



DRAINAGE ASSESSMENT REPORT

POCKLINGTON SERVICE AREA, BROADHELM CLOSE, POCKLINGTON

Commissioned by The Broadhelm Venture

Report 22183-L-RP-001-R2

8th April 2024

DRAINAGE ASSESSMENT REPORT

POCKLINGTON SERVICE AREA, BROADHELM CLOSE, POCKLINGTON

CONTENTS

- 1 INTRODUCTION
- 2 SITE LOCATION
- 3 PROPOSED DEVELOPMENT
- 4 FLOOD RISK
- 5 SURFACE WATER DRAINAGE STRATEGY
- 6 SUSTAINABLE DRAINAGE SYSTEMS
- 7 CONCLUSIONS
- 8 LIMITATIONS

APPENDIX A	Site Location Plan
APPENDIX B	Proposed Development Plan
APPENDIX C	Topographical Survey
APPENDIX D	Site Wide Flood Risk Assessment and Drainage Strategy
APPENDIX E	Proposed Drainage Strategy Drawing

ISSUE LOG FOR REPORT 22183-L-RP-001

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R0	13 th March 2024	FIRST ISSUE	MP	RA
R1	28 th March 2024	SECOND ISSUE	MKN	MP
R2	8 th April 2024	UPDATED SITE BOUNDARY	MP	RA

Issuing office: Mason Clark (LEEDS). Refer to final page for full office details.

1 INTRODUCTION

Mason Clark Associates (MCA) has been commissioned by The Broadhelm Venture to compile a drainage assessment report for the development of Pocklington Service Area, Broadhelm Close, Pocklington.

This report has been carried out to provide an initial feasibility assessment for suitable methods for discharge of surface water from the proposed development.

2 SITE LOCATION

The site is greenfield and is located on Hodsow Lane Pocklington, York, YO42 1AD. It is situated on a business park with an existing balancing pond and the A1079 to the south, fast-food restaurants to the west, Hodsow Lane to the north and a former cut-through road to the east, which has since been closed off with bollards and gates.

The approximate coordinates are (479285, 447850) and a site location plan is shown in Appendix A.

3 PROPOSED DEVELOPMENT

With an approximate site area of 0.662ha, the proposed development is for a carpark and access road from Hodsow Lane, with 12 electrical car charging spaces and 51 regular parking spaces. A proposed development plan is shown in Appendix B.

A topographical survey was carried out in November 2023 by LSTC surveys and is shown in Appendix C. The site levels are shown to fall from north-east to south-west with approximate levels of 23.94mAOD to 23.37mAOD.

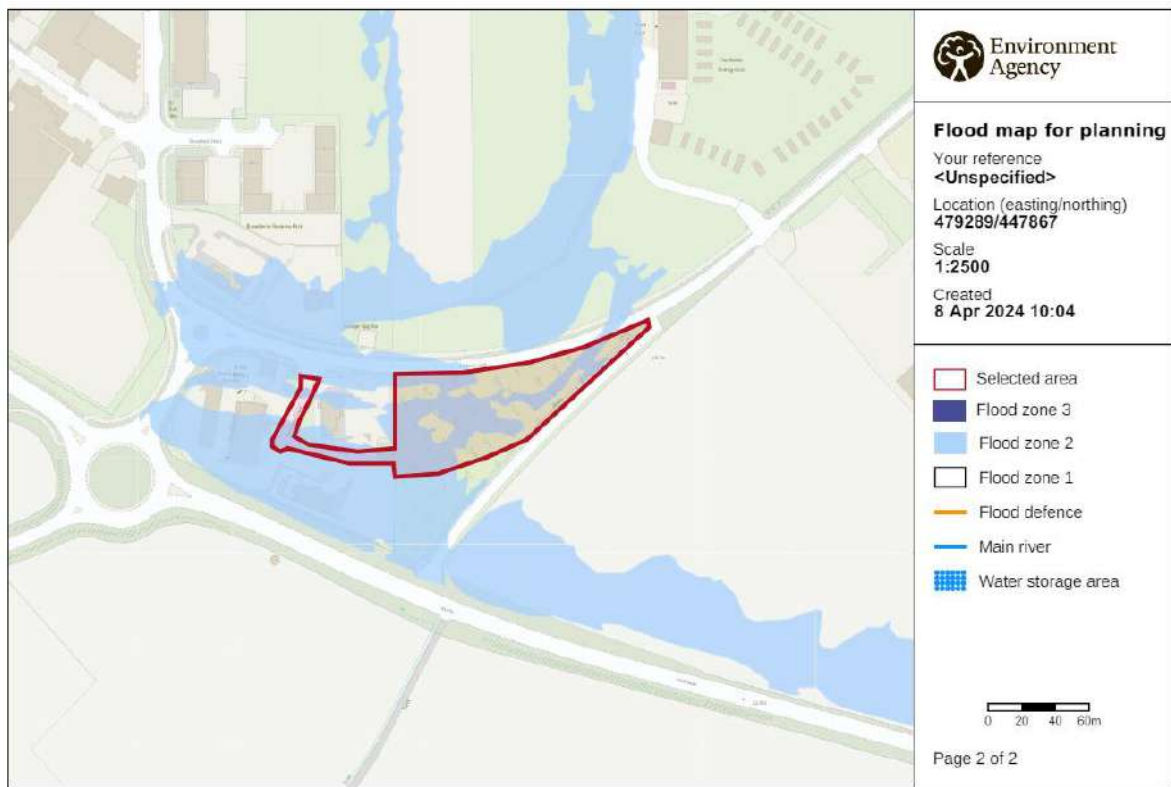
4 FLOOD RISK

To manage surface water flooding, the existing flood risk of the site must be understood. A Drainage Strategy & Flood Risk Assessment Report was prepared the wider scheme of Broadhelm business park development as shown in Appendix D. The proposed site is referenced as "Plot D". It should be noted that as part of the business park, a site wide drainage

scheme has been developed to help reduce the flood risk which has already been approved by planning.

Flood risk should be reduced where possible with the implementation of a suitable surface water drainage strategy. The surface water drainage strategy is discussed further in section 5.

According to the Environment Agency Flood Map for planning, the site is located in Flood Zone 2, which is a medium risk of flooding from rivers and the sea. This is shown below in Figure 1.



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Figure 1 - EA Flood Map for Planning

The EA Long term flood risk map shows that the site is at low risk of flooding from rivers and the sea and takes account of the impact of flood defences. This means that there is a chance of flooding between 0.1% and 1% each year.

The EA Long term flood risk map shows that the site is at low risk from surface water flooding. This means that there is a chance of flooding between 0.1% and 1% each year.

The EA Long term flood risk map shows that the site is unlikely to flood due to reservoir or groundwater flooding.

5 SURFACE WATER DRAINAGE STRATEGY

As part of the site wide Broadhelm Business park a Drainage Strategy and Flood Risk Assessment was carried out as shown in Appendix D. This shows that the large balancing pond on the site will provide storage for the site wide business park development and discharge to the existing ditch at an agreed rate of 14 l/s.

The following is a review of "Plot D" referenced in the FRA which is shown in Appendix D.

