



HARGREAVES SERVICES PLC

**MONCKTON COKE WORKS
ROYSTON
BARNLEY**

STATEMENT ON FLOODING AND DRAINAGE

1.0 INTRODUCTION

- 1.1 Hargreaves Services PLC is considering developing part of the existing site with a new railway line and hard standing area for stockpiling once unloaded from the train.
- 1.2 ARP Associates have been appointed to carry out an assessment of the site, and prepare a Statement on Flooding and Drainage proposals for the new development, referring to the requirements of the National Planning Policy Framework (NPPF) and its accompanying Technical Guidance (TG).
- 1.3 The walkover survey and report has been undertaken in May 2013.

2.0 SITE WALKOVER

General

- 2.1 The site, which is centred on Ordnance Grid Reference SE 374 123, is located on the northeastern edge of the village of Royston. The site abuts Lund Hill Lane to the east with a nature habitat beyond. To the north, there is an access track leading to a Yorkshire Water sewage works with areas of grass land and densely populated woodland. A small commercial garage is located in the northeast corner. To the west, there are a railway line and a disused canal with open agricultural fields beyond before the village of Royston. To the south, there is the main site operations area of the coke works. The proposal site is roughly a triangular shaped piece of land extending to an area approximately 2.86ha.
- 2.2 A site location plan is presented in Appendix A.
- 2.3 The majority of the site is presently used for the stockpiling of raw materials (ground coal) used in the works manufacturing processes. A small portion of land in the northeast corner is unused and is currently overgrown grass with multiple sapling trees. The small strip of land to the west was a previous railway line, now removed, with the stone formation still present. The land either side of the strip is woodland with multiple trees, hawthorns and overgrown grass.
- 2.4 The site falls predominantly in a westerly direction, with a gradual fall to the north in places. Land to the east of Lund Hill Lane falls in an easterly direction, whilst levels to the north fall towards the site. However, the site is bunded along the northern and western boundary with what now appears to be a natural embankment with grassland and several

sapling trees. The unused land to the east is much lower than the existing highway where a railway line used to pass under the highway.

- 2.5 A topographical survey is presented in Appendix B.

3.0 EXISTING DRAINAGE

- 3.1 There are existing sewers crossing the site, but there is no positive drainage present. Rainwater run-off is likely to pond on site in the northwestern corner.
- 3.2 The nearest watercourse is un-named, and located approximately 200m northwest from the site boundary at its nearest location, within the woodland.
- 3.3 Barnsley canal, now disused, is located to the west of the site. Due to the orientation of the canal and the site, the canal is located approximately 60m away, at its nearest location.
- 3.4 The unused area to the east has an area of standing water. This is due to the area being bunded to all sides, so rainfall falling on the land has nowhere to discharge and ponds accordingly.
- 3.5 An indicative existing drainage layout provided by the Client is presented in Appendix C.

4.0 CONSULTATIONS

Water Authority

- 4.1 A consultation was requested from Yorkshire Water, who are the Water Authority for this area. At this time, a response is still to be received.

Land Drainage Authority

- 4.2 A consultation was requested from Barnsley Metropolitan Borough Council, who are the Land Drainage Authority for this area. At this time, a response is still to be received.

Environment Agency Consultation

- 4.3 The Environment Agency website confirms that the site lies within Flood Zone 1.

5.0 MATERIAL CONSIDERATION IN RELATION TO NPPF AND TG

Flood Classification

- 5.1 The Environment Agency website shows that the site falls within land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding in any year (less than 0.1%). In accordance with Table 1 of the TG, the site falls within Flood Zone 1 "Low Probability".
- 5.2 Therefore, all uses of land are appropriate within this zone, but an assessment of the effect of surface water run-off will need to be incorporated in any flood risk assessment.

End Use

- 5.3 The proposed development includes the construction of a new railway line and hard standing area for stockpiling once unloaded from the train. A proposed site layout is presented in Appendix D.
- 5.4 When applying Table 2 of the TG, the flood risk vulnerability classification shows that the proposed end use will fall into a "Less Vulnerable" classification.

Sequential Test

- 5.5 As set out in the NPPF, the aim of the Sequential Test is to steer development to areas with the lowest probability of flooding (Zone 1).
- 5.6 When the site is evaluated in accordance with Table 3 of the TG, the development shows that the Sequential Test is satisfied.

