

University Of Huddersfield

Firth Street Car Park

Proposed Surface Water Drainage Strategy

The proposals involve the creation of a barrier controlled secure parking area for use by the University Of Huddersfield. The proposed layout is shown on the appended University Of Huddersfield Drg. No. MW 2020 024 B 001.

Existing Site Drainage Arrangements

A topographical survey of the site and adjacent lengths of Firth Street has been undertaken and is shown on the appended AHR Consultancy Ltd. Drg. No. 2020.00637.000/1. The survey shows that the application site is currently split into two distinct areas by a masonry wall. The appended sheet SW1 highlights the two areas.

The first area (Area A) is adjacent to the Firth Street Depot building and in the past this would have linked Firth Street to the end of Commercial Street to the south. Historical aerial photography shows that this area has previously been used for vehicle parking although this is now prohibited by the presence of barriers at both ends. The area consists of a tarmac surfaced carriageway and raised tarmac footway adjacent the north-east kerb line. Surface water run-off is contained by the kerbing and directed to a gully at the south. The route of the outfall from the gully is not known, although the appended Yorkshire Water's sewer record shows two combined sewers running beneath the area, the larger of which is most likely to be the point of discharge.

The second area (Area B) is currently partially occupied by a scrap metal business and used for the storage of vehicles. Again, historical aerial photography shows that the whole area has in the past been used for the storage of vehicles and it is only recently that the storage area has been reduced to its current size by the erection of the line of Herras fencing indicated on the survey drawing. The whole of this area is currently surfaced with concrete with no positive drainage features identified. Therefore, taking the levels obtained by the survey into account, it is reasonable to assume that all surface water run-off from this area flows above ground towards the east where it discharges unrestricted to the River Colne.

Proposed Surface Water Drainage Strategy

Area A

The area adjacent the Firth Street Depot building is to have minimal works of an aesthetic nature only. This will include removal of the raised footway over the majority of its length and the provision of a new surface course/patch repairs as necessary to create a serviceable impermeable surfacing. Where the footway is removed, new levels are to be set so surface water run-off will continue to be directed to the existing gully.

Some parts of the existing surfacing around the new vehicle access point are to have landscaping or other permeable surfacing created, and so the area contributing to the gully will be reduced as a result of the proposed works. The appended Sheet SW2 shows that the new impermeable area will be 755 m², previously 840 m², a 10% reduction.

Area B

The area of the scrapyard is to have more extensive works, primarily to tie levels into those at the interface with Area A, but also to prevent run-off discharging directly to the River Colne. Where possible, the existing concrete surfacing is to be retained and overlain with bituminous materials as necessary. The prevention of direct discharge to the River Colne will be achieved by the provision of new upstand kerbing and/or a masonry wall along the eastern boundary. A new system of gullies and a drainage channel is to be installed to provide positive drainage for this area.

Disposal Proposals

Following comments received from Kirkless Council, it is proposed that run-off from both Area A & Area B are combined into a single surface water drainage system.

Once collected, it is proposed that run-off is passed through a Class 1 by-pass petrol interceptor with high level oil alarm before discharge to the River Colne via a new headwall structure. Details of the headwall arrangement are to be agreed with the relevant bodies once a survey of the area has been undertaken.

It is proposed that the rate of discharge is reduced by 30% from the estimated existing rate which currently discharges overland into the River Colne from Area B. Sheet SW1 shows that the existing impermeable area is 1235 m² and assuming a rainfall intensity of 50mm/hour, the existing peak discharge rate is taken to be 17.1 litres/second. Applying a 30% reduction on this figure gives a maximum permitted discharge rate of **12 litres/second**.