Current guidance states that the priority for discharging surface water runoff from a development is as follows;

1. Infiltration into the ground
2. Discharge into a watercourse
3. Discharge into a surface water sewer
4. Discharge into a combined water sewer

Infiltration

The site wide FRA in Appendix D states that the adjacent business park site was generally suitable for shallow soakaway trenches constructed above the water table, where it is estimated that 20% of the overall site wide drainage flows into a balancing pond located south of the site. Therefore, the use of soakaways should be suitable, and a permeable construction carpark will be proposed with an overflow route into the balancing pond before discharging into the nearby drain at the previously agreed rate of 14l/s as per the previous drainage strategy shown in Appendix D.

It should be noted that the areas of hardstanding are proposed to be permeable.

Watercourse

An existing drain is located to the east of the site and will be used as an outfall for the site-wide drainage at 14l/s as per the previous planning application shown in Appendix D.

Public Sewers

It is anticipated that discharge to watercourse will be suitable and therefore surface water discharge into public sewers should not be required.

Impermeable Areas

It should be noted that the tarmac car park area is proposed to be permeable tarmac. The adjacent parking will be gravel/ grasscrete. The new proposed car park development has an approximate impermeable area of 0.30ha. The total area for the proposed site (referred to as plot D in Appendix D) was based on the overall greenfield area of 2300m² and has been accounted for in the storage area in the existing profiled storage pond to the south.

Attenuation

The attenuation for the site will be provided within the balancing pond as shown in the previous drainage strategy in Appendix D. Further storage will also be provided within the permeable carpark which will be profiled to fall towards the outfall as shown in the proposed drainage strategy drawing in Appendix E.

6 SUSTAINABLE DRAINAGE SYSTEMS

To manage the surface water on site, where possible, Sustainable drainage (SuDS) systems/techniques should be used. Typically, SuDS should be incorporated as close as practicable to the source and are put in place to help slow the flow prior to reaching the outfall. These could be in the form of permeable paving, rainwater harvesting, ponds and other above ground green systems. Swales could also be incorporated into the layout to convey surface runoff rather than below ground pipes (which tend to have a higher velocity).

Sustainable Drainage (Overview)

Drainage systems can contribute to sustainable development and improve urban design, by balancing the different issues that influence the development of communities. Approaches to manage surface water that take account of water quantity (flooding), water quality (pollution) and amenity issues are collectively referred to as Sustainable Drainage Systems (SuDS).

SuDS mimic nature and typically manage rainfall close to where it falls. SuDS can be designed to slow water down (attenuate) before it enters streams, rivers, and other watercourses, they provide areas to store water in natural contours and can be used to allow water to soak (infiltrate) into the ground or evaporated from surface water and lost or transpired from vegetation (known as evapotranspiration).

SuDS are technically regarded as a sequence of management practices, control structures and strategies designed to drain surface water efficiently and sustainably, while minimising pollution and managing the impact on water quality of local water bodies.

SuDS are more sustainable than traditional drainage methods because they:

- Manage runoff volumes and flow rates from hard surfaces, reducing the impact of urbanisation on flooding

- Protect or enhance water quality (reducing pollution from runoff)
- Protect natural flow regimes in watercourses
- Are sympathetic to the environment and the needs of the local community
- Provide an attractive habitat for wildlife in urban watercourses
- Provide opportunities for evapotranspiration from vegetation and surface water
- Encourage natural groundwater/aquifer recharge (where appropriate)
- Create better places to live, work and play.

SuDS principles

Sustainable drainage is a departure from the traditional approach to draining sites. There are some key principles that influence the planning and design process enabling SuDS to mimic natural drainage by:

- storing runoff and releasing it slowly (attenuation)
- allowing water to soak into the ground (infiltration)
- Slowly transporting (conveying) water on the surface
- filtering out pollutants
- allowing sediments to settle out by controlling the flow of the water

The above was taken from www.susdrain.org

The following table (overleaf) reviews the suitability of different SuDS techniques and whether they would be appropriate for the site.

SUDS Technique	Can they be feasibly incorporated into the site?	Comments
Green Roofs	✘	Green roofs would not be appropriate for the proposed car park.
Basins and Ponds	✓	There is an existing balancing pond to the south of the site.
Filter Strips, Swales and Bio-Retention	✓	Filter strips, swales and bioretention could be used to convey the surface water flows on the site.
Infiltration techniques	✓	Partial infiltration techniques could be utilised
Permeable surfaces and tree pits	✓	Permeable surfaces for the car park are proposed.
Rainwater Harvesting	✘	The carpark is not suitable for rainwater harvesting as there are not constant occupants on the site to utilise it.
Tanked Systems	✓	Tanked systems could be used as an alternative to the voided stone under the car park but would not be the preferred option.

SuDS Maintenance

On-site SuDS systems will be privately managed rather than put forward for adoption by the local Water Authority. Exact details of the drainage systems will be determined during detailed design stage.

The below table shows an indicative maintenance schedule for a typical Geo-Cellular Soakaway system.

Schedule	Required Action	Frequency
Regular Maintenance	Inspect and Identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, Annually thereafter.
	Remove sediment from pre-treatment structures and/or internal forbays.	Annually, or as required.
Remedial Action	Repair/rehabilitate inlets, outlets and vents.	Annually, or as required.
Monitoring	Inspect/check all inlets, Outlets and vents.	Annually
	Survey inside of tank for sediment build-up and remove if necessary.	Every 5 years, or as required.

7 CONCLUSIONS

The site is greenfield, with an approximate site area of 0.662ha and is located on Hodsow Lane Pocklington, York, YO42 1AD.

The proposed development is for a carpark and access road from Hodsow Lane, with 12 electrical car charging spaces and 51 regular parking spaces. The drainage from the proposed car park will ultimately outfall into the existing balancing pond. The existing balancing pond serves the business park as attenuation as outlined in the previous drainage strategy which has been approved by Planning.

The Environment Agency (EA) Flood Map for planning, the site is located in Flood Zone 2, which is a medium risk of flooding from rivers and the sea. With consideration of flood defences, the EA Long Term Flood map shows that the site is at low risk of flooding from rivers and sea. The risk of flooding from all other sources is low.

Infiltration tests were previously carried out in other areas of the site which showed that in some areas this could be utilised but that the water table was high. We would recommend that soakaway tests to BRE365 are carried out to establish that the site is suitable to discharge surface water into the ground. Also ground water monitoring tests should be carried out to establish the water table level to ensure any soakaways are above the water table.

An existing watercourse is located to the east of the site and will be utilised as the final discharge point as per the previous drainage strategy at 14l/s for the site wide scheme. The previously implemented balancing pond will provide adequate storage for the site.

It is expected that SuDS methods for surface water storage will be utilised, with perforated pipes and an overall connection into the balancing pond prior to discharging into the drain at the previously agreed 14l/s as outlined in the previous drainage strategy report in Appendix D.

8 LIMITATIONS

All comments and proposals contained in this report, including any conclusions, are based on information available to Mason Clark Associates during investigations. The conclusions drawn by Mason Clark Associates could therefore differ if the information is found to be inaccurate or misleading. Mason Clark Associates accepts no liability should this be the case, nor if additional information exists or becomes available with respect to this scheme.

Where we have undertaken preliminary infiltration rate tests on site on your behalf this is for indicative purposes only to enable preliminary designs to progress. Where any subsequent designs rely upon infiltration and/or these test results then you should undertake further infiltration rate tests in accordance with accepted industry standard guidelines as detailed in Building Research Establishment publication BRE Digest 365.

Except as otherwise requested by the client, Mason Clark Associates is not obliged to and disclaims any obligation to update the report for events taking place after: -

- (i) The date on which this assessment was undertaken, and*
- (ii) The date on which the final report is delivered*

Mason Clark Associates makes no representation whatsoever concerning the legal significance of its findings or the legal matters referred to in the report.

