

wardell-armstrong.com

ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT



COVENTRY CITY COUNCIL

SHERBOURNE RESOURCE PARK

FLOOD RISK ASSESSMENT

AUGUST 2020

DATE ISSUED: AUGUST 2020
JOB NUMBER: CA11485
REPORT NUMBER: 0005
VERSION: V1.0
STATUS: FINAL

COVENTRY CITY COUNCIL

SHERBOURNE RESOURCE PARK

FLOOD RISK ASSESSMENT

AUGUST 2020

PREPARED BY:

B Griffiths Senior Environmental Scientist



APPROVED BY:

A Durber Technical Director



This report has been prepared by Wardell Armstrong LLP with all reasonable skill, care and diligence, within the terms of the Contract with the Client. The report is confidential to the Client and Wardell Armstrong LLP accepts no responsibility of whatever nature to third parties to whom this report may be made known.

No part of this document may be reproduced without the prior written approval of Wardell Armstrong LLP.



CONTENTS

1	INTRODUCTION.....	1
2	FLOOD RISK AND PLANNING POLICY	2
3	SITE SETTING	6
4	DEVELOPMENT PROPOSALS	10
5	FLOOD RISK	11
6	DRAINAGE STRATEGY.....	20
7	CONCLUSIONS.....	24

APPENDICES

Appendix 1	Severn Trent Water Sewer Records
Appendix 2	Severn Trent Water Developer Enquiry Response
Appendix 3	CCTV Sewer Survey Report
Appendix 4	Lead Local Flood Authority Correspondence
Appendix 5	Environment Agency Correspondence
Appendix 6	Greenfield Runoff Calculations
Appendix 7	Surface Water Attenuation Calculations

DRAWINGS

CA11485-021	Site Location Plan
CA11485-034	Existing Drainage Layout
CA11485-064	Indicative Drainage Strategy
CA11485-038	London Road Entrance Topography
CA11485-057	Proposed Layout Option 8
CA11485-025	Topographic Survey
2/15816	Whitley Depot, London Road, Coventry
2/14014	Whitley Depot London Road Main Yard Plan 2

1 INTRODUCTION

1.1 General

1.1.1 Wardell Armstrong LLP (WA) has been commissioned by Coventry City Council to prepare a Flood Risk Assessment (FRA) for the proposed development of a Materials Recycling Facility (MRF) on land off Shortley Road, Coventry, West Midlands.

1.1.2 This report sets out the findings of the FRA required by the Local Planning Authority to support the planning application for development on the site. The assessment has been carried out in accordance with the guidance set out in National Planning Policy Framework (NPPF).

1.2 Methodology

1.2.1 The methodology for this FRA has comprised a desktop study, supplemented by liaison with Coventry City Council, the Environment Agency and Severn Trent Water.

1.2.2 Reference has been made to relevant plans and documents including:

- Coventry City Council (December 2015) – Level 1 and Level 2 Strategic Flood Risk Assessment;
- Coventry City Council (June 2017) – Preliminary Flood Risk Assessment Second Cycle Final Report;
- Coventry City Council (2019) – Flood Risk Management and Drainage – Planning Standing Advice; and
- Severn Trent Water Sewer Record Plans.

2 FLOOD RISK AND PLANNING POLICY

2.1 National Planning Policy

2.1.1 The NPPF and the accompanying Planning Practice Guidance (PPG) aim to ensure that flood risk is taken into consideration at all stages of the planning process and advocates the use of a risk-based ‘Sequential Test’ to preferentially locate development in areas with a low risk of flooding. Where development is necessary in high risk areas, the NPPF aims to ensure that the development is safe without increasing flood risk through the application of the Exception Test.

2.1.2 The PPG, defines the levels of flood risk within England as follows:

- Flood Zone 1 – Low Probability – Land having less than a 1 in 1,000 annual probability of river or sea flooding.
- Flood Zone 2 – Medium Probability – Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
- Flood Zone 3a – High Probability – Land having a 1 in 100 or greater annual probability of river flooding; or having a 1 in 200 or greater annual probability of sea flooding.
- Flood Zone 3b – Functional Floodplain – Land where water has to flow or be stored in times of flood.

2.1.3 The PPG states that a site-specific FRA is required for all new development proposals located in Flood Zones 2 and 3, and for any proposal of 1 hectare or greater regardless of its flood zone classification. The flood zones as described above are shown on the Environment Agency’s Flood Map for Planning, available online.

2.1.4 Table 2 of the PPG classifies development types based on their vulnerability to flooding, ranging from ‘Essential Infrastructure’ which has to be operational in times of flood, through ‘Highly Vulnerable’ (eg emergency service stations), ‘More Vulnerable’ (eg residential dwellings and establishments), ‘Less Vulnerable’ (eg offices/retail), to ‘Water Compatible’ development (eg open space, docks, marinas and wharves).

2.1.5 Table 3 of the PPG indicates which ‘vulnerability classes’ are acceptable in each of the Flood Zones, and when the Exception Test should be applied. This is reproduced as Table 1 below.

