South Tees Site Company Stockpile 2

FRA and Drainage Strategy Addendum

First Issue

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Revision History

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12.04.21	First Issue	Phil McCarthy

Contract

This report describes work commissioned by Phil McCarthy, on behalf of South Tees Site Company. Joseph Landells-Molloy of JBA Consulting carried out this work.

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Purpose

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Contents

List of Figures

List of Tables

1 Introduction

This supplementary flood risk and drainage statement has been prepared in support of a Section 73 Application relating an additional stockpile (Metals Recovery Stockpile 2) within the Teesworks area. The statement forms an addendum to the original flood risk assessment and drainage strategy (41825-WOOD-XX-XX-RP-OW-0001_A_P01) prepared by Wood for the original application (R/2019/0427/FFM) and relates to the varied scheme (R/2021/0057/VC).

2 Site Details

2.1 Site Location

In addition to the initial six locations for temporary storage of imported soil material defined in the original report, South Tees Development Corporation (STDC) has identified a new area located within the wider site planning boundary at the Metals Recovery Landfills area, at approximate NGR 454522. The location of the new storage mound is shown in Appendix A (STDC-SIZ-MR-PLA-0003 Metals Recovery Proposed Stockpile 2 Contours and Sections) and in Figure 2-1.

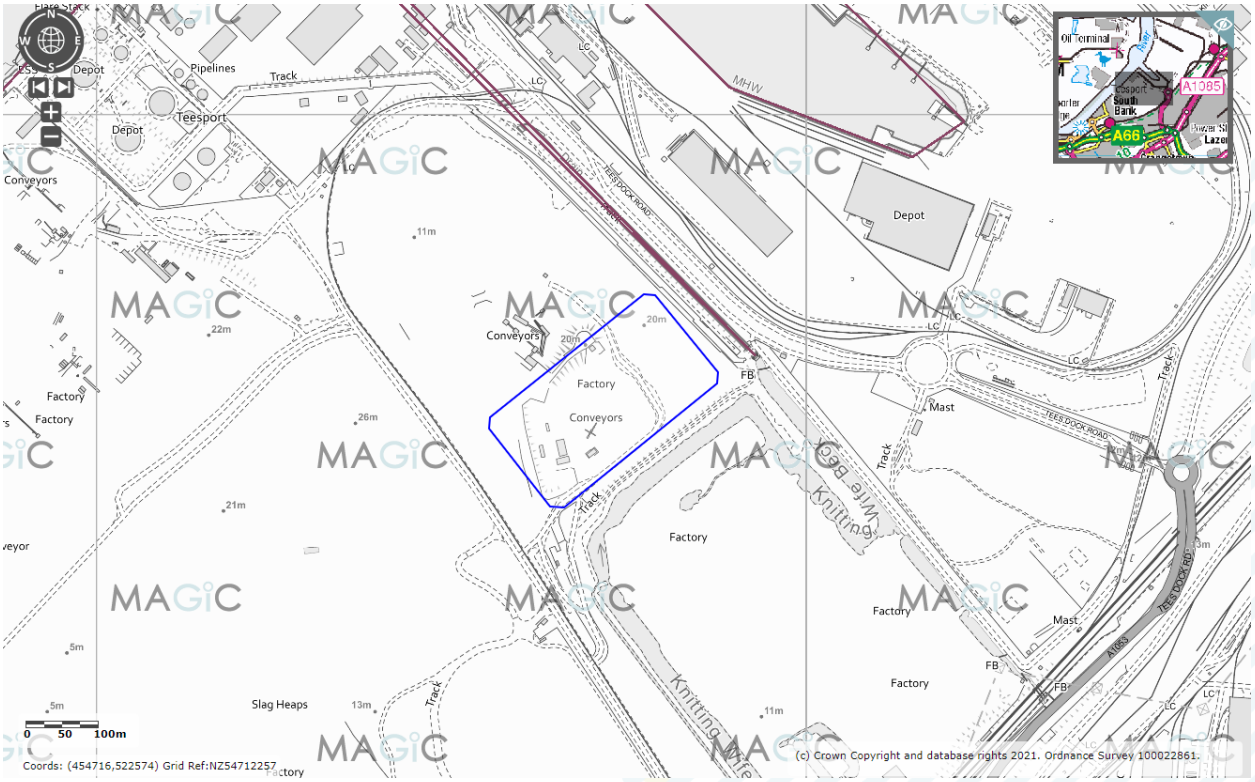


Figure 2-1: Location Plan

2.2 Metals Recovery Storage Mound

This area at Metals Recovery Landfills is proposed for the temporary storage of imported soil material as described with the original report. STDC would be responsible for management of the storage mound prior to future re-use of the land as part of the wider redevelopment of the site.

The identified location for this storage mound has an area of 4.6ha.

The area is located adjacent to the left bank of the Drainage Cut which forms the downstream extent of Knitting Wife Beck (Cleveland Channel), to the south of Tees Dock

Road. The site has now been fully remediated and has been levelled for reuse. The area is currently set at 8.8 mAOD.

It is proposed to discharge runoff from the Metals Recovery Stockpile 2 to the adjacent Cleveland Channel (Knitting Wife Beck) which ultimately outfalls to the River Tees approximately 1km to the north west of the site.

3 Flood Risk Appraisal

3.1 Potential Sources of Flooding

3.1.1 Tidal and Fluvial

The Metals Recovery Stockpile 2 is located within Flood Zone 1, therefore, at low risk of tidal and fluvial flooding (less than 0.1% Annual Exceedance Probability (AEP)).