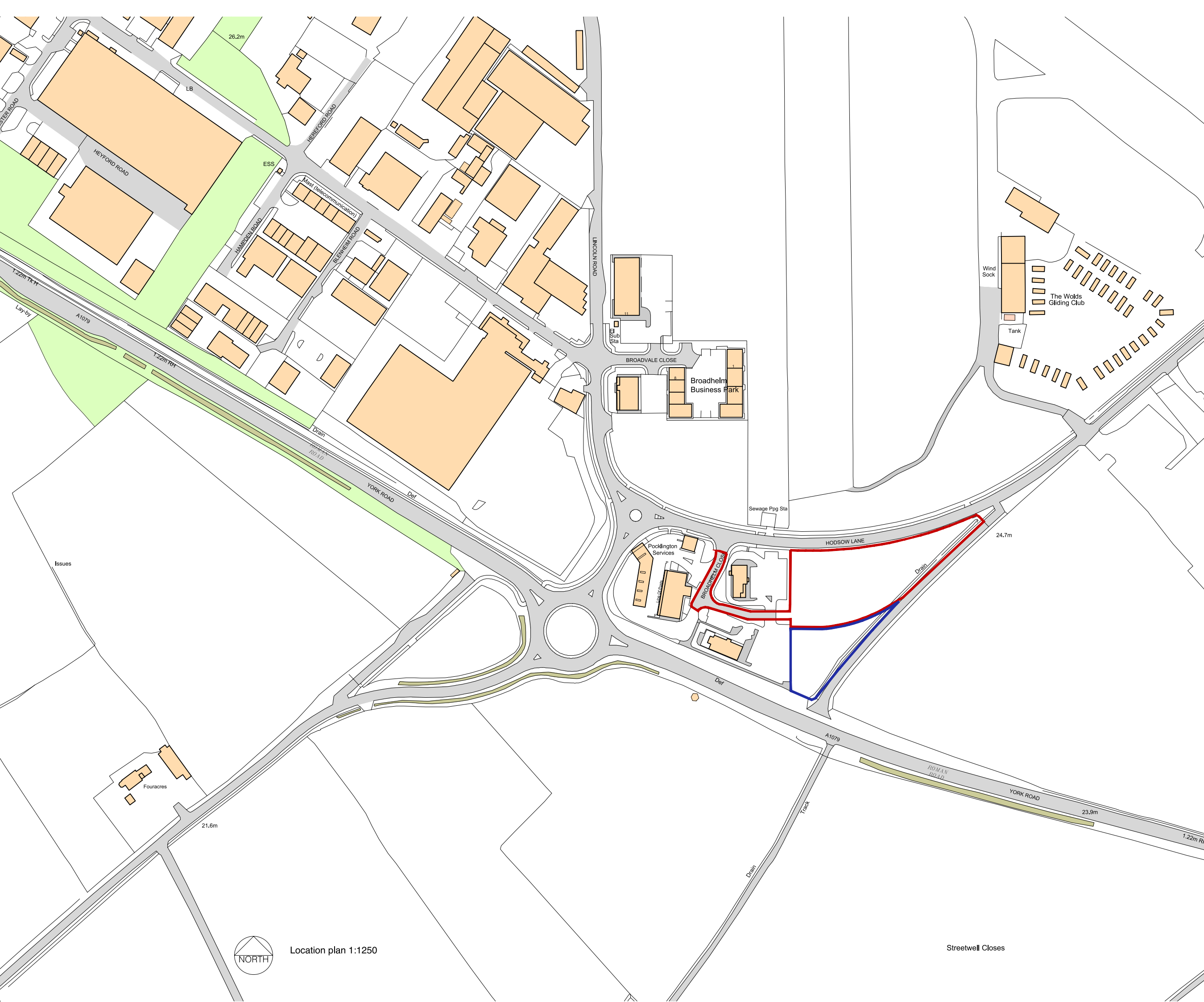
All Environment Agency mapping data is used under special license. Data is current as of 20/02/2024 and is subject to change.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.

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APPENDIX A

Site Location Plan



CDM REGULATIONS				
Safety, Health + Environmental Information				
In addition to the hazards / risks typically associated with the types of work detailed on this drawing, please NOTE the following advisory statements. Notes may relate to CONSTRUCTION, MAINTENANCE + CLEANING, and / or DEMOLITION; however this list is not exhaustive.				
rev	description	date	dr by	app by
It is assumed that all works are to be carried out by a competent contractor working, where appropriate to an approved method statement.				

NOTES

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All work shall be carried out in accordance with Local Authority, Statutory Authority and Health + Safety Regulations.

Cease all construction work immediately if any protected species is suspected to be present within an existing building or new development site. A qualified ecologist must be consulted to carry out the relevant survey and provide mitigation advice prior to (re)commencing construction.

rev	description	date	dr by	app by
original		04,01,24		MW

PRELIMINARY

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York, YO24 4AW
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www.walkerdsp.com