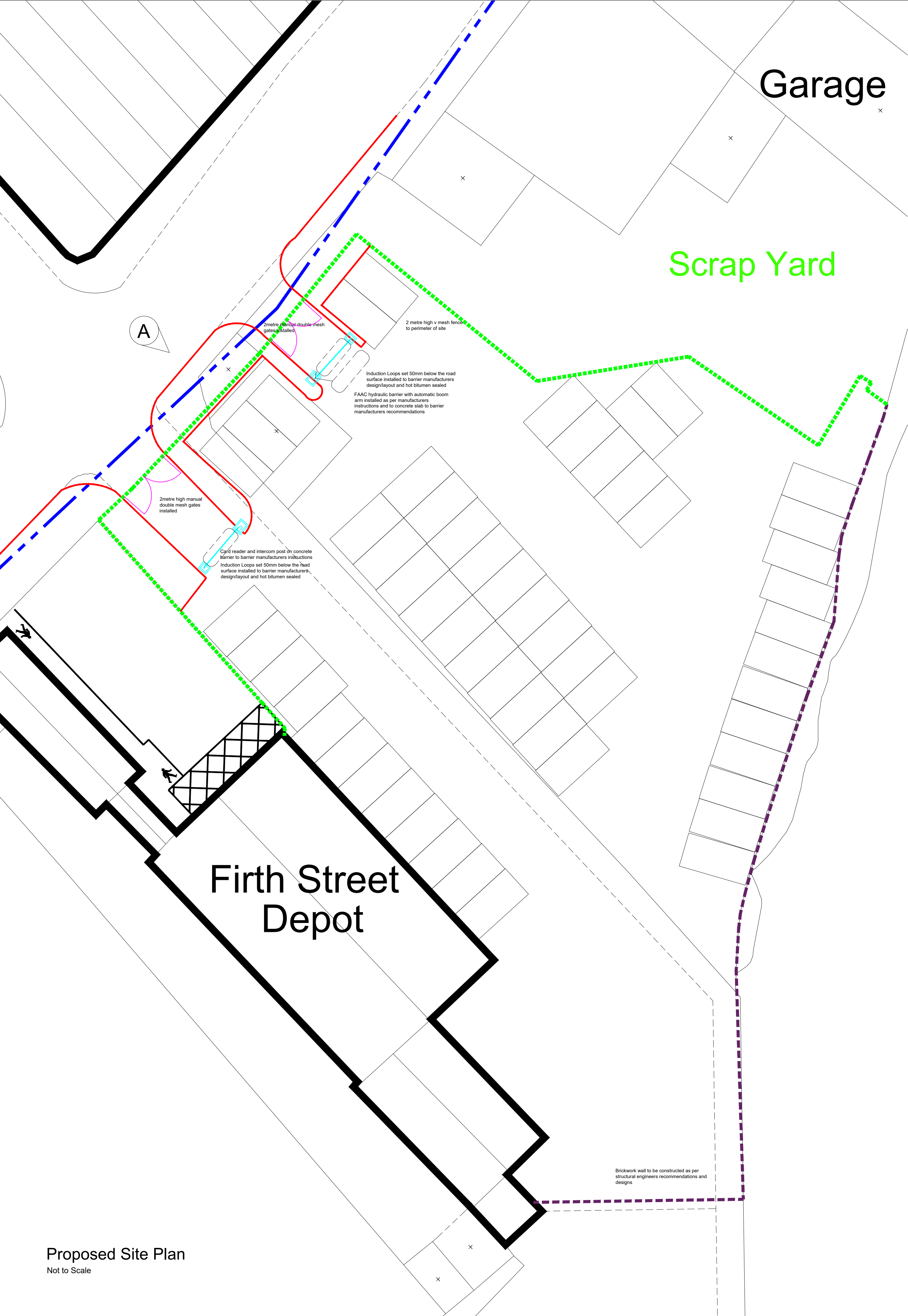
The restriction in discharge rate is to be achieved by the provision of a vortex flow control device (Hydrobrake or similar).

In order to prevent regular overland flooding into the River Colne, it is proposed that on-site storage be provided, sized to retain attenuated run-off for all rainfall events up to and including the 1 in 100 year return period plus an allowance of 30% for climate change. The appended calculation sheet SW3A shows that 40.6 m³ of storage will be required. It is proposed that this volume is provided by a combination of proprietary voided below ground storage units and shallow surface ponding. The appended sheet SW4 shows the approximate extent of this shallow ponding, with a maximum depth of 125mm, which is estimated to have a volume of at least 3.6m³. The remaining 37m³ of storage necessary is to be provided below ground.