The extents of the tidal and fluvial Flood Zones are shown for the wider site boundary in Figure A.2 of the original FRA and Appendix A.2 of this report (41825-WOOD-XX-XX-DR-OW-0002_S2_P01.1).

3.1.2 Surface Water

The Metals Recovery Stockpile 2 is generally at very low risk from surface water flooding (less than 0.1% AEP) based on the EA surface water flood risk map. Any surface water flooding in close proximity to the site is highly localised and limited to ponding at low spots.

The extents of the EA surface water flood risk map are shown for the wider site boundary in Figure A.3 of the original FRA and Appendix A.3 of this report (41825-WOOD-XX-XXDR-OW-0003_S2_P01.1).

3.1.3 Flooding from Sewers

The risk of flooding from sewers is considered to the low based on the original report findings. No further assessment has been undertaken.

3.1.4 Flooding from Reservoirs

The risk of flooding from reservoirs is considered to the low based on the original report findings. No further assessment has been undertaken.

3.1.5 Flooding from Groundwater

The risk of flooding from groundwater is considered to the low based on the original report findings. No further assessment has been undertaken.

3.1.6 Artificial Sources

The risk of flooding from artificial sources such as existing water retaining structures within the existing steelwork site is considered to the low based on the original report findings. No further assessment has been undertaken.

3.2 Flood Risk Mitigation

The risk of flooding to Metals Recovery Stockpile 2 is considered to be low from all sources. However, construction of the storage mound may reduce permeability and potentially increase runoff. Therefore, runoff will need to be managed appropriately to ensure that flood risk is not increased offsite.

4 Drainage Strategy

4.1 Baseline Surface Water Runoff

It is proposed to discharge site runoff to the adjacent Knitting Wife Beck (as shown on the drawing in Appendix A) which outfalls to the River. Whilst unrestricted discharge could be permitted to the tidal River Tees, it is considered more appropriate to restrict runoff to provide attenuation and a level of surface water treatment through settlement of particulates. The greenfield Qbar and 1% AEP rates are presented in Table 4-1. In line with the original report, greenfield runoff rates have been calculated using the ICP SuDS method (see Appendix B).

Table 4-1: Baseline Discharge Rates

Site	Greenfield Qbar (l/s)	Greenfield 1% AEP (l/s)
Metals Recovery Stockpile 2	17.4	36.1

4.2 Surface Water Drainage Strategy

In line with the original FRA report, it is assumed that the storage mounds are fully impermeable. It is proposed to restrict runoff to Knitting Wife Beck at the 1% AEP greenfield runoff rate.