client **The Broadhelm Venture**

project **Poc-K Tri Site
Broadhelm Close
Pocklington**

drawing title **Location plan**

Location plan 1:1250

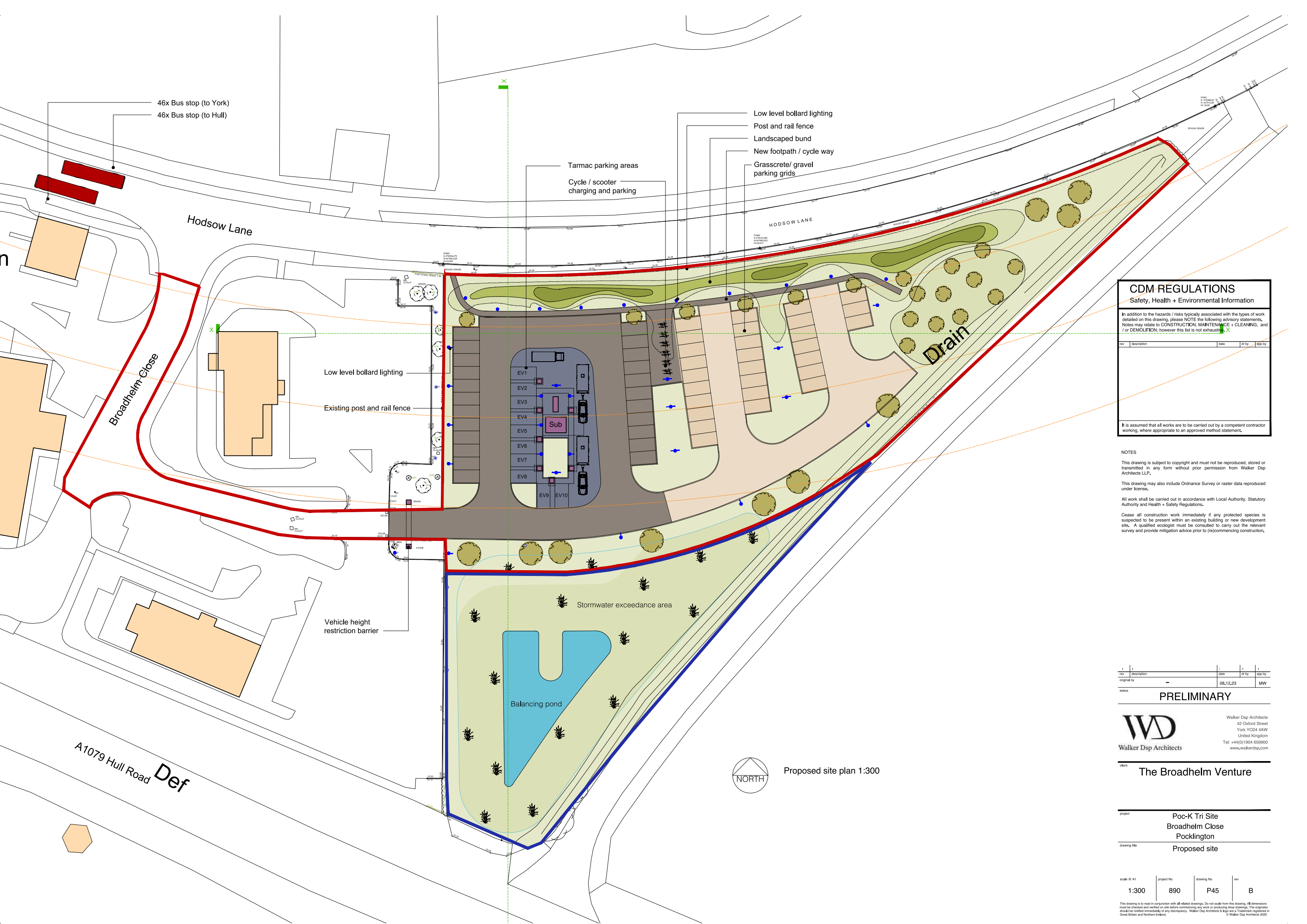
Streetwell Closes

scale	project No	drawing No	rev
1:1250	890	P01	A

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APPENDIX B

Proposed Development Plan



CDM REGULATIONS
Safety, Health + Environmental Information

In addition to the hazards / risks typically associated with the types of work detailed on this drawing, please NOTE the following advisory statements. Notes may relate to CONSTRUCTION, MAINTENANCE + CLEANING, and / or DEMOLITION; however this list is not exhaustive.

rev	description	date	dr by	app by

It is assumed that all works are to be carried out by a competent contractor working, where appropriate to an approved method statement.

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rev	description	date	dr by	app by
original		08,12,23		MW

status **PRELIMINARY**

WD
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client **The Broadhelm Venture**

project **Poc-K Tri Site
Broadhelm Close
Pocklington**

drawing title **Proposed site**

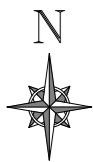
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1:300	890	P45	B

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 Proposed site plan 1:300

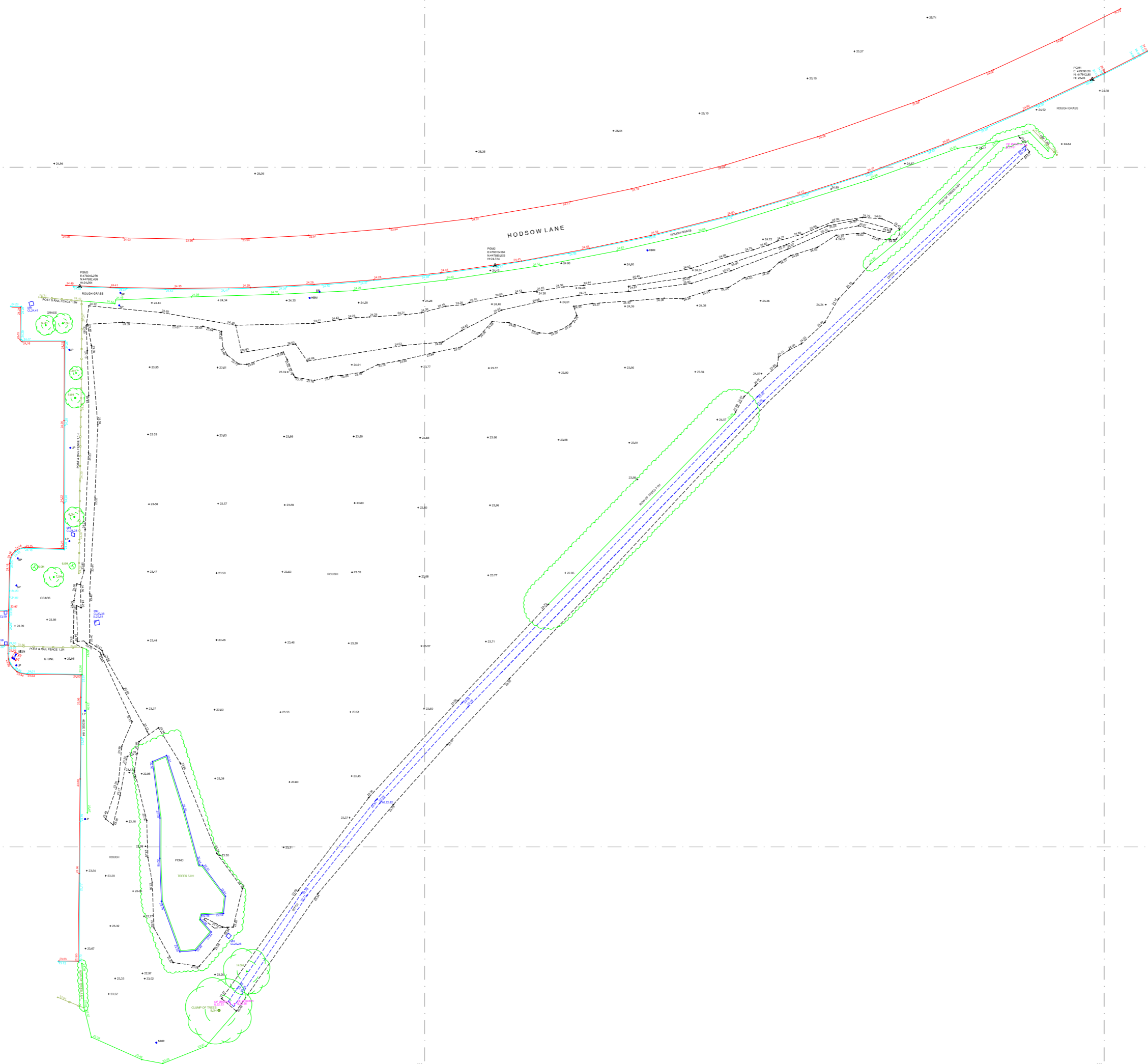
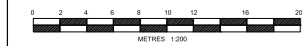
APPENDIX C

Topographical Survey



447900N

447800N



REV	DATE	SURVEYED	DRAWN	CHKD
A	04/12/2023	AM	MM	AM

DESCRIPTION: FIRST ISSUE

NOTES
 LEVELS ARE RELATED TO O.D. (NEWLYN).
 CO-ORDINATES ARE RELATED TO NATIONAL GRID
 DERIVED VIA GPS - (OSGB36/15) SYSTEM.

