

DRAINAGE STRATEGY REPORT

**SCRAP HANDLING FACILITY
ROTHERHAM STEEL TERMINAL
THE ICKLES
SHEFFIELD ROAD
ROTHERHAM
S60 1DG**

CLIENT

**Celsa Manufacturing (UK) Limited
Building 58 Castle Works
East Moors Road
Cardiff
CF24 5NN**

JOB REF	ISSUE	PREPARED BY	CHECKED BY	APPROVED BY	DATE
19.02	1	KJ	TT	KJT	05.01.22



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1.0 INTRODUCTION

1.1 BACKGROUND

James & Nicholas LLP have been engaged by Celsa Manufacturing (UK) Ltd to prepare a drainage strategy for proposed upgrading works associate with the existing scrap handling facility located at Rotherham Steel Terminal, The Ickles, Sheffield Road, Rotherham, S60 1DG

The proposed development comprises expansion of the existing scrap handling facility, including construction of concrete yard areas, surfacing of access roads and drainage improvements. A new weighbridge, a shear machine and modular offices will be installed as part of the proposal.

The proposed expanded facility will take both processed scrap (for immediate onward transfer via the adjacent rail terminal) and unprocessed scrap (which will be processed on site prior to being transported as above).

It is proposed to carry out the works in a phased manner.

1.2 REFERENCES

Our proposed drainage strategy has been developed in accordance with the following:-

- CIRIA SuDS Manual C753 published in 2015
- Sewerage Section Guidance published 25th October 2019
- Site Condition Report and Geotechnical Site Investigation by Integral Geotechnique (Wales) Ltd (report ref. 12782/GNS/21/SI dated January 2021)

1.3 DESIGNERS

Designed by: - Karl Jones BSc Civil Engineering (Hons) MSc

Checked by: - Kevin Tobin MSc DIC CEng MICE

Approved by: - Kevin Tobin MSc DIC CEng MICE

2.0 EXISTING SITE

2.1 SITE LOCATION

The site is located to the south of Rotherham town centre, immediately adjacent to Bradmarsh Industrial Estate, ref. Figure 1 (below).

It forms part of an existing railway terminal that is currently owned and operated by DB Cargo UK and comprises a mixture of tarmac surfacing, concrete pavements and stoned hardstanding. A railway track runs from north-to-south on the eastern boundary of the site.

The site currently operates within a standard rules environmental permit. The purpose of the proposed construction works is to upgrade the facility generally and ultimately to obtain a bespoke environmental permit.



**Figure 1 – Site Location Plan
(site boundary outlined in red)**

2.2 SITE GEOLOGY

Integral Geotechnique (Wales Ltd) carried out site investigation works and prepared a Site Condition Report and Geotechnical Site Investigation report (report ref. 12782/GNS/21/SI dated January 2021).

The site investigation comprised trial pitting and window sampling carried out across the site and confirmed the ground profile to be made up as follows:-

- Made ground (0.3 – 0.5 m)
- Stiff clay (0.5 – 1.0 m)
- Weak siltstone (1.0 – 1.5m)
- Sandstone (to depth)

2.3 SITE FLOOD RISK

The Environment Agency 'Flood map for planning' for the proposed development site confirms that it is not located within a flood zone. A copy of the Environment Agency map is appended (ref. Appendix A)

2.4 EXISTING SITE DRAINAGE INFRASTRUCTURE

A drainage assessment of the site was undertaken out in February 2016 by Environmental Scientifics Group Ltd (ESG) in order to assess and map the site drainage (ref. report no. 16_02_EN023874_JPC_01 dated 1st March 2016 prepared for DB Schenker Rail UK).

Section 4.0 of the ESG report notes that a review of the former site drainage plan (ref Plan No:2099/19A by British Rail Property Board Dated 14.2.95 and contained within the report) indicated that all drainage at the DB Schenker terminal was connected and flowed from the very south of the site to the north of the site and out into the town's sewer system.

The drainage for the 'Metal Recycling Area' (the main subject of this report) was also shown to feed into the main drainage run, with a connecting sewer pipe shown to run beneath the rail tracks located within DB Schenker's Facility.

The report goes on to say that in relation to the 'Metal Recycling Area' by order of the Environment Agency all drains, manholes and connecting pipework within this area have been filled in, due to the nature of operations within this area (which included categorization and organization of waste metals).

The report notes that 'water retention within this area is now an issue due to the absence of drainage and has to be systematically removed from site'.