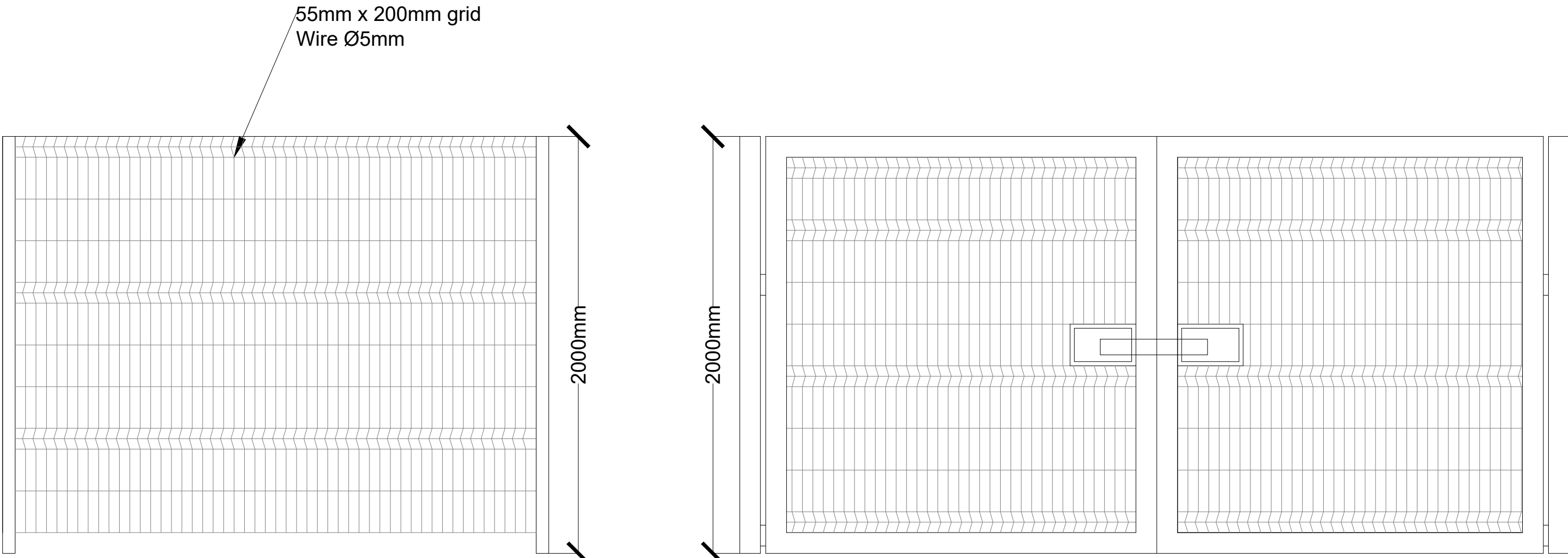
Appended is Eastwood & Partners Drg. No. 45101/001C showing the proposed drainage layout for the development which has been prepared in accordance with the strategy set-out above.

Proposed Maintenance

The surface water drainage systems, both new and existing, across the whole development site will remain in private ownership and will be maintained by the University of Huddersfield. A Maintenance Schedule is appended.