Flood Sources

- 5.7 Flooding from Rivers - The site is not located near enough to the sea to cause a problem from this source.
- 5.8 Flooding from Local Watercourses - The nearest watercourse is located approximately 200m northwest. Due to the topography, flooding from this source is considered to be low risk.
- 5.9 Flooding from the Sea - The site is not located near enough to the sea to cause a problem from this source.
- 5.10 Flooding from Land - The site is situated adjacent to an existing public highway serviced by a positive drainage system throughout. Although land to the north falls towards the site, the topography of the access track along the northern boundary is such that overland run-off will flow in a westerly direction. Furthermore, the northern boundary of the site has a large bund that will prevent any run-off from entering the site. The topography of the existing coke works to the south is such that no run-off should discharge into the proposal site. The proposed route of the railway line to the west is generally higher than the surrounding land. Therefore, it is unlikely that flooding will occur from overland run-off.
- 5.11 Flooding from Groundwater - The Geological Survey Map of Great Britain shows the site is underlain by Made Ground over Mexborough Rock of the Pennine Middle Coal Measures Formation. These soils will prevent issues of groundwater on the site and, therefore, flooding from this source is considered to be low risk.
- 5.12 Flooding from Sewer - There are existing sewers crossing the site. It is possible, therefore, that any blockage of the sewers will result in flooding from the lowest cover level of manholes or gullies, and this will need to be considered as part of any proposed development.
- 5.13 Flooding from Reservoirs, Canals or Artificial Sources – Barnsley canal, now disused, is located to the west of the site. Due to the topography of the land, flooding from this source is considered to be low risk.

Climate Change

- 5.14 The NPPF indicates that the Global sea level will continue to rise, depending on greenhouse gas emissions, and the sensitivity of the climate system and there will be an increase in rainfall across the country. Table 5 of the TG makes an assessment of the peak rainfall intensity and states that this is likely to increase by 20% between 2055 and 2085 and by 30% between 2085 to 2115.
- 5.15 Due to the topography of the land and surrounding area, overland run-off from adjoining land is unlikely to be an issue. Therefore, any run-off from outside the site will be insignificant and, on this basis, only rainfall falling within the site boundaries will need to be considered in respect of climate change.
- 5.16 In accordance with the TG, the published figures show that, for an expected life of greater than 2085 for any new development, the anticipated increase in rainfall will be around 30%. It will be necessary to design any new positive drainage system with a 30% increase in capacity to accommodate this requirement.

Flood Mitigation

- 5.17 As the site falls within Flood Zone 1, flood mitigation measures are only required in the event of a catastrophic storm or blockage of the existing sewers. The following precautionary mitigation measures are, therefore, recommended:-
- 5.17.1 In the unlikely event of flooding of the site, it would be appropriate to design external levels with falls to non-critical areas, such as landscaping, where the water can pond without affecting existing buildings or third party land.

Sustainable Drainage

- 5.18 In order to comply with the requirements of NPPF, it is necessary to consider aspects of Sustainable Drainage Techniques for the new development. However, due to the nature of the manufacturing process carried out and large quantities of raw materials consisting of ground coal that are on site and what will be stored on the new hardstanding area, any proposed SUDS technique would be unsuitable as the ground coal would block any such feature. It would be unrealistic to provide a drainage system and maintenance regime to remove all the fines from any such drainage network.

Drainage

- 5.19 It is a requirement to ensure that surface water run-off from any proposed development has negligible consequence on downstream areas either in sewer capacity or discharge to watercourse.

Existing Surface Water Run-Off

- 5.20 It can be seen from the site walkover and topographical survey that run-off from site remains within the confines of the site and is infiltrated into the made ground.

Proposed Surface Water Drainage

- 5.21 Consideration for the proposed drainage should firstly be given to infiltration techniques (to ground), but these are considered unsuitable for the proposed end use. Connection to a watercourse is also considered to be impractical due to issues of removing fines and the potential for contaminating the watercourse. Therefore, as the site deals with any rainfall within the site itself at the present time, this is considered to be the most practical solution, especially considering a large amount of water may be used on site in the manufacturing process.
- 5.22 It is proposed to provide a formal tank to hold the run-off generated from the hardstanding area. A dished concrete channel should be used to divert any runoff into the tank and allow this stored water to be re-used on site. Any excess water would mimic the current flow regime on site and remain on site. Appropriate bunding should be provided in order to prevent run-off discharging onto third party land.
- 5.23 Taking the average rainfall intensity for the 100year, 360min storm duration of 10.401mm/hr, the volume of surface water run-off can be calculated. A holding tank will therefore be needed to provide sufficient storage for approximately 59.6m³. The indicative surface water drainage calculations are presented in Appendix E. However, detailed calculations and proposals will need to be prepared and submitted to the Planning Authority for approval prior to construction.
- 5.24 The introduction of the railway line into the site from the north west will not require any formal drainage as no large areas of impermeable surfacing are proposed and the existing flow regime will remain.