Following the original report methodology, estimated attenuation volumes for the 1% AEP event plus 20% climate change are presented in Table 4 2. These were calculated using the Micro Drainage Quick Storage Estimate tool (see Appendix C). It is proposed to provide surface attenuation to the east of the site (as shown in the drawing in Appendix A). Between 2142m^3 and 3415m^3 of attenuation should be provided to restrict runoff to 36.1 l/s and allow for settlement of particulates.

Table 4-2: Estimate Attenuation Volumes

Site	Site Area/ Impermeable Area (ha)	1% AEP Discharge Rate (l/s)	1% AEP + 20% CC Attenuation Lower Estimate (m^3)	1% AEP + 20% CC Attenuation Upper Estimate (m^3)
Metals Recovery Stockpile 2	4.6	36.1	2142	3415

5 Sediment Management

Management of sediment pollution associated with the construction of the Metals Recovery Stockpile 2 storage mound and associated drainage infrastructure will follow the methodology outlined in Section 5 of the original report.

6 Maintenance and Management Plan

Maintenance and management of the Metals Recovery Stockpile 2 storage mound and associated drainage infrastructure will follow the agreed plan set out in Section 6 of the original report.

7 Conclusions and Recommendations

This flood risk and drainage statement forms an addendum to the original flood risk assessment and drainage strategy (41825-WOOD-XX-XX-RP-OW-0001_A_P01) prepared by Wood for the original application (R/2019/0427/FFM). The statement covers a new area for the temporary storage of imported soil material at the Metals Recovery Landfills area.

7.1 Flood Risk Assessment

The risk of flooding arising to the Metals Recovery Stockpile 2 storage mound is considered to be very low from all sources. The areas are located within Flood Zone 1 and are generally at very low risk from surface water flooding based on the EA surface water flood risk map. Any surface water flooding in close proximity to the site is highly localised and limited to ponding at low spots.

7.2 Drainage Strategy

It is proposed to discharge surface water to the adjacent Knitting Wife Beck which ultimately discharges to the River Tees approximately 1km to the north west of the site. It is proposed to provide surface attenuation to the east of the site. Runoff from the new area is to be restricted to the total 1% AEP greenfield runoff rate (36.1l/s). Between 2142m^3 and 3415m^3 of attenuation should be provided to attenuate the 1% AEP event plus 20% climate change event.