Proposed Site Plan
Not to Scale

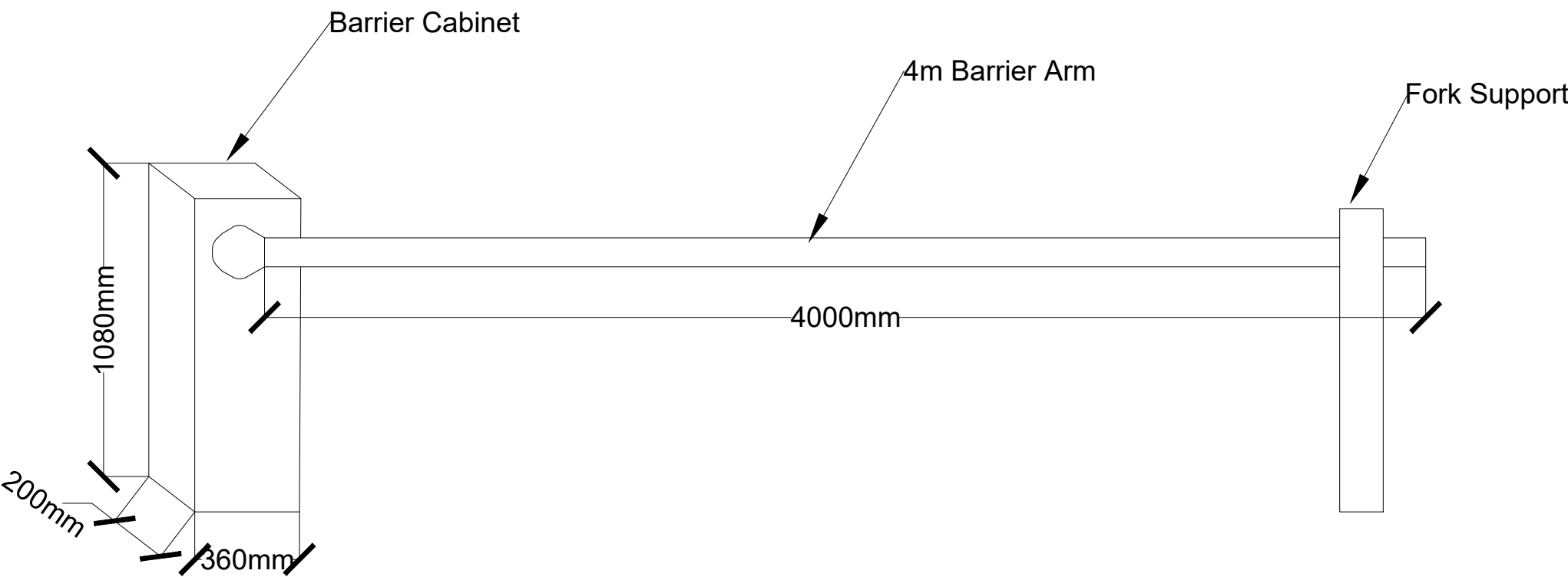


Proposed Perimeter Fencing
Scale 1:20

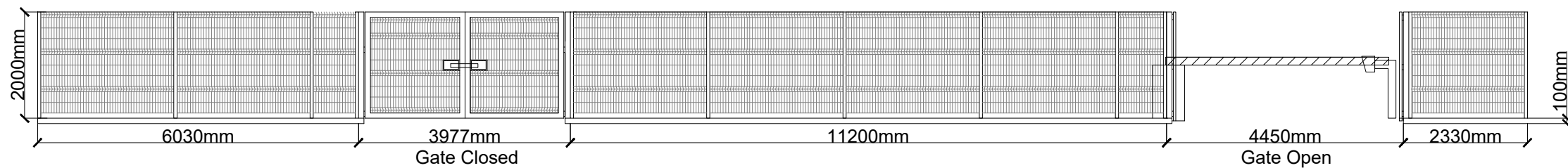
Proposed Gates
Scale 1:20

General notes

Do not scale from this dwg.
All dimensions are in mm unless stated otherwise.
This dwg to be read in conjunction with all relevant mechanical, electrical and structural drawings.
Assume all site details are existing unless specified otherwise.
All dimensions shown on any dwg to existing structures are approximate, and the contractor is to obtain all exact site dimensions necessary to carry out the works.
All specialist items to be used in accordance with the manufacturers recommendations.
Temporary protection shall be provided to prevent water penetration into any existing structures during the works.
The contractor should maintain the stability of all existing structures within and adjacent to the works, and of all the works from the date of possession of the site until practical completion of the works. the contractor shall design, install and maintain all necessary temporary works to comply with the above.
All necessary hoarding to be erected to protect public from works on site, protection to be agreed with architect.
All details of existing construction to be confirmed on site. Any discrepancies are to be reported to the Project Manager immediately.
The contractor is to provide temporary access and surfacing to the works during the construction period.
All areas of the building and adjacent walls are to be propped, shored and struted as deemed necessary in a method statement by the contractor. Whilst alterations and extensions are being implemented consideration should be given to the age and construction of the existing building. propping and shoring to be designed by the contractor
It is the contractors responsibility to identify all services with the various undertakers and confirm their location to the design team prior to undertaking any work. All records of existing services held by the design team will be made available to the contractor, however, this does not relieve the contractor of the responsibility for checking the above.



Indicative Proposed FAAC Barrier
Scale 1:20



Proposed Elevation A
Scale 1:20

- KEY
- PROPOSED ACCESS ARRANGEMENTS
 - 2.4m x 43m VISIBILITY SPLAY
 - ASSUMED SITE BOUNDARY
 - PARKING SPACES (55)
 - PROPOSED FENCE LINE
 - PROPOSED GATES
 - PROPOSED AUTOMATIC BARRIER
 - PROPOSED WALL
- NOTES
1. PRELIMINARY LAYOUT SUBJECT TO DETAILED DESIGN INCLUDING FULL CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH / DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL



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Project
Firth Street Car Park