Emergency Egress During Times of Flood

- 5.25 It is a requirement under TG that occupants should be able to egress any building during times of flood, without being trapped by flood conditions.
- 5.26 As the site falls within Flood Zone 1 and no buildings are proposed no special mitigation measures are required for emergency egress during times of flood.

6.0 COMMENTS

- 6.1 The site falls within Flood Zone 1 and the Sequential Test is satisfied. However, in order to accommodate the possibilities of flood from extreme storm or blocked sewers, the following mitigation measures are recommended.
- 6.1.1 In the unlikely event of flooding of the site, it would be appropriate to design external levels with falls to non-critical areas, such as landscaping, where the water can pond without affecting existing buildings or third party land.
- 6.4 A dished concrete channel should be used to divert any run-off into the tank and allow surface water to be re-used on site.
- 6.5 Appropriate bunding should be provided in order to prevent run-off discharging onto third party land.

- 6.6 A holding tank will be needed to provide sufficient storage for approximately 59.6m³. The indicative surface water drainage calculations are presented in Appendix D. However, detailed calculations and proposals will need to be prepared and submitted to the Planning Authority for approval prior to construction.
- 6.7 No special mitigation measures are required for emergency egress during times of flood.
- 6.8 Subject to compliance with the above, the proposed development can satisfy the requirements of the National Planning Policy Framework and its accompanying Technical Guidance in relation to flood risk.