LEGEND

• 111.71	SPOT LEVELS
△	SURVEY STATION
○	TREE (DECIDUOUS)
○	BANK
---	DITCH
---	EXTENT OF SPREAD / CANOPY
---	FENCE
---	FOUNDATION
---	GRIDLINE
---	HEDGE (EDGE)
---	KERB TOP
---	ROAD
---	UTILITY
---	VEGETATION

ABBREVIATIONS

CL	COVER LEVEL
G	GULLY
H	HEIGHT
HBM	HIGHWAY BOUNDARY MARKER
L	INVERT LEVEL
LP	LAMP POST
MH	MANHOLE
MR	MURDER
OF	CUTFALL
PGM	PERMANENT GROUND MARKER
PRF	POST & RAIL FENCE
SP	SKIN POST
WL	WATER LEVEL

As the Surveyor's Certificate is not a guarantee of accuracy, it is not intended to be used for any other purpose than that for which it was issued. The Surveyor's Certificate is not intended to be used for any other purpose than that for which it was issued. The Surveyor's Certificate is not intended to be used for any other purpose than that for which it was issued.

CLIENT

JG HATCLIFFE

PROJECT
 BROADHELM BUSINESS PARK
 POCKLINGTON

TITLE
 TOPOGRAPHICAL SURVEY

SCALE	1:200	DRAWN	MM
DATE SURVEYED	27/11/2023	CHECKED	AM
DATE ISSUED	04/12/2023	APPROVED	DBe



INTERNAL DRAWING NUMBER	REV
A0	06_231098_01

APPENDIX D

Site Wide Flood Risk Assessment and Drainage Strategy



Broadhelm Business Park, Pocklington – Drainage Strategy

- 2.6 A system of adoptable gravity sewers will be installed in the proposed highways on the Broadhelm Business Park with connections to serve the individual plots. The gravity sewers will be shallow at the northern, high end of the site, falling to an adoptable pumping station located to the north side of Hodsow Lane at the lower end of the site.
- 2.7 An adoptable rising main will be installed from the pumping station to discharge at the Pocklington WWTW.
- 2.8 The Southern Area development will have gravity foul drainage beneath the proposed road and will be at a depth to enable gravity connections to serve the whole of the four proposed development plots. The gravity drainage on the Southern Area will not be offered for adoption.

3. **FLOOD RISK**

- 3.1 We inspected the Environment Agency flood map for the area which was revised in Autumn 2011 to incorporate remodeling of the catchment and shows changes to the extent of flooding in extreme events. The flood map demonstrates that the majority of the site is now in the floodplain in Flood Zone 2. The remaining areas of site are outside the floodplain in Flood Zone 1. Planning Policy Statement 25 (PPS25) states that Flood Zone 2 comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding in any year. The site is likely to be affected only by a major flood event with a return frequency of up to a 1 in 1000 year chance of occurring. A copy of the Flood Map is appended to this report.
- 3.2 We understand that the mechanisms for flooding in this area is that the Pocklington Beck, coming through Pocklington and south to Canal Head, to the east of the site, is contained within banks for a 1 in 100 year event. As levels increase for a less frequent event then floodwater escapes from the river channel and overland flow can occur which could reach the proposed development in an extreme event.
- 3.3 East Riding of Yorkshire Council constructed a new roundabout on the A1079 and diversion of Hodsow Lane in early 2011. The new road layout is not shown on the recently updated flood map and presumably has not been incorporated into the flood risk model. The new road and adjacent ground levels are raised above the former ground levels and form an effective bund around the Southern Area site which is likely to prevent overland flow from reaching the proposed development.

3792/LA/FRA

Flood Risk Assessment

Application for Variation of Conditions 2 and 3 in respect of Approved Outline Application 06/04422/STOUT - referenced DC/10/03984/STVAR/STRAT

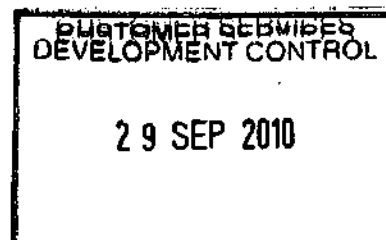
As indicated on the East Riding Strategic Flood Risk Assessment a small part of the site (490m²) lies within Flood Zone 2 the degree of potential impact being shown on composite drawings 3792 (0-)17 and 108/06/02 FRA both of which are enclosed, these being elaborations of the original Outline Application drawing 108/6/02 and the current Illustrative Site Masterplan 3792 (0-) 07 these both having been deposited with the Application for the Variation of Conditions.

Information obtained from the Environment Agency Development Control indicates that 1 in 100 year events are contained within the banks of Pocklington Beck located about half a mile to the east of the site. 1 in 1000 year events have not been modelled but Zone 2 is only likely to be affected during such an event.

To the extent that the site is within Zone 2 it should be noted that there is no intention to develop that part of the site and to the extent that Climate Change might need to be taken into account - in that a higher risk might be applied to what is now a part Zone 2 impact - the key consideration is still that this is not an area for development.

The surface water strategy for the development is one that is site wide and is designed using sustainable drainage principles and systems. Surface water from the highways, and primarily for development plots, is to discharge to suitably sized soakaways. Where a plot is to be largely impermeable 'on plot' storage will balance flows to allow a controlled discharge to an onsite drain. A further feature lagoon at the low point of the site will receive flows from the drain and ensure that the discharge rate from the site to the off site ditch can be controlled to be equal to the discharge rate of the existing land drainage system. In this way site discharge will be not exceed the current run off rate.

Finally, it is important to recognise that the proposed development - Phase 1 and Phase 2 of a Business Park for B1, B2 and B8 use with Hotel, Restaurant and Conference Complex - has an extant Outline Approval granted with the benefit of an Environmental Agency appraisal and that no EA objection was raised at that time.





Broadhelm Business Park, Pocklington – Drainage Strategy

- 3.4 The change to the existing levels of the site will affect the modeled extent of the overland flow and flooding of the site in extreme events, the limits of which are already imprecise. In the absence of precise flood level data for the site we suggest that the floor levels of the buildings should be set 600mm above the existing ground level.
- 3.5 It should be noted that Zone 2 land is appropriate for less vulnerable and more vulnerable uses of land as described in PPS25 Table D.2. These uses include all the land uses likely throughout the proposed development

4. SURFACE WATER DRAINAGE

- 4.1 Ground permeability testing has demonstrated that the site is generally suitable for shallow soakaway trenches constructed above the water table.
- 4.2 Investigations on site demonstrate that there is existing land drainage on the site which discharges into the adjacent ditch along the eastern boundary of the site.
- 4.3 The equivalent rate of discharge of surface water from the site from impermeable areas shall be restricted to 1.4 litres/second/hectare. The permissible maximum rate of runoff from the entire Broadhelm Business Park site when fully developed shall be restricted to 14 l/s discharging to the adjacent ditch. The 1.6 hectare Southern Area is the first Phase of the development and the initial discharge rate from the site will be restricted to 2.29l/s.
- 4.4 No surface water shall be permitted to discharge to the foul drainage system.
- 4.5 Adoptable carriageways and footways throughout the Northern Area shall discharge to adoptable soakaways located in dedicated land outside the pedestrian/cycleways. We have discussed this proposal with the Environment Agency and they have no objections to surface water going to soakaways as proposed. The recently constructed and adopted length of Hodsow Lane drains surface water to adopted trench soakaways located within the highway boundary.