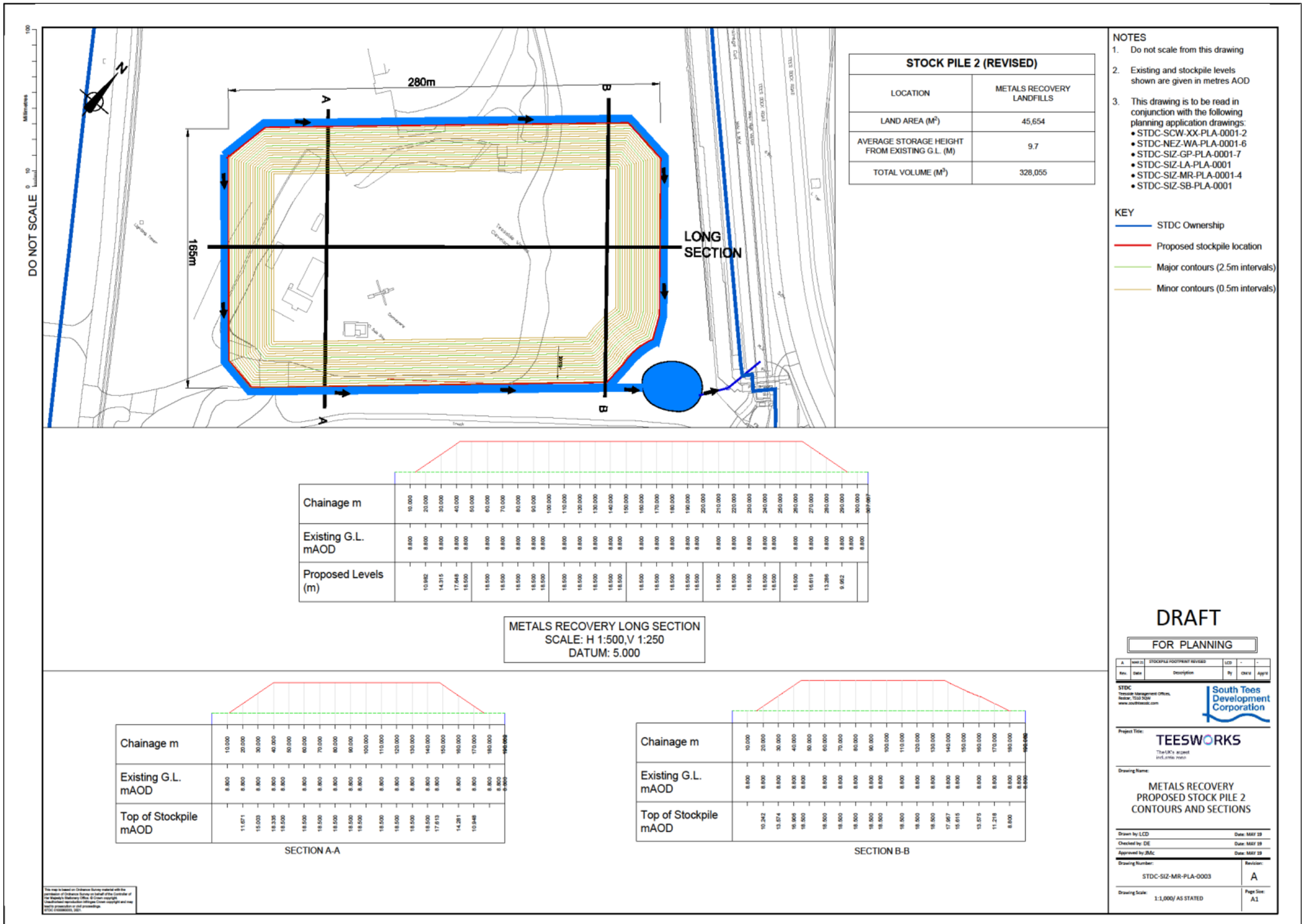
Runoff from the storage mound will contain sediment and this will be managed in accordance with the methodology agreed in the original report.

It will be the Contractors responsibility to ensure that appropriate measures are incorporated into the CEMP for the stockpiling works and that any Environment Agency permits required to discharge to the River Tees are in place prior to the commencement of works.