A P P E N D I X A

S I T E L O C A T I O N P L A N



Legend

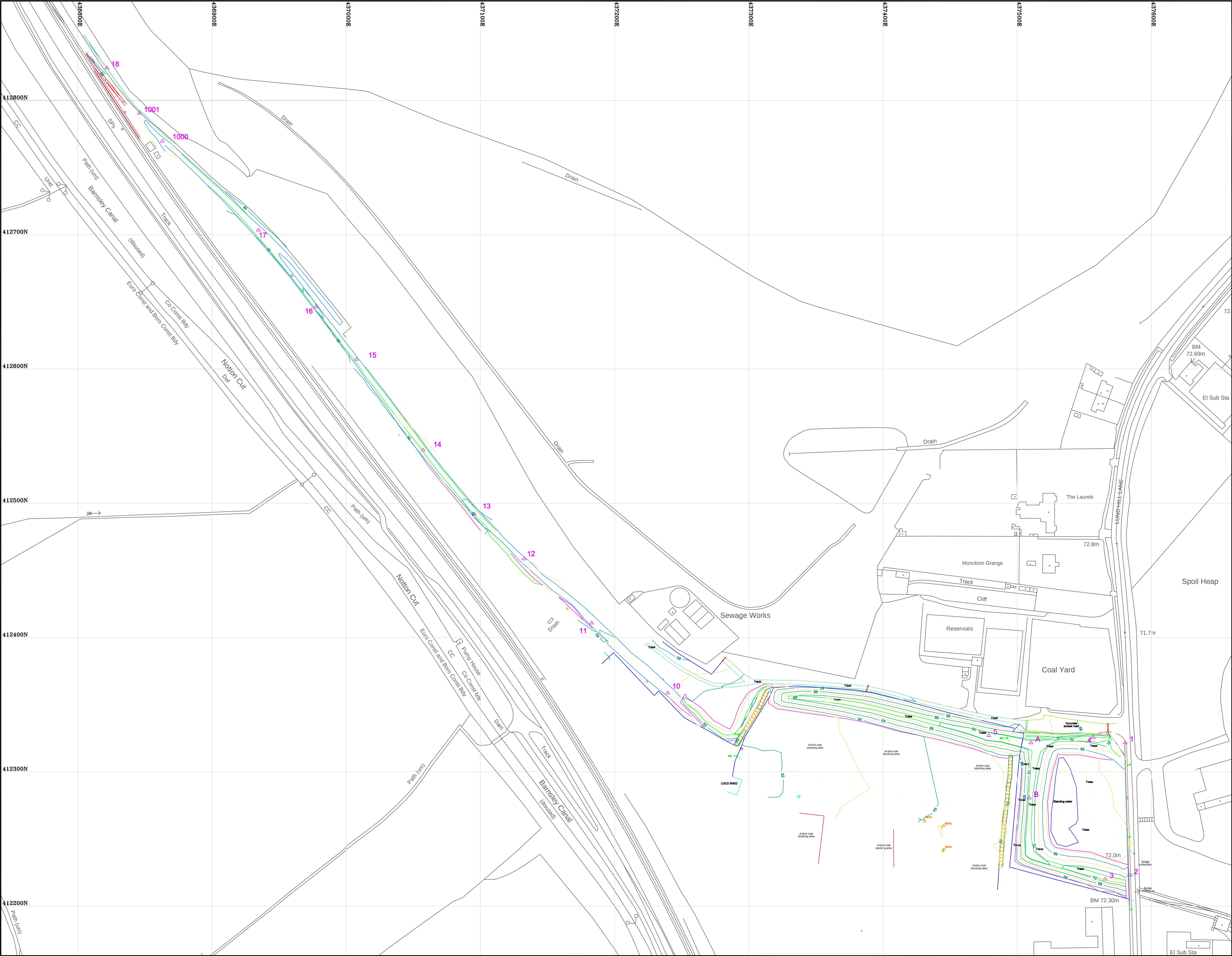
Planning Application Boundary

Other land under the control of the applicant

Rev	Description	Date	By	Chkd
Client:				
Project:				
MONCKTON COKEWORKS PROPOSED RAIL SIDING				
Plan Title:				
PLANNING APPLICATION BOUNDARY PLAN				
Silkstone Environmental Ltd				
www.silkstoneenvironmental.co.uk				
7, Hall Annex, Thorncliffe Park, Chapeltown, Sheffield, S35 2PH Tel (0114) 2573487 Fax (0114) 2573459				
Project No. 13049		Dwg No. 13049 / 103	Rev	
Date: 25.04.13		Drawn: CM	Chkd: SR	Scale: 1:1250 @ A1
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APPENDIX B

TOPOGRAPHICAL SURVEY



Legend

Contour (mAOD)

Contour prominent (mAOD)

Bottom of bank

Top of bank

Bridge footprint

Bridge underpass canopy

Fence

Kerb

Railway ballast

Railway line

Railway sleeper outline

Track

Wall

Waterline

Concrete manhole ring

Tyre wall

Gate

Manhole

Telecoms cover

Ground level

Station

Station	Easting	Northing	Level
1	437580.507	412321.641	68.922
2	437583.891	412222.952	71.960
3	437565.524	412220.068	71.303
4	437556.658	412325.617	70.742
5	437478.810	412326.939	70.482
10	437239.588	412358.777	61.294
11	437182.876	412410.856	60.238
12	437132.497	412458.589	58.824
13	437095.434	412481.976	58.397
14	437057.262	412539.625	57.378
15	437007.515	412607.151	56.244
16	436977.505	412646.411	55.964
17	436934.638	412703.437	56.355
18	436821.655	412824.317	57.838
1000	436862.998	412769.659	57.403
1001	436845.957	412780.485	57.778
2A	437586.909	412131.072	68.272
A	437510.218	412321.593	70.746
B	437509.001	412280.461	70.956

This survey has been carried out to National Grid and National Grid Datum using Leica GPS 1200 series equipment & Leica smartnet.
A one point localisation was established using coordinates derived from station 11

Rev	Description	Date	By	Chkd

Client:

Project:

MONKTON COKE WORKS

Plan Title:

TOPOGRAPHICAL SURVEY
RAIL SIDINGS

Plan Title:

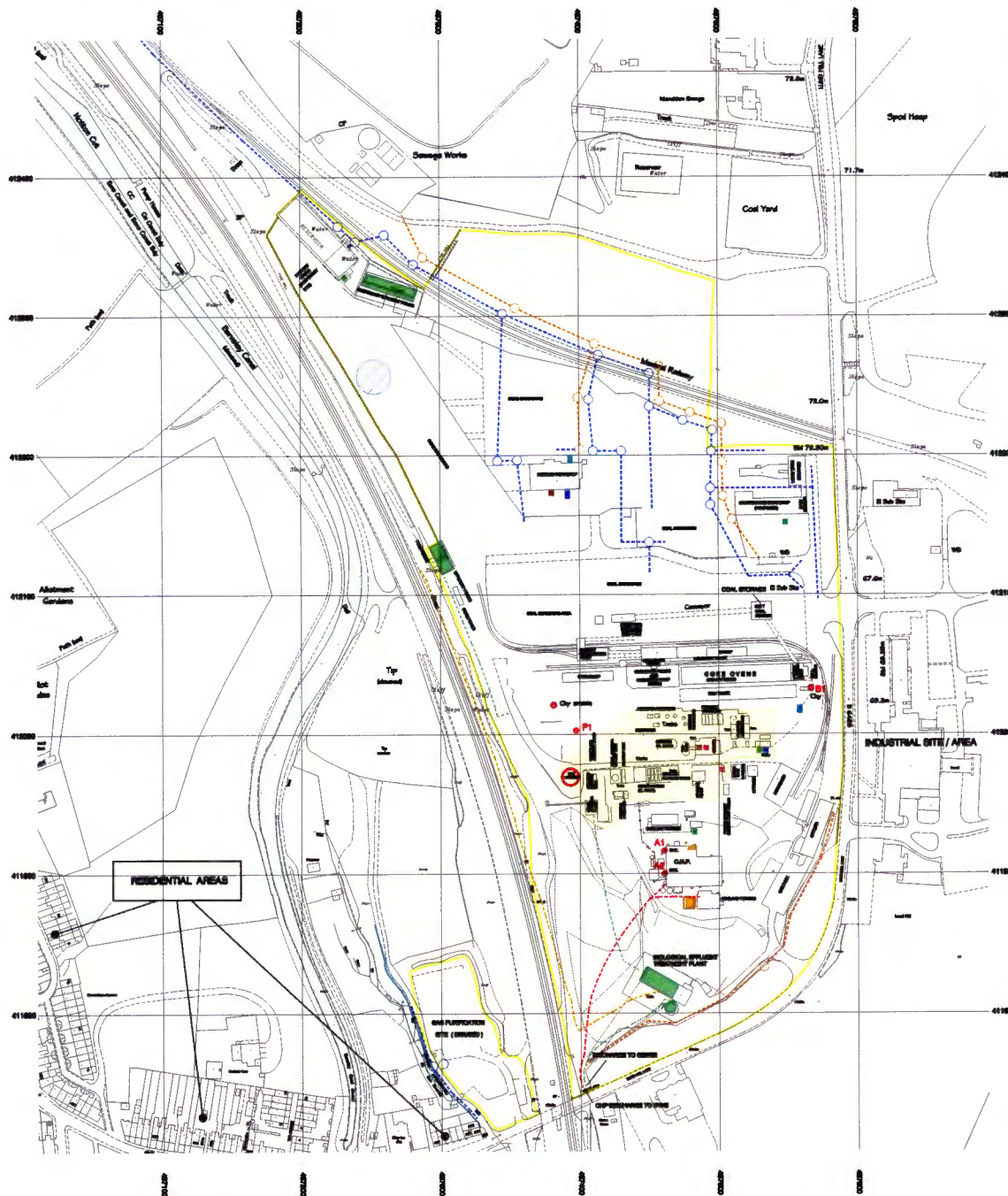
Silkstone
Environmental Ltd
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7, Hall Annex, Thorncliffe Park, Chapeltown, Sheffield, S35 2PH
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Project No. 13049	Dwg No. 13049/100	Rev
Date: Mar'13	Drawn: MS	Chkd: CM

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APPENDIX C

INDICATIVE EXISTING DRAINAGE LAYOUT



Legend

- SITE BOUNDARY
- SURFACE WATER DRAINAGE
- SURFACE WATER MANHOLE
- SEWER
- SEWER MANHOLE
- WATERCOURSE
- CANAL
- EFFLUENT STORAGE & DISCHARGE
- LEACHATE
- CHW DISCHARGE
- CHIMNEY EMISSIONS TO AIR
- FACTORY WASTE SKIPS
- TRANSFORMERS
- BREZZE FOR ACCORDANCE
- VEHICLE SPILL KITS & ABSORBENTS
- OIL STORES
- WATER TREATMENT CHEMICALS
- DIESEL
- GAS HOLDER
- BY-PRODUCT AREA CONTAINS:
 - VEHICLE SPILL KITS & ABSORBENTS
 - VEHICLE SPILL KITS & ABSORBENTS
 - CAUSTIC SODA
 - AMALGAM (2-25%)
 - TAR
 - COAL GAS

NOTE:
HISTORICAL GROUND CONTAMINATION TO BE EXPECTED
THROUGHOUT THE SITE, BUT PRIMARILY IN THE
BY-PRODUCTS AND GAS PURIFICATION AREA.