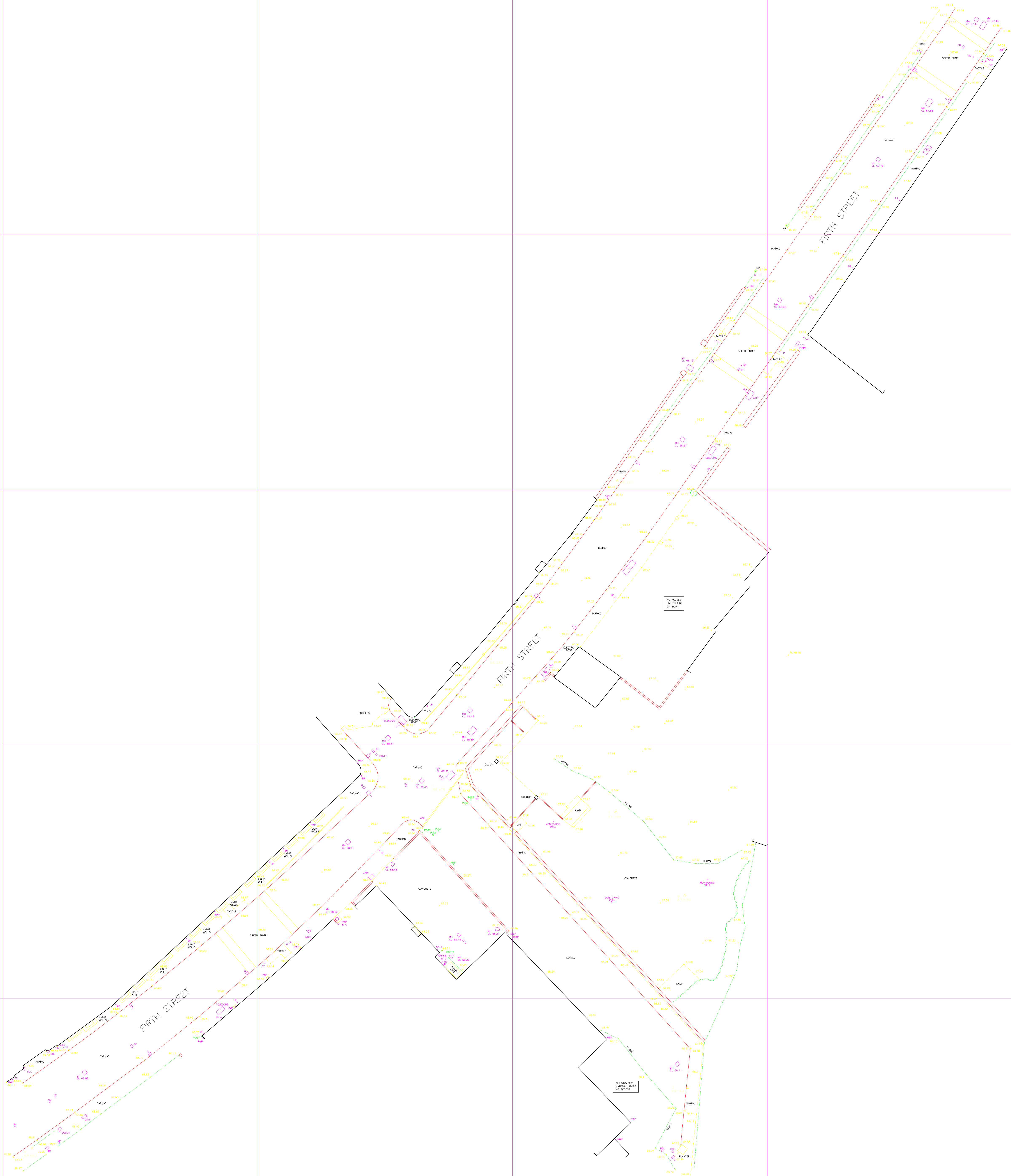
Title
Proposed Plans

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Drawn By RH	Checked By	Approved By
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Project Number MW 2020 024	Building B	Drawing 001	Revision
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Date 07.04.2020	Scale NTS
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KEY

BS

BUS STOP

BT

BRITISH TELECOM COVER

CL

COVER LEVEL

CDV

CABLE TELEVISION COVER

CTV

COVER

EP

ELECTRICITY POLE

ER

EARTHING ROD

PH

FIRE HYDRANT

FL

FLOOR LEVEL

G

GULLY

HT

HEIGHT

IL

INVERT LEVEL

LB

LITTER BIN

LP

LAMP POST

MH

MANHOLE

M/R

MARKER

MT

MERCURY TELEPHONE COVER

NB

NOTICE BOARD

PB

POLLAR BOX

PO

POST OFFICE COVER

RE

RODDING EYE

RS

ROAD SIGN

RWP

RAIN WATER PIPE

SC

STOP COCK

SP

STOP POST

SV

STOP VALVE

TBM

TEMPORARY BENCH MARK

TCB

TELEPHONE CALL BOX

TL

TRAFFIC LIGHTS

TP

TELEGRAPH POLE

VP

VENT PIPE

W

WATER COVER

WM

WATER METER

SURVEY STATION

FENCE LINE

LEVEL DATUM INFORMATION:

ALL LEVELS RELATED TO OSGB36(15)

Rev	Description	Date	Dr by	App by
original by		date created		Approved by
JT		14/09/20		LM