Broadhelm Business Park, Pocklington – Drainage Strategy

- 4.6 Where possible and practicable surface water on development plots to the Northern Area of the site shall be retained and discharged to on plot soakaways. A limited amount of surface water discharge from some development plots has been anticipated and a surface water sewer will be installed along the eastern boundary of the northern site to receive surface water and take it down the site to the Southern Area. Although the ground is suitable for soakaways it is anticipated that the extent and type of some of the developments on the plots will preclude the use of soakaways for practical and commercial reasons and a reasonable alternative provision for dealing with surface water from such areas has been included in the development which is the subject to this planning application in terms of the siting and sizing of the balancing pond. It is anticipated that up to about 20% of the proposed Northern Area impermeable surfacing may be discharged directly into the surface water sewer along the eastern boundary.
- 4.7 There will be a large balancing pond constructed in the south east corner of the Southern Area with an outfall to the existing ditch restricted by a flow control device. Initially the rate of discharge from the Southern Area site will be restricted to 2.29l/s but ultimately, on completion of the full development of the Broadhelm Business Park, the rate of discharge from the whole site will be restricted to 14l/s. The pond will be designed to accommodate the ultimate run off from those plots on the Northern Area of the business park that do not drain to soakaways. It will also receive the surface water run off from the Southern Area of the site.
- 4.8 The three development sites in the Southern Area; Plots A, B & C and the access road and associated footways will discharge surface water from impermeable surfaces directly to the adjacent balancing pond without on plot storage or balancing. Plot D will have a combination of permeable and impermeable surfacing to suit the detailed requirements of the development when known. Impermeable surfaces will discharge surface water to the balancing pond with some on plot storage or balancing.
- 4.9 The balancing pond is designed to have a permanent area of water below the outlet to the ditch. There will be an irregular shaped feature pond area, of about 400m², with varying but gently sloping sides, between nominally 1 in 5 and 1 in 10, to allow for suitable landscaping and access for regular maintenance. The water levels will fluctuate with varying rainfall events; rising quickly and falling within hours back to normal levels. The maximum water level is designed to be reached only in the event of a 1 in 100 year event of the most onerous duration. An additional 20% storage volume allowance is included above the calculated worst case volume to provide some spare capacity to withstand the effects of future climate change, the implications of which are not currently know. The total surface water storage volume required to



Broadhelm Business Park, Pocklington – Drainage Strategy

accommodate the assumed impermeable of the Southern and Northern Areas of the site will be about 1200m³. The area of the ultimate flood storage pond area will be about 2200m².

- 4.10 The design identifies the maximum water level and storage volume that will be required to serve the entire Broadhelm Business Park development. It is anticipated that the pond will be developed in stages to match the rate of development of the Business Park. For the initial Southern Area development, the volume of the storage pond required to ensure that stormwater resulting from a 1 in 100 year event, plus 20% to account for climate change, can be stored on site without risk to people or property and without overflowing to the adjacent watercourse is 680m³.