AMENDMENTS

NO.	DESCRIPTION	REVISED	REVISED	DATE
A	Revised Update	A.B.	S.E.	20-09-01
B	Change P1 added, all emissions controlled	G.W.	S.E.	15-09-02
C	Define Water Storage, Storage 2 Modification added	G.W.	C. Ferns	06-09-09



UK COAL MINING LTD.
HARDWORTH PARK, BURNLEY ROAD, HARDWORTH,
ROSDALE, BOLTON, LANCASHIRE, OL14 5SE

001-0000

**MONCKTON COKE
& CHEMICAL Co Ltd.**

TITLE

Environmental Emergency Plan

COUNTRY DISTRICT CIVIL PARISH

LOCATION

C.O. 410000 410000

Page

10

Approved by: S.E. Date: 20-07-09

Checked by: Date:

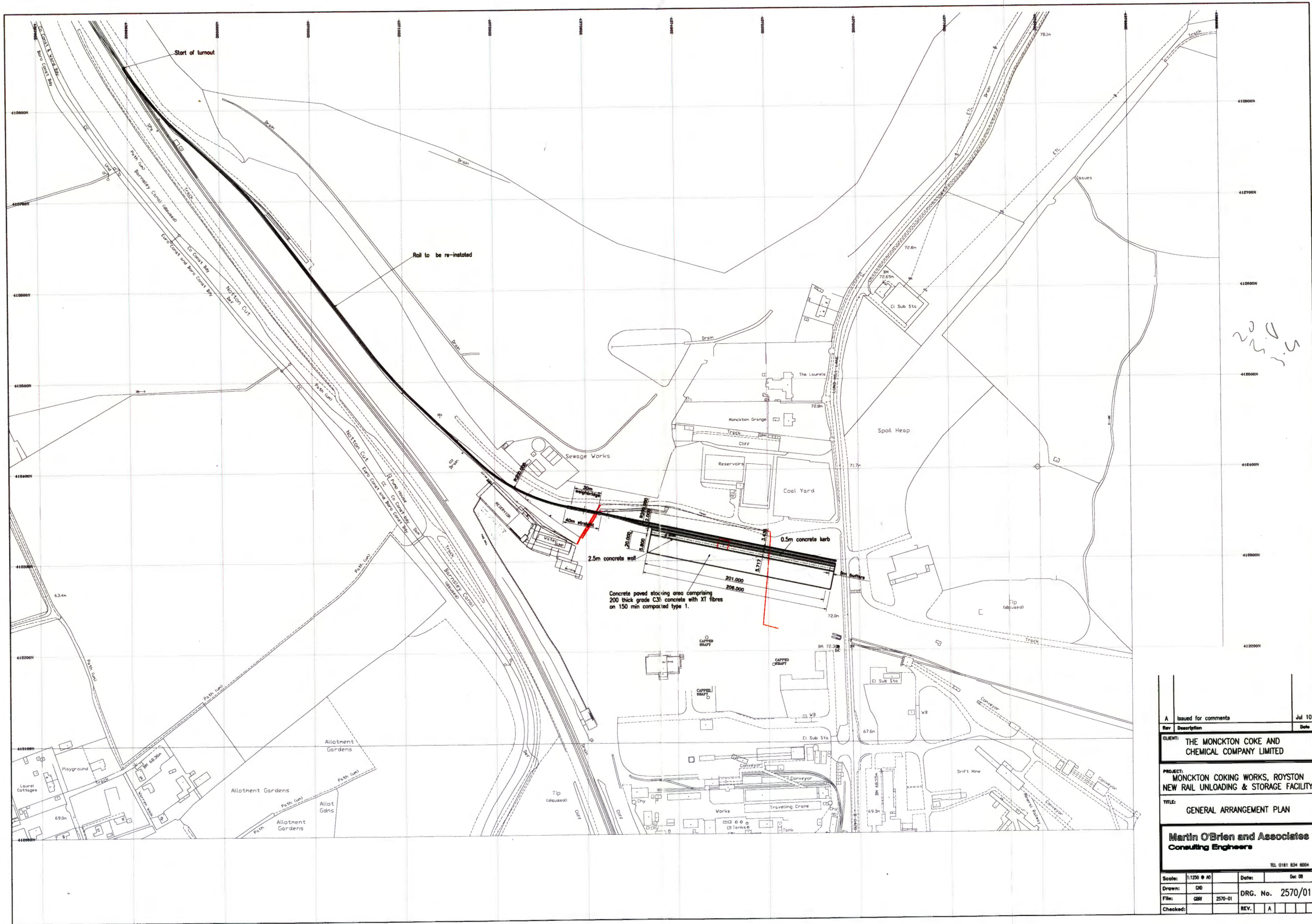
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Drawing No. 312501C