It should be noted that the systematic removal of water is still ongoing, with surplus water being removed from site by tanker, at significant cost.

2.5 EXISTING LOCAL DRAINAGE INFRASTRUCTURE

2.5.1 Mains Drainage

The drainage map for the site provided by Yorkshire Water (copy appended – ref. Appendix C) indicates a 375 mm surface water sewer and a 600 mm foul sewer both running within Sheffield Road. Reference to the report by ESG and the original drainage plan for the site (see 2.4 above) indicates that the existing site drainage from DB Schenker's site is connected to the 600 mm foul sewer that is situated within Sheffield Road.

2.5.2 Watercourses and Culverts

Rotherham Metropolitan County Council have advised us that that there are no adopted local watercourse/culverts within the vicinity of the site

3.0 PROPOSED DRAINAGE DESIGN

3.1 DESIGN GUIDANCE OVERVIEW

Yorkshire Water were contacted by WM Saunders Partnership LLP with regard to the potential for a drainage connection for the proposed development and they provided a response in a letter dated 15th May 2021 (Yorkshire Water Ref: X008947). In summary their initial opinion based on a 'desk top' study of the site was noted as follows: -

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 (which points are to be agreed).
- Foul water domestic waste can discharge to the 600 mm diameter public combined sewer recorded in Sheffield Road.

Surface Water

- In the first instance consideration should be given to the SuDS drainage hierarchy for surface water disposal.
- As a last resort (and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted) curtilage surface water may discharge to the 375 mm diameter public surface water main recorded in Sheffield Road. If this were to be the case, the rate of discharge would be limited to 4.75 l/sec.

3.2 PROPOSED FOUL WATER DRAINAGE DESIGN

Due to the limited amount of foul (sewage) water that will be generated by the new welfare facilities it is proposed that this will be drained to a sealed tank (cesspit) and emptied by tanker as and when required/recommended.

3.3 PROPOSED SURFACE WATER DRAINAGE DESIGN

Taking into account the comments made by Yorkshire Water (ref. section 3.1, above) an assessment of the disposal of surface water was carried out in accordance with CIRIA SuDS Manual C753. The findings of this assessment are as follows: -

3.3.1 RUN-OFF DESTINATION

3.3.1.1 Priority Level 1 – Collection of rainwater for use

The proposed development is to handle and process scrap metal therefore the collection of rainwater is not feasible (because it is not required for operational needs).

3.3.1.2 Priority Level 2 – Surface water runoff infiltrated to ground

The ground has a layer stiff clay underlain by siltstone and sandstone. Infiltration cannot therefore be used as a means of surface water drainage.

3.3.1.3 Priority Level 3 – Surface water runoff discharged to watercourse

Rotherham Metropolitan County Council have confirmed that there are no local watercourses around the boundary of the proposed development site, therefore it will not be possible to discharge surface water runoff to a watercourse.

3.3.1.4 Priority Level 4 – Surface water runoff discharged to a surface water sewer

The Yorkshire Water sewer map indicates an adopted 375 mm diameter surface water sewer running within Sheffield Road.

However, record data gathered as part of a previous assessment of the site drainage (ref 2.4 above) indicated that the original and existing site drainage systems are in fact connected to the 600mm combined sewer also located within Sheffield Road.

It is therefore proposed to collect surface water runoff from the development site and to then discharge treated flows into the existing on-site system located at the northern end of the site as described below (3.3.2).

3.3.2 SURFACE WATER DRAINAGE DESIGN

Taking all of the above into account it was concluded that the majority of the site had originally drained to mains (the existing 600 mm foul sewer located in Sheffield Road) and that the only available and practical solution is to disposal of the surface water run off via the existing connection, but to reduce the rate of run off as described below.

Any additional areas not originally drained to mains would be designed in accordance with current SuDS guidance also discharging via the existing connection and as detailed below.

It is proposed that the site is to be split into three operational areas as follows and the proposed drainage design for each of these is considered separately below:-

- Processing Area
- Handling Area
- Office Block and Access Road

The three operational areas are illustrated on Drawing No. 19.02 C30 Rev A (Proposed Drainage Masterplan) by James & Nicholas LLP– copy appended, ref. Appendix D.

3.3.2.1 Surface Water Drainage - Processing Area

The Processing Area is currently operated with a permeable stoned surface.