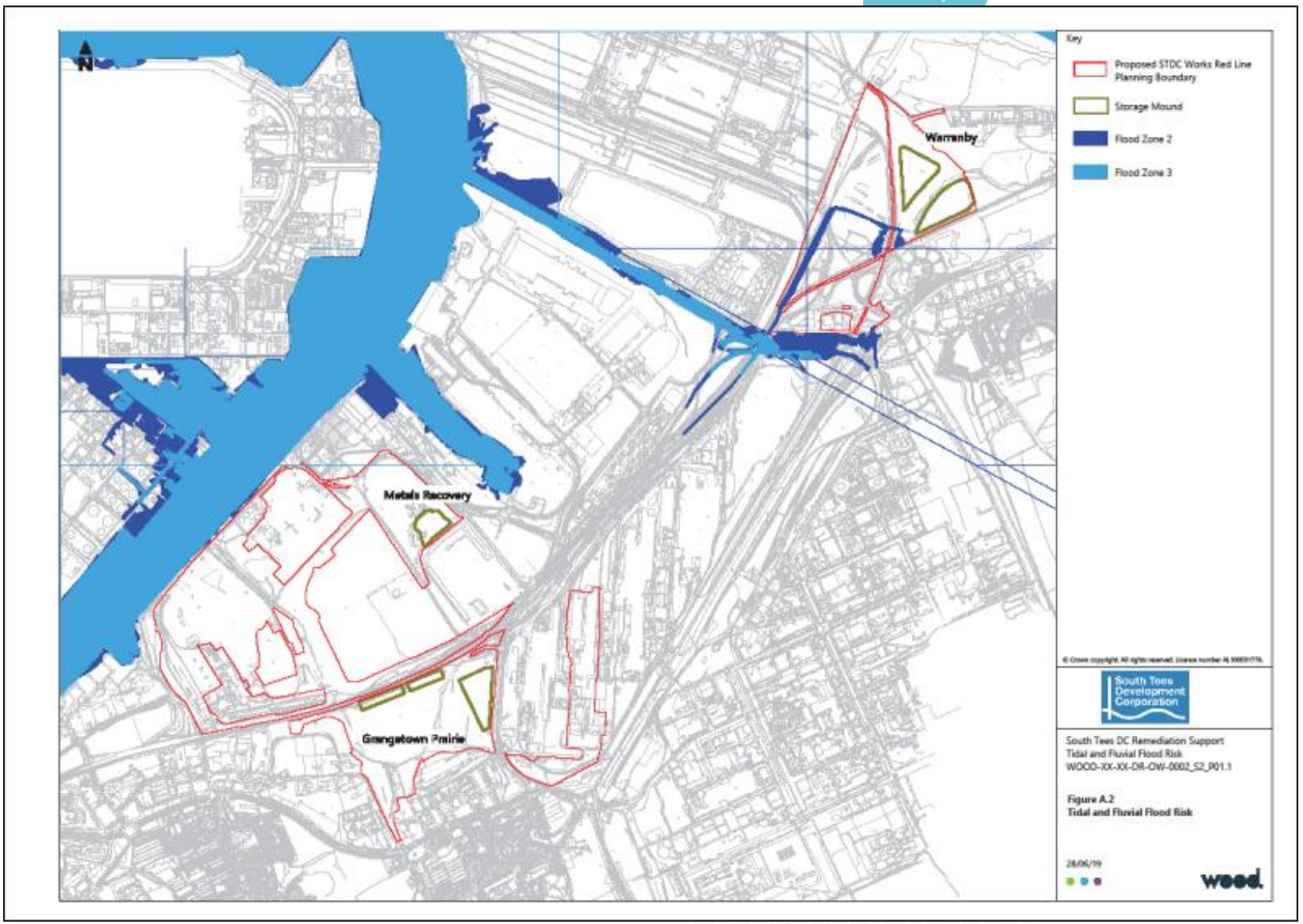
Appendices

A Drawings

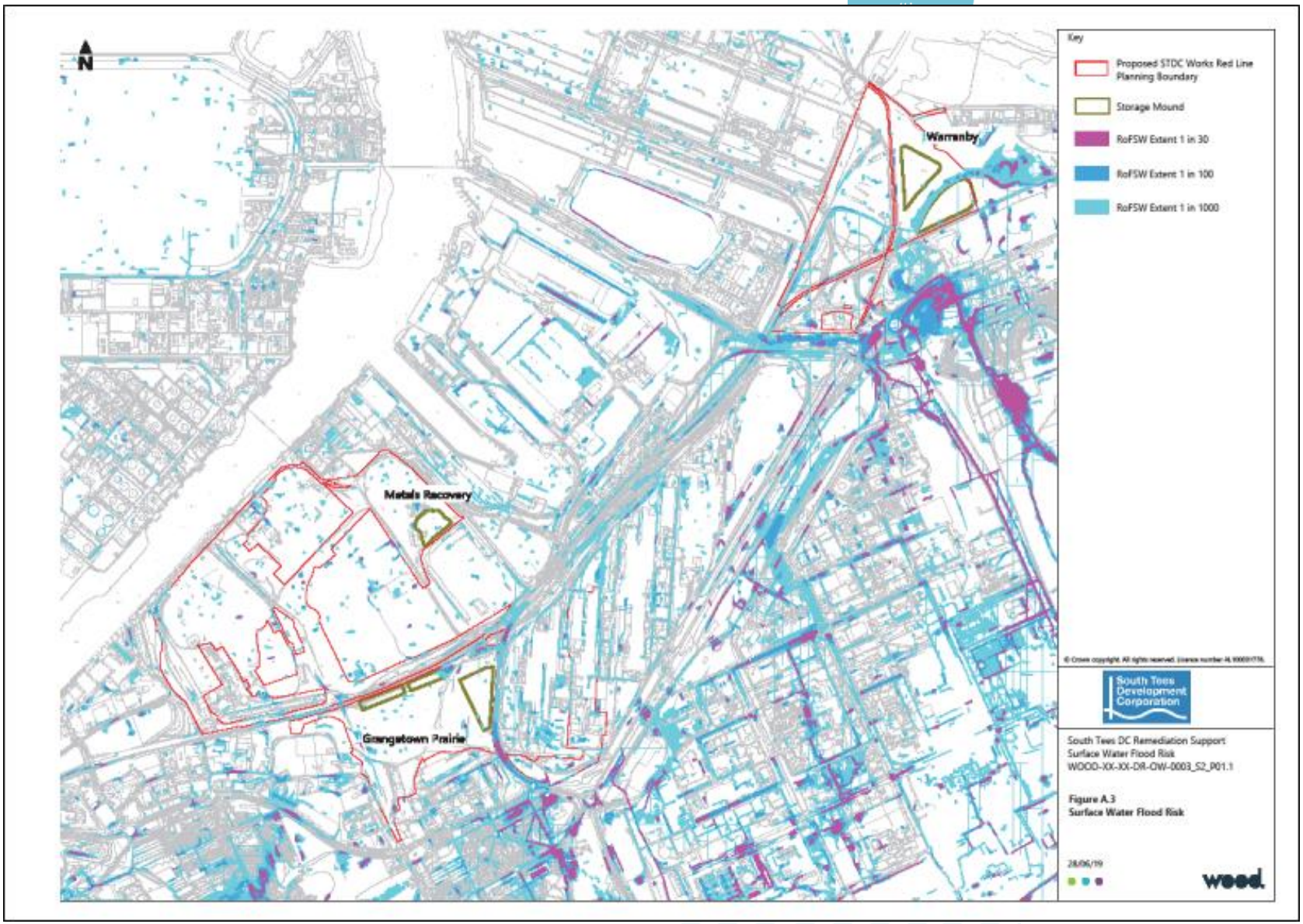
A.1 STDC-SIZ-MR-PLA-0003 Metals Recovery Proposed Stockpile 2 Contours and Sections



A.2 41825-WOOD-XX-XX-DR-OW-0002_S2_P01.1



A.3 41825-WOOD-XX-XXDR-OW-0003_S2_P01.1



B Greenfield Runoff Rates Micro Drainage Results

JBA Consulting		Page 1
The Library St Philips Courtyard Coleshill B46 3AD		Micro Drainage
Date 31/03/2021 16:22 File	Designed by jflow_atherstone Checked by	
Micro Drainage	Source Control 2020.1	