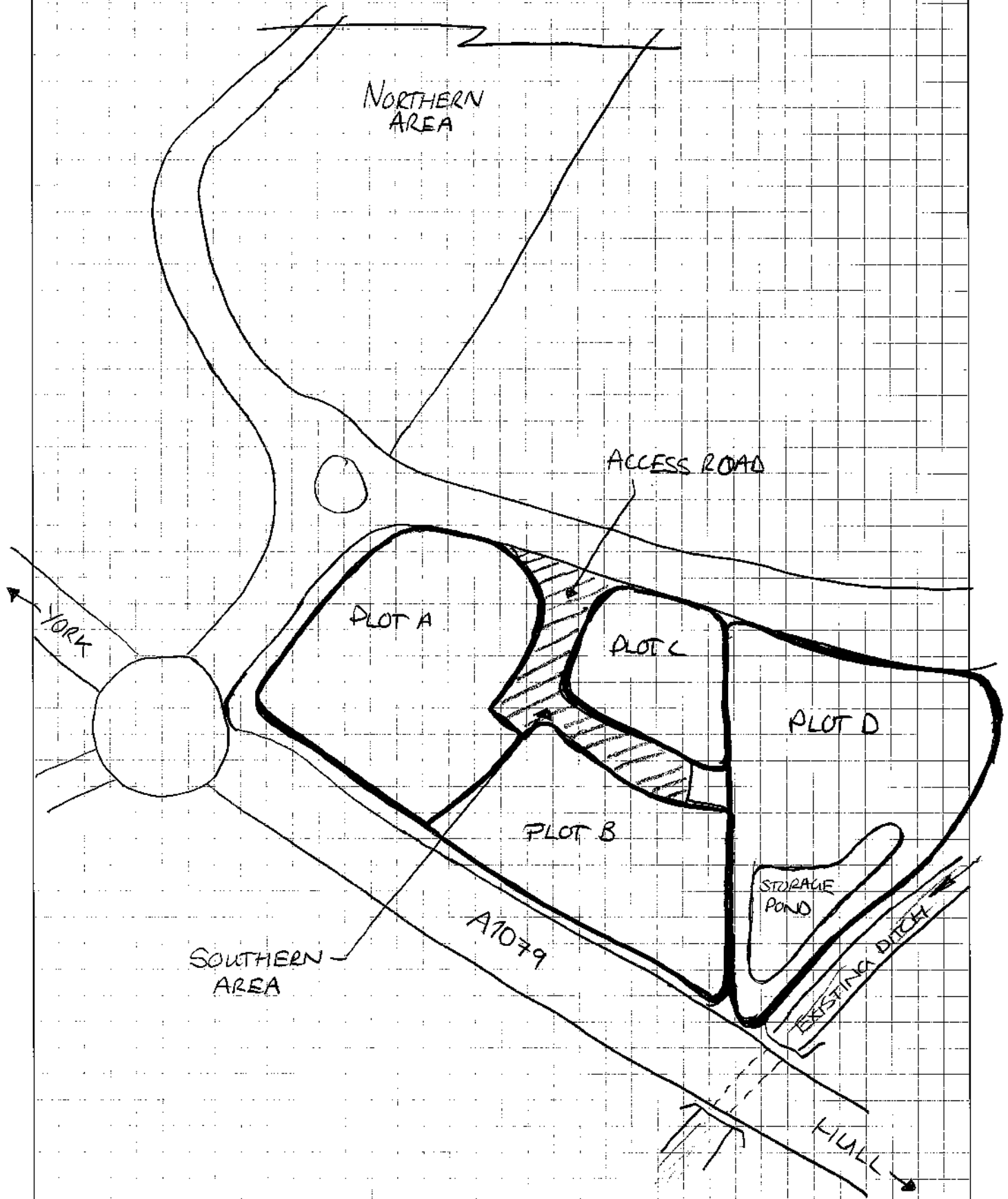
Yours faithfully,

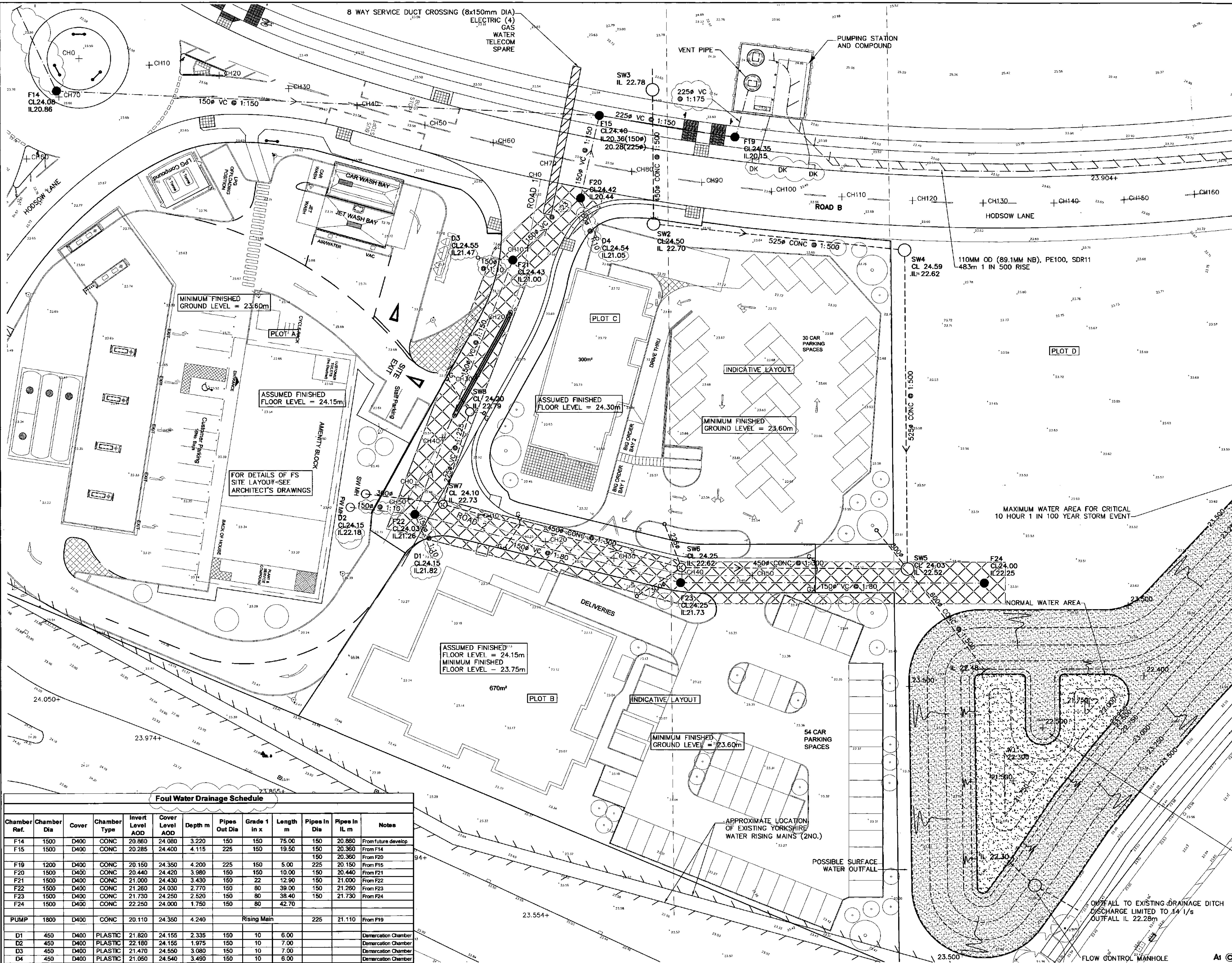
S G Dick BSc, CEng, CEnv MICE.
for **Dossor Group**



PROJECT No. 2007 1159	SHEET No. 4
PREPARED By CLN	DATE 29/6/11
CHECKED By	DATE

BROADHELM BUSINESS PARK





- NOTES**
- DO NOT SCALE
 - ALL LEVELS RELATE TO ORDNANCE DATUM
 - ALL WORKS TO COMPLY WITH SEWERS FOR ADOPTION 6TH EDITION AND YORKSHIRE WATER'S E&M ADDENDUM TO THAT DOCUMENT.

- KEY**
- TACTILE CROSSING
 - SURFACE WATER SEWER
 - SURFACE WATER MANHOLE
 - ADOPTABLE FOUL WATER SEWER
 - ADOPTABLE FOUL WATER MANHOLE
 - ADOPTABLE RISING MAIN
 - D1 DEMARCATION CHAMBER
 - ROAD GULLY
 - CABLE DUCT RUNS
 - FOUL WATER EASEMENT (6m)
 - SURFACE WATER BALANCING POND
 - DK DROPPED KERB

DEVELOPMENT CONTROL
REC'D 17 JAN 2012

PLANNING ISSUE

B	AMENDED IN LINE WITH YORKSHIRE WATER COMMENTS 29.11.12	CN 9.12.11
A	PFS LAYOUT UPDATED	CN 19.10.11
SUFFIX LETTER	REVISION	INITIAL & DATE

THE BROADHELM VENTURE

BROADHELM BUSINESS PARK, POCKLINGTON

SOUTHERN AREA: SECTION 104 DRAINAGE

Dossor Group

CONSULTING ENGINEERS & SURVEYORS
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ace
 consultancy engineering between environments

Drawn by	Date	Scale
CN	AUG 2011	1:250
Checked by	Date	AT A1
SD	AUG 2011	

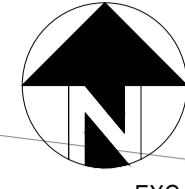
Foul Water Drainage Schedule

Chamber Ref.	Chamber Dia	Cover	Chamber Type	Invert Level AOD	Cover Level AOD	Depth m	Pipes Out Dia	Grade in x	Length m	Pipes In Dia	Pipes In IL m	Notes
F14	1500	D400	CONC	20.860	24.080	3.220	150	150	75.00	150	20.860	From future develop
F15	1500	D400	CONC	20.285	24.400	4.115	225	150	19.50	150	20.360	From F14
F19	1200	D400	CONC	20.150	24.350	4.200	225	150	5.00	225	20.150	From F20
F20	1500	D400	CONC	20.440	24.420	3.980	150	150	10.00	150	20.440	From F21
F21	1500	D400	CONC	21.000	24.430	3.430	150	22	12.90	150	21.000	From F22
F22	1500	D400	CONC	21.260	24.030	2.770	150	80	39.00	150	21.260	From F23
F23	1500	D400	CONC	21.730	24.250	2.520	150	80	38.40	150	21.730	From F24
F24	1500	D400	CONC	22.250	24.000	1.750	150	80	42.70			
PUMP	1800	D400	CONC	20.110	24.350	4.240			Rising Main	225	21.110	From F19
D1	450	D400	PLASTIC	21.820	24.155	2.335	150	10	6.00			Demarcation Chamber
D2	450	D400	PLASTIC	22.180	24.155	1.975	150	10	7.00			Demarcation Chamber
D3	450	D400	PLASTIC	21.470	24.550	3.080	150	10	7.00			Demarcation Chamber
D4	450	D400	PLASTIC	21.050	24.540	3.490	150	10	6.00			Demarcation Chamber

APPENDIX E

Proposed Drainage Strategy Drawing

HODSOW LANE



Design Notes:

- Min 0.90m cover to soffit of pipes.
- CL's designed to suit drainage has been raised by approximately 0.35m

**NOTE:
NOT SUITABLE FOR
HGV LOADING**

Car Park finished to Architect specifications. note all surfaces should be permeable. Permeable membrane required. Note, impermeable liner may be required and stone (BF3 or similar) should be profiled at 1:500 gradient towards outfall

Stormwater exceedance area

Discharge limited to 14 l/s as previously agreed in planning application approved.