A 300 mm diameter perforated pipe currently runs along the eastern boundary of the site adjacent to the railway track. This drains any surplus surface water run off to a holding tank for removal by tanker if and when required.

The existing stoned area will be provided with concrete surfacing as part of the longer-term development and this will ultimately increase the surface water runoff.

It is proposed that the run off from the concrete-surfaced yard area will be collected by an in-situ cast concrete dished channel, catchpits with gully grating and large bore pipes (replacing the existing perforated pipe system) and drained via a full retention separator into a below-ground attenuation storage system. This will then be drained to a pumping station located within the Handling Area (see 3.2.2.2 below)

The attenuation system will be designed to restrict the flow to a 'green field' run-off rate' of 3.1 litres/second/hectare based on a storm with a return period of 30 years.

3.3.2.2 Surface Water Drainage - Handling Area

The original drainage system serving the area (ref. section 2.4 above) has been either removed or sealed (or both). Surface water run-off of is currently a significant issue, with surplus water having to be removed from site by tanker at significant cost.

It is proposed that the run off from the concrete surfaced yard area will be collected by an in-situ cast concrete dished channel, catchpits with gully grating and large bore pipes formed as part of the new concrete surfacing work and to be located alongside the existing railway track on the eastern perimeter of the area.

The system will then drain via a full-retention separator and into a below-ground attenuation storage system. The attenuation system will then discharge via a flow control unit into a pumping station located within the area.

As this area was originally served by a mains drainage system, the new attenuation system will be designed to restrict the flow to 'brownfield' run-off less 20% based on an 'original design rate' of 50 mm/hour, so that there will be a net reduction on the original designed flow from the site to mains.

3.3.2.3 Pumped Mains (Serving the Processing and Handling Areas)

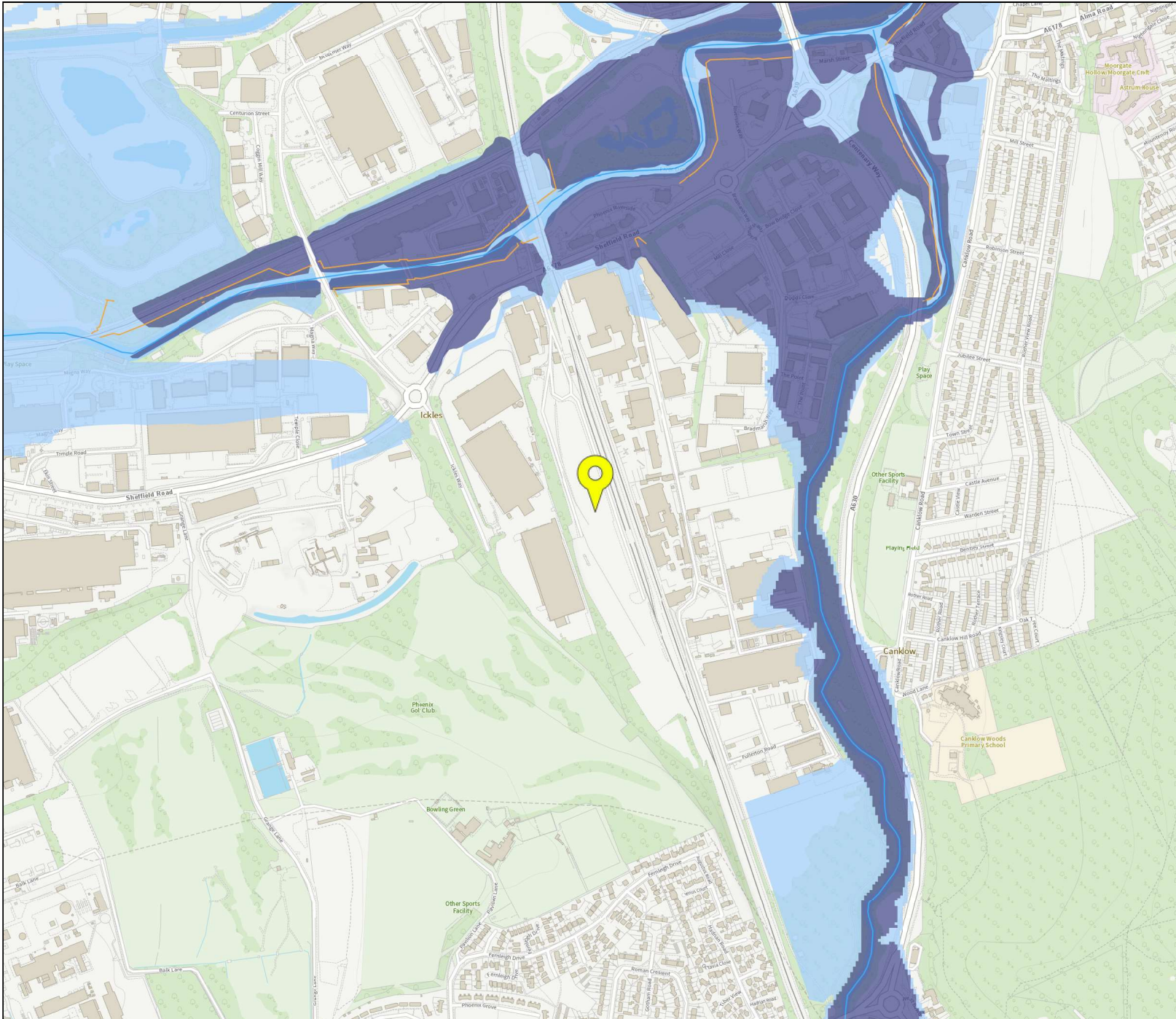
A pumped main is required serving the Processing and Handling Areas due to the topography of the site.