ICP SUDS Mean Annual Flood

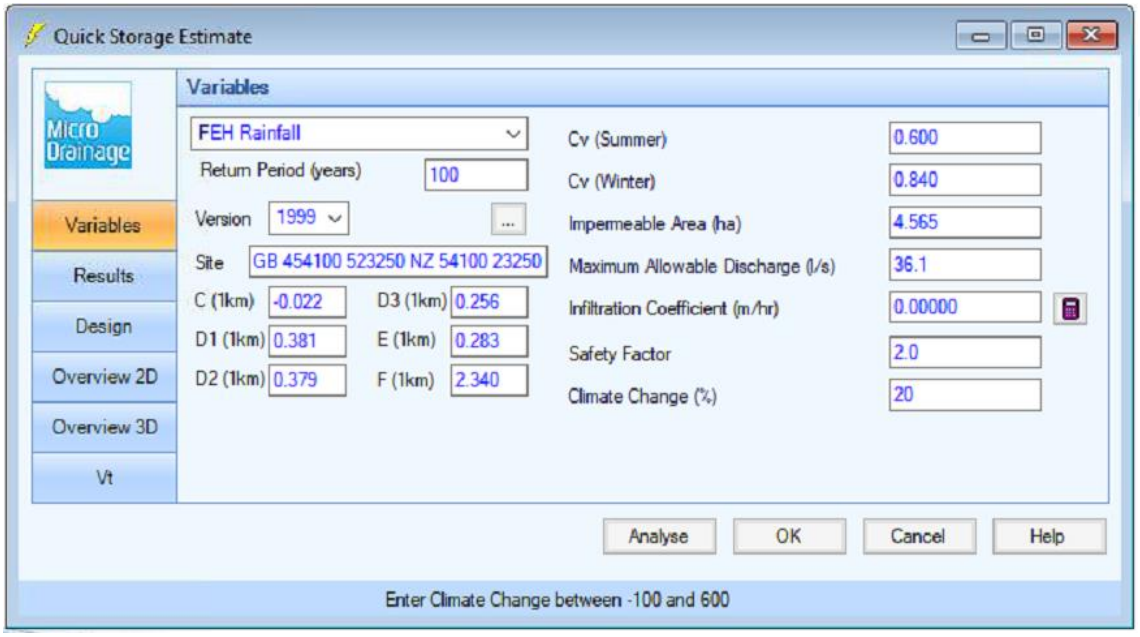
Input

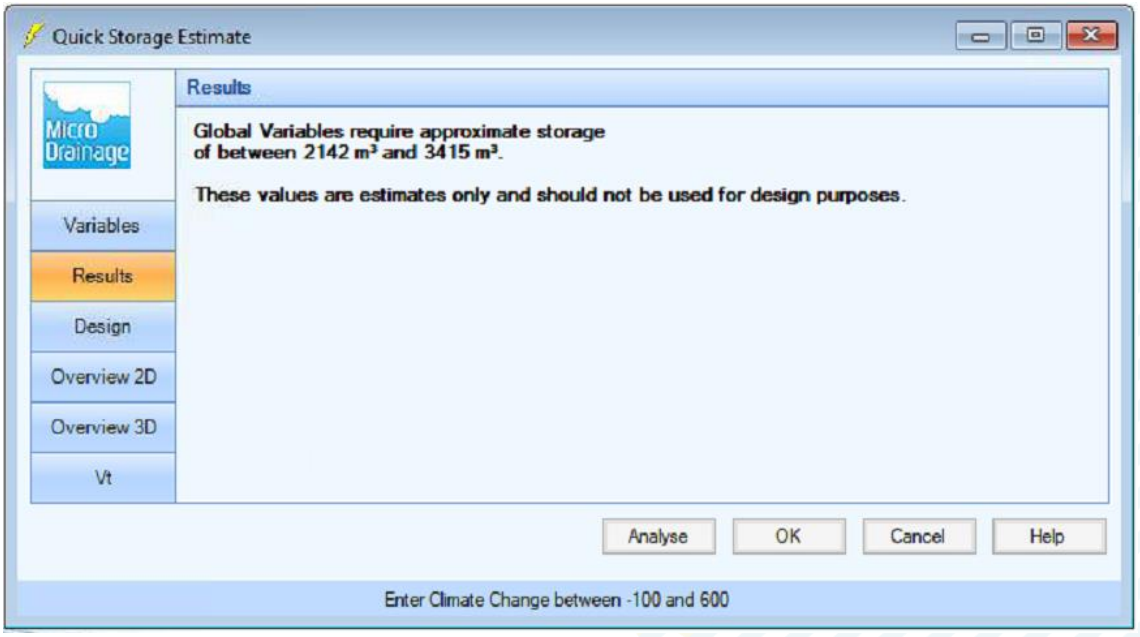
Return Period (years)	100	Soil	0.450
Area (ha)	4.565	Urban	0.000
SAAR (mm)	619	Region Number	Region 3

Results l/s

QBAR Rural	17.4
QBAR Urban	17.4
Q100 years	36.1
Q1 year	14.9
Q30 years	30.5
Q100 years	36.1

C Micro Drainage Quick Storage Estimates





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