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UNIVERSITY OF HUDDERSFIELD

project

FIRTH STREET CAR PARK

drawing

TOPOGRAPHICAL SURVEY AS EXISTING

revision number

2020.00637.000

scale

1:250

drawing number

1

issue

08/06

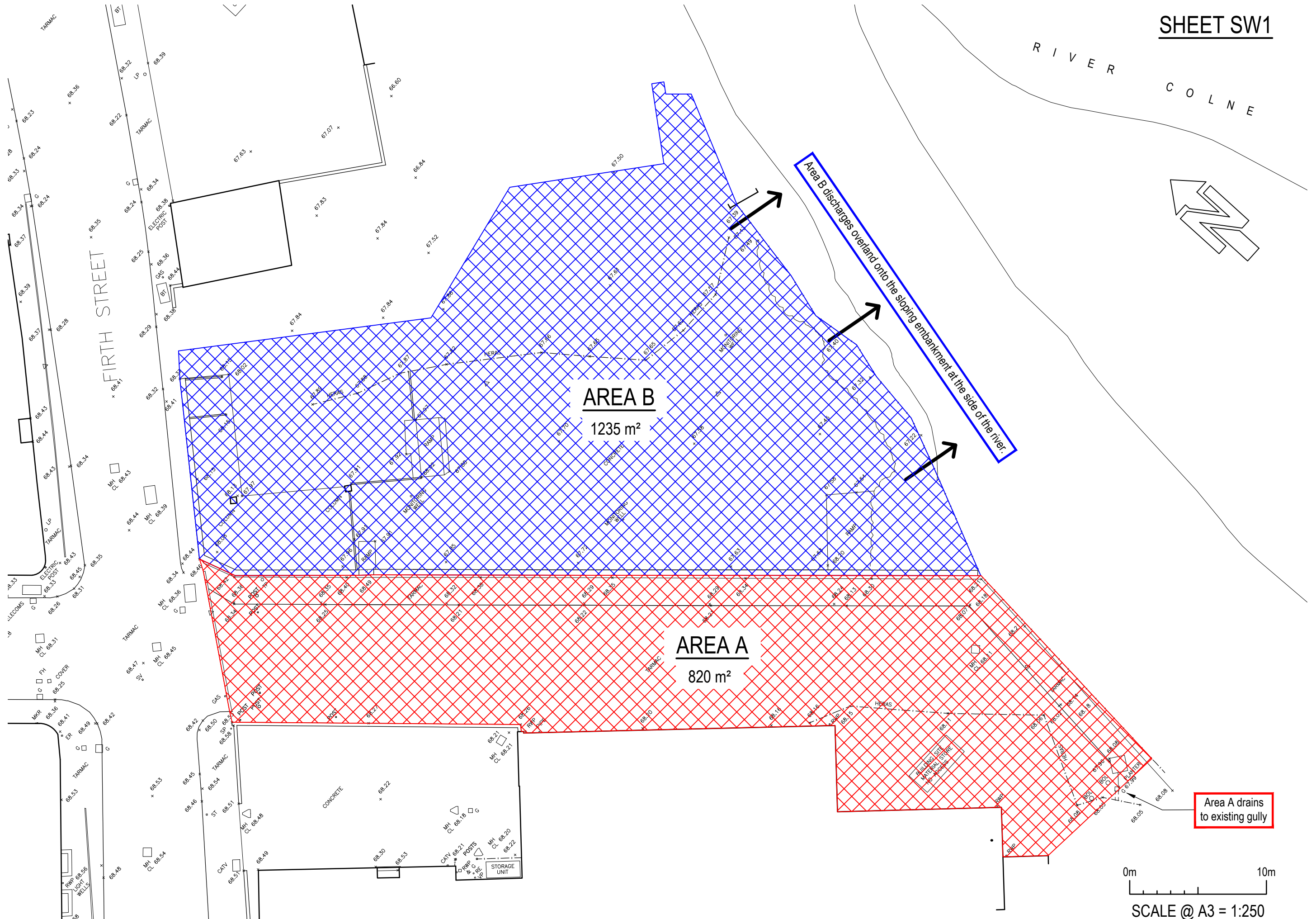
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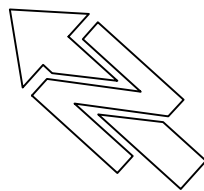
information

INFORMATION

This drawing is to be used in conjunction with all related drawings. All dimensions must be checked and verified on site before commencing any work in producing this drawing. The engineer should be notified immediately of any discrepancy. This drawing is copyright and remains the property of AHR.



R I V E R
C O L N E



Area B drains to new
gullies/drainage
channel and into the
new drainage system.

