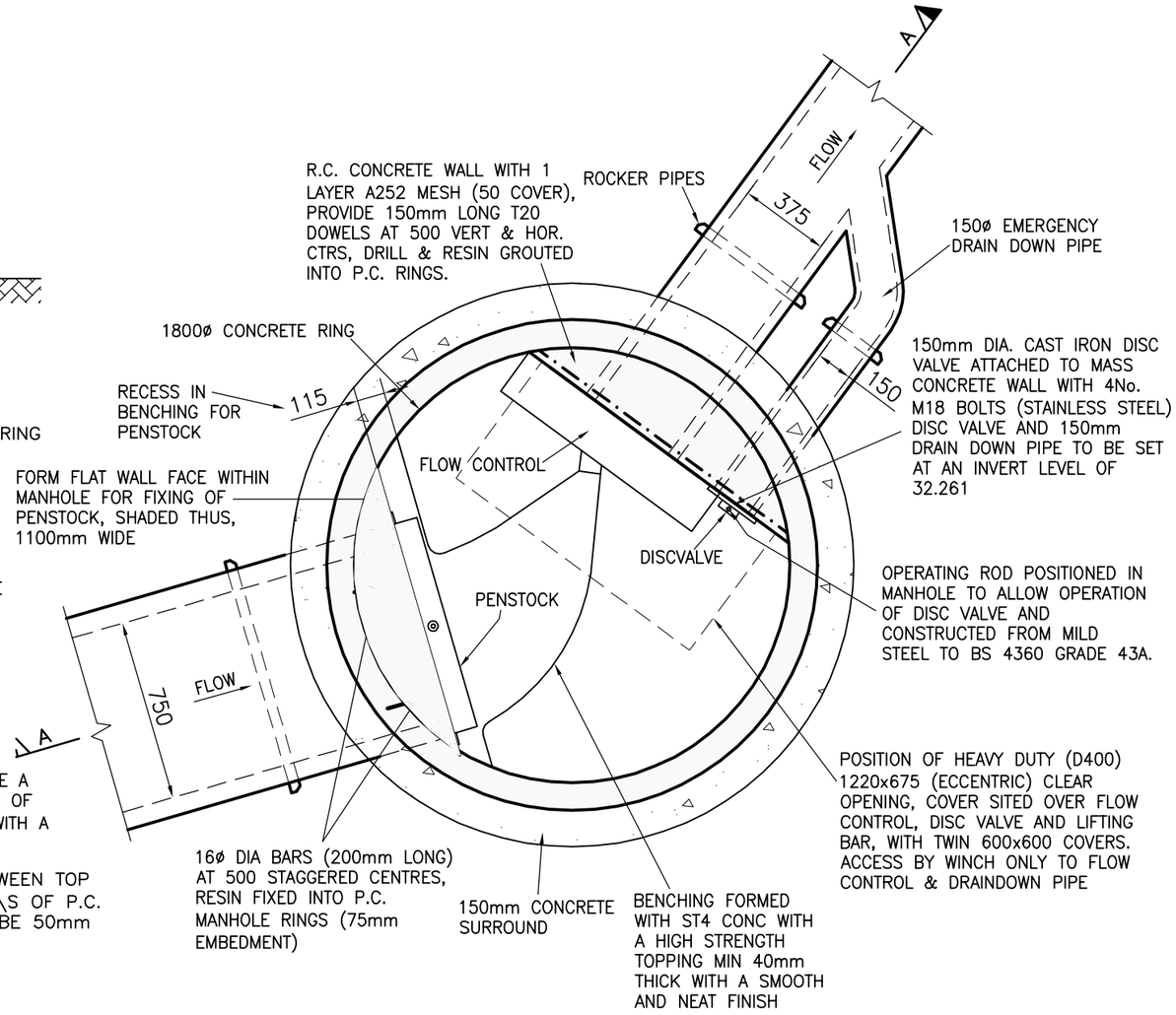
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N O T E S



SECTION A–A.



PLAN ON CHAMBER.

NOTE:
PENSTOCK TO BE AUTOMATICALLY CLOSED WHEN FIRE ALARM TO MAIN BUILDING IS ACTIVATED

REV	DESCRIPTION	DATE	BY	CK
A	PENSTOCK ADDED	30.10.06	RK	AMF

JORDAN PRITCHARD GORMAN
Consulting Civil & Structural Engineers
2 Gemini Business Park
Sheepscar Way Leeds LS7 3JB
Tel 0113 262 8818 Fax 262 6075

Job Title: PROJECT ASHES GRIMETHORPE	Drawing Title.: G.A OF SURFACE WATER FLOW CONTROL CHAMBER	Architect: GARNETT NETHERWOOD	Checked	Date: 24.10.06	Scale: 1:25 / Drawn: RAK
			Drawing No	3823–D8	A

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