It is proposed that treated, attenuated surface water run-off from both the Processing and Handling areas will be collected in a single chamber. From this chamber it will be pumped via a rising main discharging into a new manhole and then into the existing system located at the northern end of the site and ultimately into the 600 mm foul water mains located within Sheffield Road as previously

3.3.2.4 Surface Water Drainage - Office Block and Access Road

It is proposed that the drainage system for surface water run-off from the access road will comprise a typical gravity system utilising gullies and a below-ground piped, gravity system to collect surface water, and that the surface water will be drained via a new full-retention separator and attenuated storage system prior to its discharge to a new manhole (ref. section 3.3.2.3 above).

As this area was originally served by a mains drainage system the new attenuation system will be designed to restrict the flow to 'brownfield' run-off' less 20% based on an 'original design rate' of 50 mm/hour, so that there will be a net reduction on the original designed flow from the site to mains.



Flood map for planning

Your reference

Rotherham

Location (easting/northing)







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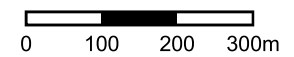
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Created

9 Nov 2021 15:32

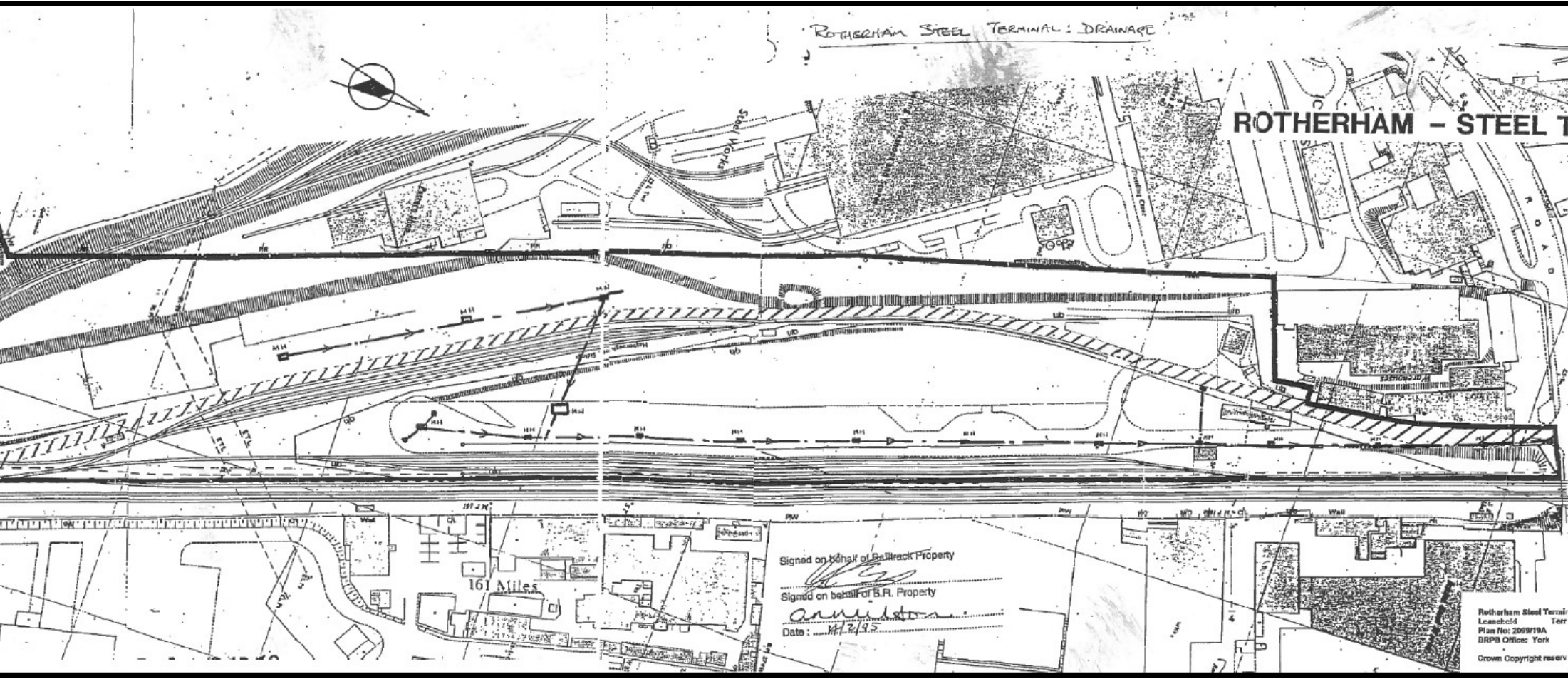
-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area