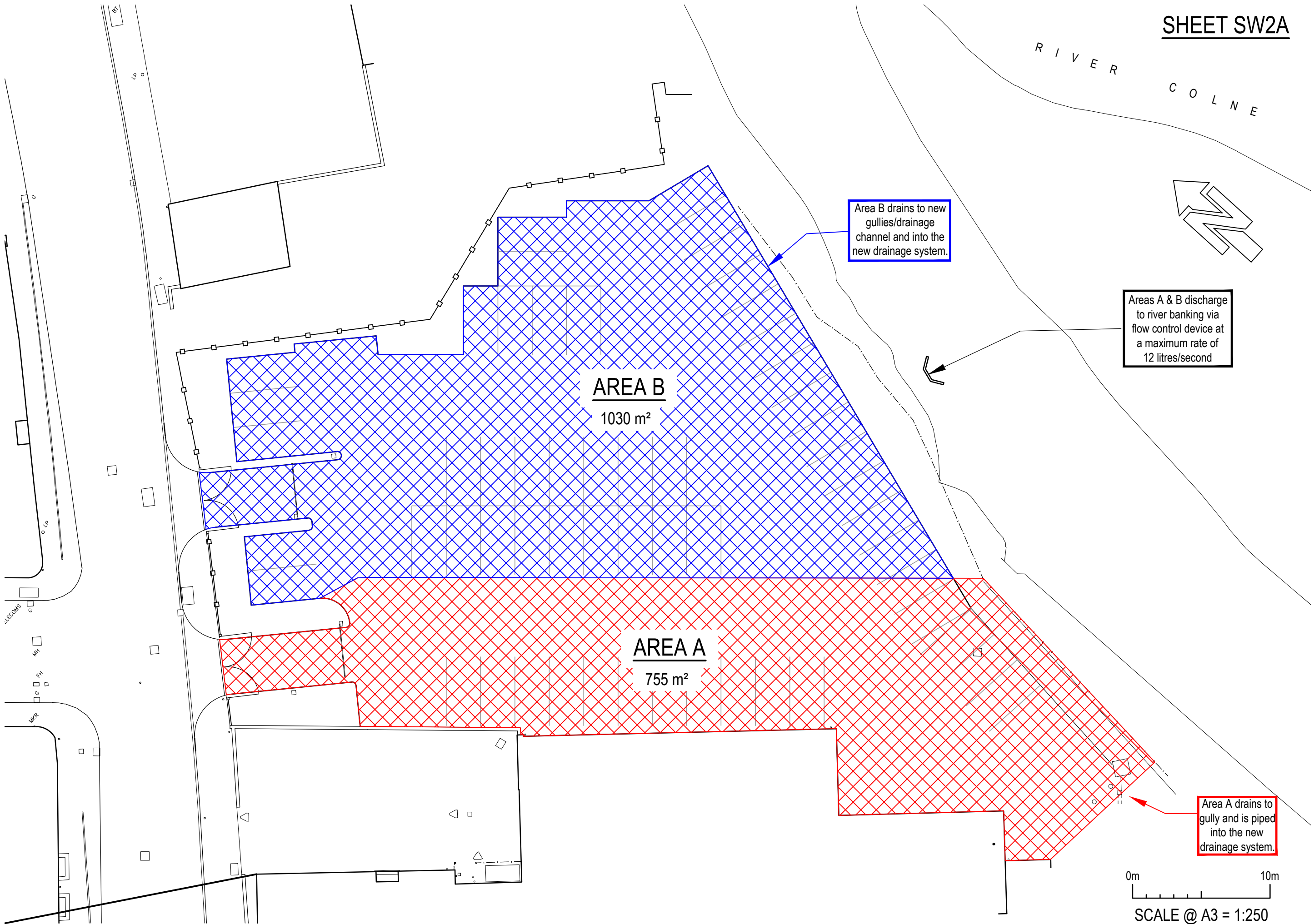
Areas A & B discharge
to river banking via
flow control device at
a maximum rate of
12 litres/second

AREA B
1030 m²

AREA A
755 m²

Area A drains to
gully and is piped
into the new
drainage system.

0m 10m
SCALE @ A3 = 1:250



EASTWOOD & PARTNERS (Consulting Engineers) Ltd.

Project:	Sheet	SW3A
	Job No.	45101
	Date	05/01/2021
Subject: Surface Water Storage	Designed	MW
	Checked	
	Revision	

Site Details :

Information From Wallingford Maps :

Location :	Huddersfield	M5-60	19.0 mm
Grid Ref :		r	0.35
		SAAR	750 mm
Total Site Area	0.1785 ha	UCWI	80 (Fig. 9.7)
		Soil Type	4
Roof	ha	SOIL	0.45 (Section 7.4)
Paved	ha		
Other	ha		
Total Impermeable	0.1785 ha		
PIMP	100.0%		
PR	79.7	Equation 7.3	
Cv	0.80	Equation 7.21	
Default Cv	0.84	Designer to insert to override calculated Cv	

Design Return Period	100	Years	Max. Branch Length	50
			Approx. Time of Flow	0.8 mins

Percentage Increase For Climate Change: **30%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System	12.0 Litres/sec
Assumed Average Flow as a Proportion (Estimate)	80 %
Average Rate of Flow	9.6 Litres/sec

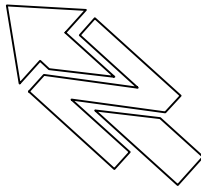
Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	15	30	60	120	180	240	360
Average Point Intensity (mm/hr)	89.0	59.8	38.4	23.8	17.7	14.3	10.5
Volume of Run-off for the period = Area x Cv x i x D (m3)	33.4	44.9	57.6	71.4	79.8	85.7	94.5
With climate change	43.4	58.3	74.9	92.8	103.7	111.4	122.9
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	9.1	17.8	35.0	69.6	104.2	138.7	207.8
Storage Volume for this Duration (m3)	34.3	40.6	39.8	23.2	-0.4	-27.3	-85.0