Drainage Notes

- All private drainage works are to be constructed in accordance with the relevant provisions of BS EN 752 including by reference BS 8301, Building regulations part H and Sewerage Sector Guidance (SSG) Appendix C, Version 2.2.
- The Contractor MUST confirm invert levels of existing points of connection prior to commencement of drainage works.
- Manhole invert levels relate to the downstream pipe. Pipes at manholes to be laid soffit to soffit level.
- Unless otherwise shown surface water pipes to be 150mm Ø laid at 1 in 100 minimum gradient.
- Where cover to top of pipe barrel is less than 900mm in lightly trafficked areas and 600mm in non trafficked areas, pipe to have minimum 150mm ST4 concrete surround.
- Where cover to pipe barrel located beneath highways is less than 1200mm, pipes are to be protected with concrete surround (bed type Z) Grade C20 in accordance with sewers for adoption 6th edition, table 2.4.
- Manhole cover levels where not shown are to be confirmed at later stage. Covers are to be fixed to a profile corresponding to the surrounding pavement surface and may be adjusted to suit actual site levels.
- All pipework up to 300mm Ø to be standard strength vitrified clay to BS EN 295 (min crushing strength 40KN/m) or plastic to BS 4660:2000 and BS EN 1401-1:1998 and shall comply with the requirements of SSG Version 2.2.
- All pipework larger than 300mm Ø to be Class 120 precast concrete to BS EN1916:2002 and shall comply with the requirements of SSG Version 2.2.
- Bedding to all pipework to be Class S granular bed & surround in accordance with BS882 or Class Z (see manhole schedule and/or details drawing).
- All backfill above gravel surround in drainage trenches and under building slabs to be Type 1 stone compacted in layers not exceeding 225mm thick.
- Manholes to be precast concrete to BS EN1917: 2002, Type B, in accordance with the requirements of SSG Version 2.2, unless noted otherwise.
- Inspection chambers to be polypropylene, 475mm diameter, Hepworth range or similar & approved. Opening restricted to max 350mm where depth of chamber exceeds 1.2m.
- All manholes covers and gully gratings located in trafficked areas to be ductile iron class D400. Covers located in non trafficked areas to be min class B125 unless noted otherwise on the drainage layout or manhole schedule.
- Any external recessed cover required or internal manhole covers to be specified by the Architect.
- Proprietary attenuation systems, cellular soakaways and petrol/oil interceptors to be installed in accordance with the manufacturers details and recommendations, including bedding and surround, membranes, protection and backfill requirements.
- Position and details of rainwater pipes, and foul connections to be confirmed by Architect.
- For above ground and internal drainage, vents, fittings and access points refer to Architects and/or M&E details.
- Cover levels of private drainage chambers may be adjusted to suit actual site levels.
- The contractor is responsible for identifying and locating all existing services and ensuring that the levels do not conflict with the proposed drainage system. If there are any such conflicts then the Engineer must be made aware immediately.
- All existing redundant drainage systems are to be abandoned and grubbed up including redundant manholes and pipework. The voids are to be backfilled with as dug material or suitable fill material and compacted in layers.
- Any live sewer connections found in any sewers that are to be abandoned are to be picked up and diverted.
- The Contractor shall undertake a CCTV survey of the as constructed site drainage system on completion of the works. A copy shall be made available to Mason Clark Associates.

Notes

- This drawing is subject to copyright and must not be reproduced, stored or transmitted in any form without prior permission from Mason Clark Associates.
- This drawing is not to be scaled. All dimensions are to be checked on site by the contractor. Any discrepancies are to be notified to Mason Clark Associates. Obtain instructions prior to works commencing.
- This drawing is to be read in conjunction with all the relevant contract drawings and specifications.
- All dimensions are in millimetres and all levels are in metres AOD unless noted otherwise.
- All work shall be carried out in accordance with Local Authority, Statutory Authority and Health & Safety Regulations.
- Mason Clark Associates are not responsible for determining the appropriate fire period, fire boundary conditions or the associated design of fire protection or inherent fire resistance to any elements of structure, including all frames, posts, beams, joists, roof members and secondary structural elements such as lintels. Refer to the Architect or Project Manager for this information.

Drainage Key

- Site Boundary
- Proposed Surface Water
- Proposed Surface Water Perforated Pipe
- Proposed Surface Water Manhole
- Proposed Permeable Stone @ 1:500
- Existing Combined Water Sewer (public sewer)

Health & Safety Information

In addition to the hazards and risks normally associated with the type of works detailed on this drawing, please note the following abnormal risks to Health & Safety.

Refer to Mason Clark Associates project specific Design Risk Assessment (DRA).

Construction Phase

HAZ-C1	Invert Level to be confirmed by constructor.
HAZ-C2	Utilities in the area.

It is assumed that all works will be carried out by a competent contractor working where appropriate to an approved method statement

Not for Construction

Refer to drawing issue box for purpose. Please contact Mason Clark Associates if construction is instructed.

P1	Preliminary - Initial Issue	MP	13.03.2024
Rev	Details	By	Date
		Hull +44 (0) 1482 345797 Leeds +44 (0) 113 277 9542 York +44 (0) 1904 638035 www.masonclark.co.uk	
Client: The Broadhelm Venture			
Project: Pocklington Service Area, Broadhelm Close, Pocklington			
Title: Proposed Drainage GA			
Drawn: MP	Checked: NP	Date: March 2024	
Scale @ A1: 1:200			
Drawing No: 22183-L-DR-200			Rev: P1



<p>Hull (Registered Office) Church House 44 Newland Park Hull HU5 2DW 01482 345797 www.masonclark.co.uk consultants@masonclark.co.uk</p>	<p>Leeds Unit E Millshaw Business Living Global Avenue Leeds LS11 8PR 0113 2779542 www.masonclark.co.uk</p>	<p>York Partnership House Monks Cross Drive Monks Cross York YO32 9GZ 01904 438005 www.masonclark.co.uk</p>
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<p>CIVIL ENGINEERING Bridge design, maintenance and construction Wharfs, jetties and marine structures Highway design and maintenance Retaining wall and slope stability solutions Land remediation advice Road and sewer design to adoptable standards Section 38 and 104 Agreements Sewer requisitions and diversions Section 98 and 185 Agreements Flood Risk Assessments Coastal erosion flood breach analysis Flood risk management / prevention schemes Underground drainage design Stormwater attenuation SUDS Ponds, lakes and balancing ponds</p> <p>PROJECT MANAGEMENT QUANTITY SURVEYING & CONTRACT ADVICE CDM SERVICES</p> <p>BUILDING SURVEYING SERVICES Design, Remedial Repair / Improvement Schemes Contract Administration Building Surveys Professional Opinion Reports Condition Surveys & Schedules of Condition Measured Surveys Dilapidation Claims Party Wall etc. Act Representation Disabled Adaptations</p> <p>EXPERT WITNESS SERVICES Civil & Structural engineering disputes Project Disputes Health and Safety Regulations</p>	<p>STRUCTURAL ENGINEERING Residential and commercial building structures Education and healthcare facilities Heavy industrial development Feasibility studies for development sites Building Regulations and Planning Applications Access and maintenance gantries Modular building design Blast design Subsidence management and resolution Temporary works design and specification Site and soils investigation Sulphate attack specialists Confined spaces assessments</p> <p>CONSERVATION ENGINEERING Engineer Accredited in Building Conservation CARE Registered Engineer Heritage and conservation engineering Listed Building refurbishment Historic Parks and Gardens Scheduled Ancient Monuments Monitoring and investigations Liaison with Local Conservation Officers Buildings at Risk and Managed Ruins</p> <p>3D LASER SCANNING AND DATA CAPTURE Latest Generation 3D Laser Scanning Measured Building Surveys Topographical Surveys Monitoring Surveys 3D modelling (Revit, CAD, Inventor, Solidworks) M & E Modelling Volumetric / Level analysis Scan to BIM Scan data cloud hosting Hi-Def HDR photographic surveys</p>
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