EXISTING ROTHERHAM STEEL TERMINAL DRAINAGE MAP

ROTHERHAM STEEL TERMINAL: DRAINAGE

ROTHERHAM - STEEL T



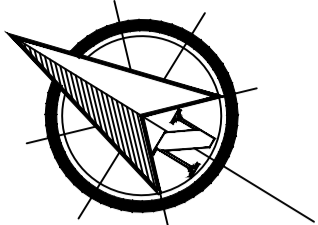
Signed on behalf of Ballrack Property

Signed on behalf of B.R. Property

Date: 11/2/95

Rotherham Steel Termal
Leasehold Terr
Plan No: 2099/19A
BRPB Office: York
Crown Copyright reserved



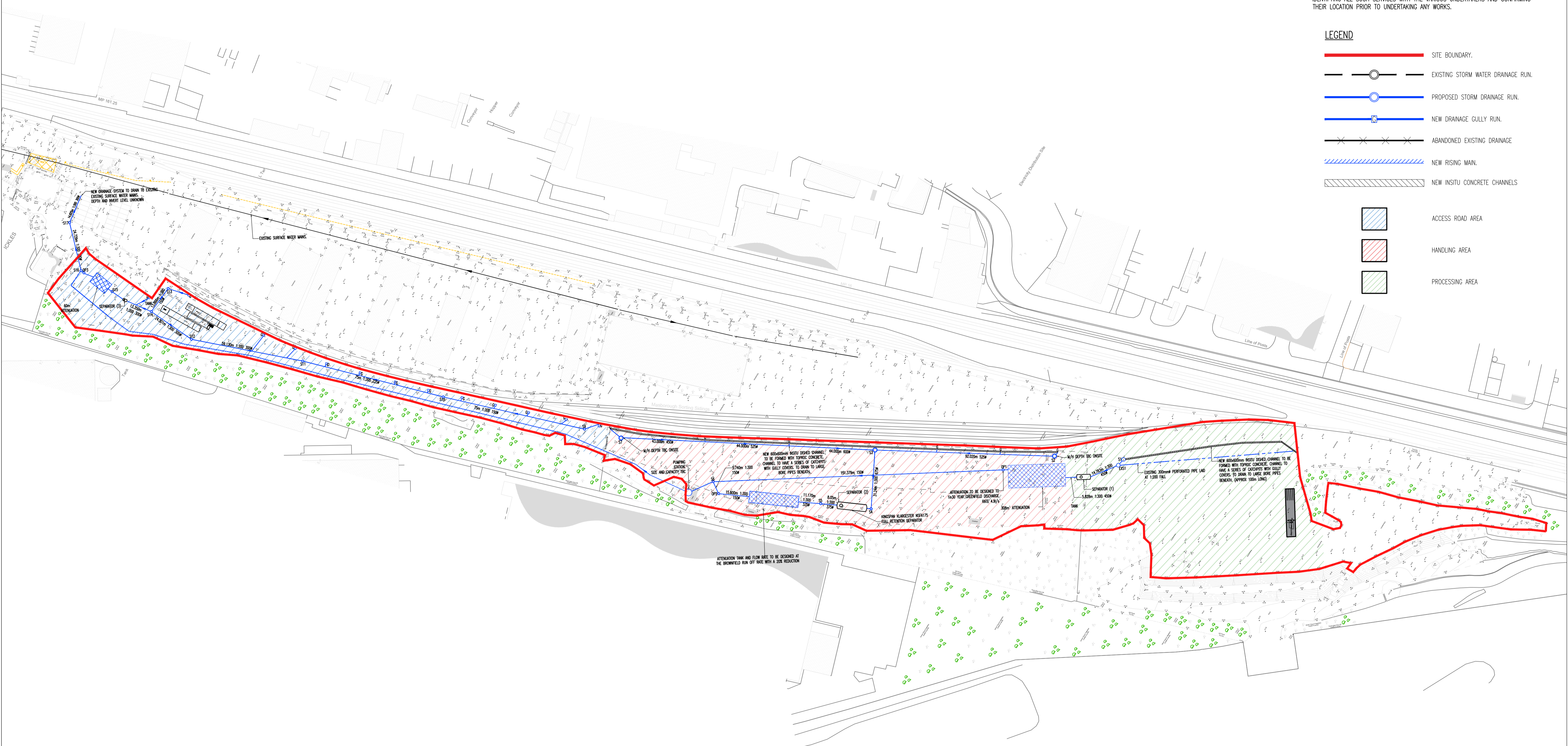


DRAINAGE NOTES

- 1.1 ALL DRAINAGE CONSTRUCTION TO BE DONE IN ACCORDANCE WITH SEWERS FOR ADOPTION 8th EDITION.
- 1.2 THE CONTRACTOR IS TO WORK IN ACCORDANCE WITH ALL APPROPRIATE GUIDANCE AND ACCEPTED GOOD PRACTICE INCLUDING HSE PUBLICATION HSG47.
- 1.3 THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISH THE EXTENT OF ALL PREVIOUS BUILDING FOUNDATIONS AND OBSTRUCTIONS ON THE SITE WHATEVER MEANS NECESSARY PRIOR TO WORKS COMMENCING.
- 1.4 THE CONTRACTOR SHALL BE RESPONSIBLE FOR DIVERSION AND OR PROTECTION OF ALL SERVICES WITHIN THE ZONE OF WORKS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL SUCH SERVICES WITH THE VARIOUS UNDERTAKERS AND CONFIRMING THEIR LOCATION PRIOR TO UNDERTAKING ANY WORKS.

LEGEND

- SITE BOUNDARY.
- EXISTING STORM WATER DRAINAGE RUN.
- PROPOSED STORM DRAINAGE RUN.
- NEW DRAINAGE GULLY RUN.
- ABANDONED EXISTING DRAINAGE.