Storage Volume Required for

100 Year Return Period = 40.6 m3

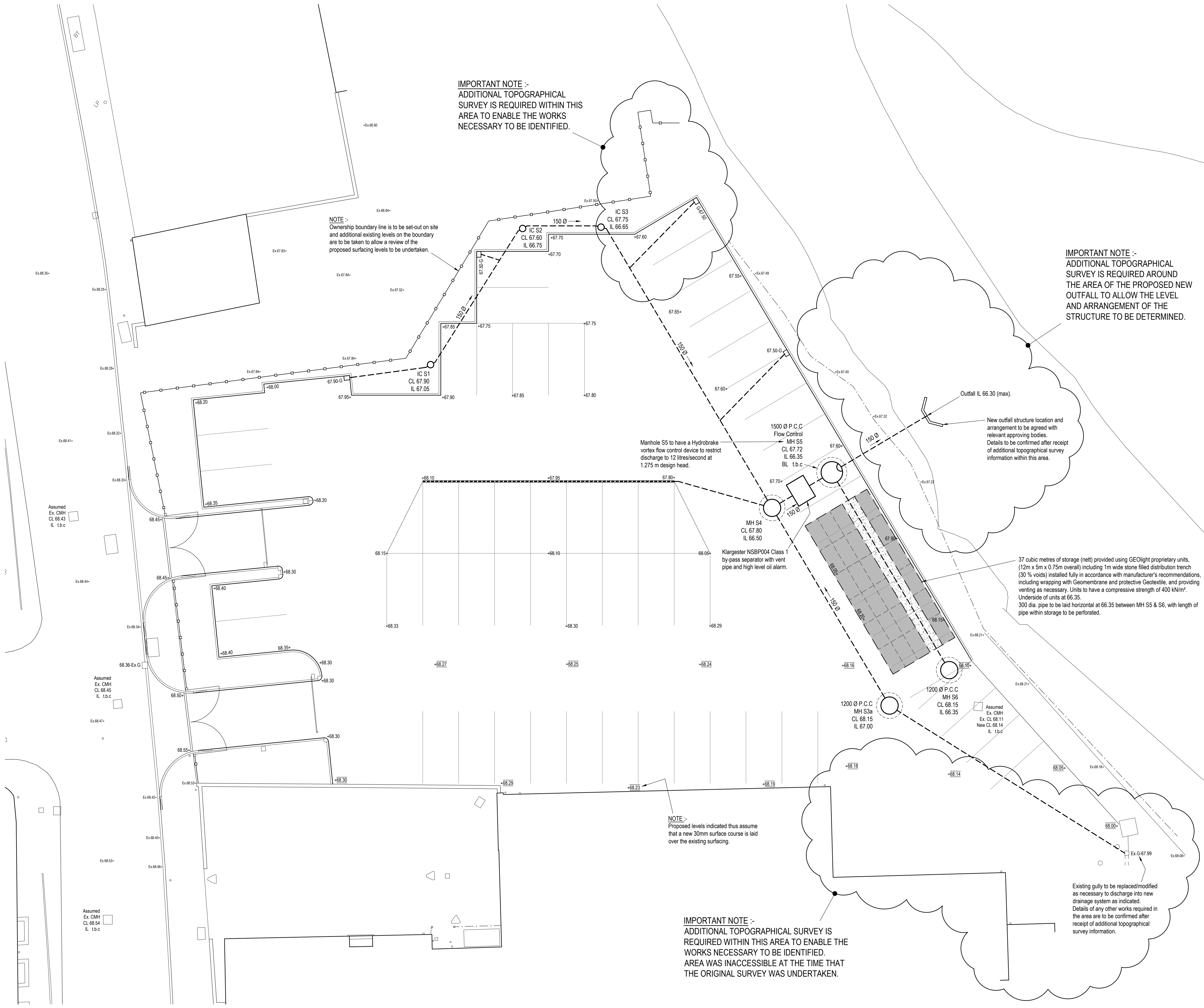
R I V E R
C O L N E



Approximate extent of surface
ponding (125mm max. depth).
Area = 91m²
Average depth say 40mm
Volume = 3.6 m³



0m 10m
SCALE @ A3 = 1:250



UNIVERSITY OF HUDDERSFIELD

FIRTH STREET CAR PARK

DRAINAGE MAINTENANCE SCHEDULE

<u>CATEGORY</u>	<u>ACTION</u>	<u>FREQUENCY</u>
REGULAR	General removal of litter and debris from external paving and landscaping areas.	Monthly (or more frequently if required)
	Cleaning of gullies, drainage channel and drainage channel sump unit to remove debris and silt.	6 monthly, after autumn leaf fall (or more frequently if necessary)
	Cleaning of manholes to remove debris and silt.	Annually, after autumn leaf fall (or more frequently if necessary)
	Inspection of all chambers, manholes and proprietary storage units to identify and make good any defects as necessary, including CCTV survey and jetting/cleaning of pipework if necessary.	Annually
	Removal of trapped oil and silt from proprietary Class 1 surface water separator.	Annually (or more frequently if notified by alarm)
CORRECTIVE	Clear blockages in gully outlets, drainage channel sump unit and branch connections.	As required
	Clear blockages in proprietary storage units.	As required