Contract Drawing No.

A P P E N D I X D

PROPOSED SITE LAYOUT



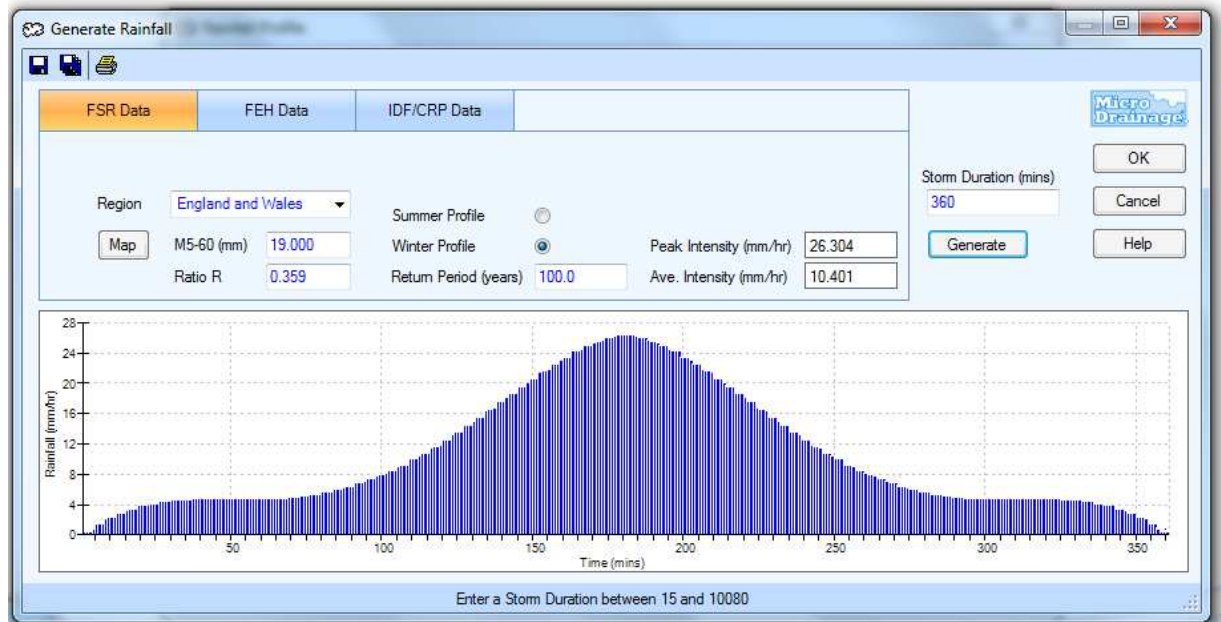
A Issued for comments		Jul 10
Rev	Description	Date
CLIENT: THE MONCKTON COKE AND CHEMICAL COMPANY LIMITED		
PROJECT: MONCKTON COKING WORKS, ROYSTON NEW RAIL UNLOADING & STORAGE FACILITY		
TITLE: GENERAL ARRANGEMENT PLAN		
Martin O'Brien and Associates Consulting Engineers		
TEL 0181 834 6004		
Scale:	1:1250 @ A0	Date: Dec 08
Drawn:	GD	
File:	GBR 2570-01	DRG. No. 2570/01
Checked:		REV. A

APPENDIX E

INDICATIVE SURFACE WATER CALCULATIONS

Appendix E:- Indicative Surface Water Calculations

Average Rainfall Intensity Generated Using Microdrainage



Storage Tank Size Calculation

Proposed impermeable area = 27.8m x 206m

$$= 5726.8\text{m}^2$$

Therefore,
$$\frac{5726.8\text{m}^2 \times 10.401\text{mm/hr}}{1000}$$

$$= 59.56\text{m}^3$$