- NEW RISING MAIN.
- NEW INSITU CONCRETE CHANNELS.
- ACCESS ROAD AREA.
- HANDLING AREA.
- PROCESSING AREA.



PROPOSED DRAINAGE PLAN
SCALE 1:1000

Rev	No.	REVISION	by	date	No.	REVISION	by	date
A	1	MINOR ALTERATIONS MADE. DRAINAGE AREA KEY ADDED.	KJ	05.01.22				

NOTES

- 1 Do not scale from this drawing
- 2 All dimensions to be checked on site
- 3 As built drawings are prepared, in part, based upon information furnished by others. While this information is believed to be reliable, James & Nicholas LLP assume no responsibility for the accuracy of As built drawings or for any errors or omissions that may have been incorporated into them as a result of incorrect information provided to us by others. Those relying on an As built drawing are advised to obtain independent verification of its accuracy.

STAGE
TENDER

REFER ALSO TO THE FOLLOWING:
Drawings:

Bending Schedules:

CLIENT

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Job title
SCRAP HANDLING AREA, SHEFFIELD ROAD, ROTHERHAM

Drawing title
PROPOSED DRAINAGE MASTERPLAN

drawn	KJ	22.11.21
checked	KJ,T	22.11.21
approved	KJ,T	22.11.21

Job No:	Drawing No:	Rev:
19.02	C30	A

scales: 1:1000 @ A1

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