Table 1: Flood Risk Vulnerability and Flood Zone 'Compatibility'					
Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1 (>0.1%)	✓	✓	✓	✓	✓
2 (0.1 – 0.5%)	✓	Exception Test	✓	✓	✓
3a (>0.5%)	Exception Test		Exception Test	✓	✓
3b (>5%)	Exception Test				✓

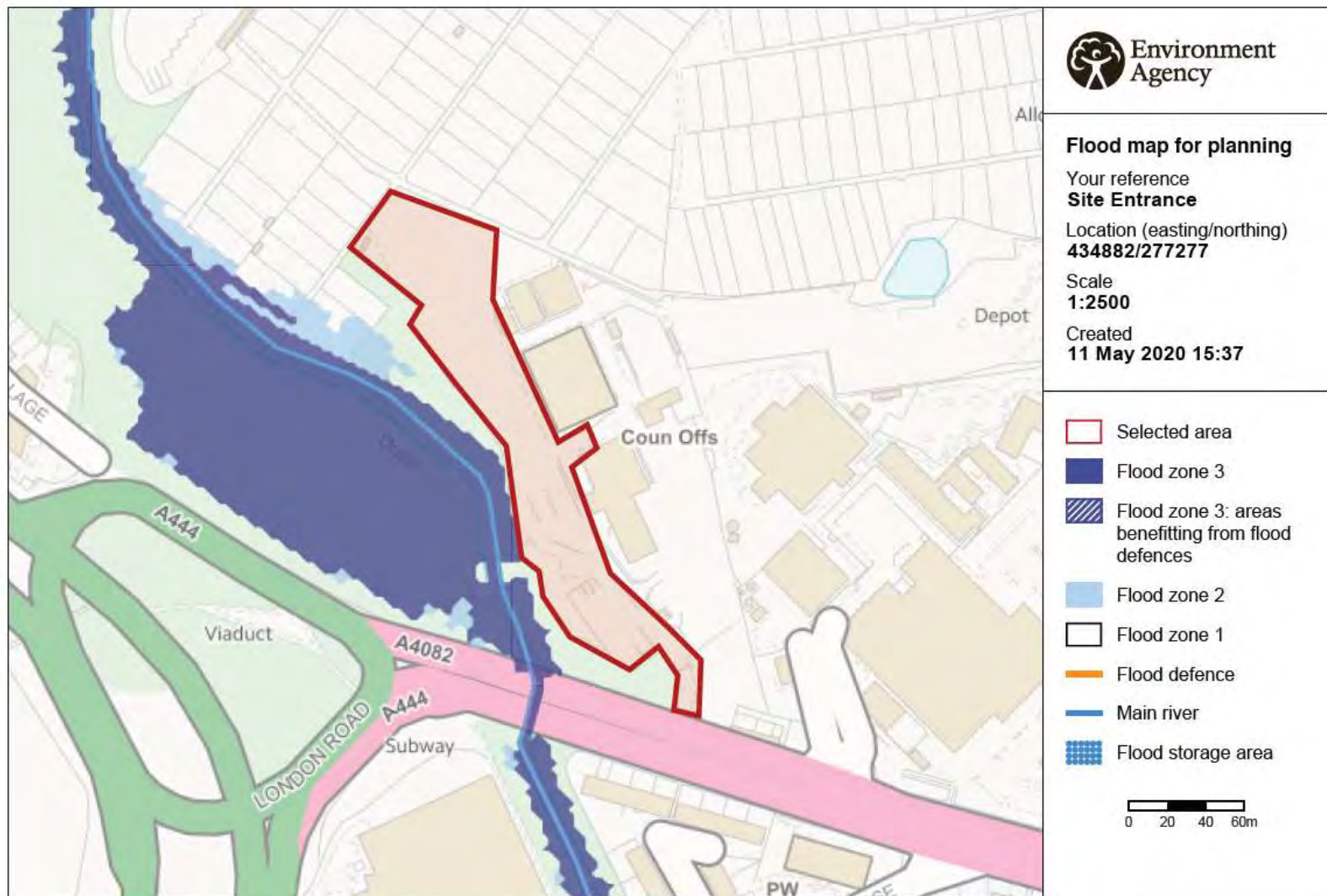
2.2 Application of the Sequential and Exception Test

- 2.2.1 The site is shown on the Environment Agency's Flood Map for Planning to be located wholly within Flood Zone 1 (see Figure 1 and Figure 2).
- 2.2.2 The Sequential Test, as set out in the NPPG, aims to steer developments to areas with the lowest risk of flooding (ie Flood Zone 1 where possible). As the site is located wholly within Flood Zone 1, based on the guidance in Table 3 of the NPPG, the Sequential Test is deemed to have been passed.
- 2.2.3 The Exception Test, detailed in paragraph 159 of the NPPF, should be applied only after the Sequential Test has been applied and in circumstances when 'More Vulnerable' development and 'Essential Infrastructure' cannot be located within Flood Zones 1 or 2, or 'Highly Vulnerable' development cannot be located within Flood Zone 1.
- 2.2.4 The proposed industrial land use is classified as 'Less Vulnerable' development in Table 2 of the NPPG. Table 1 above shows that a 'Less Vulnerable' development is appropriate within Flood Zones 1 and 2 and, consequently, it is not necessary to apply the Exception Test.



© Environment Agency copyright and / or database rights 2018. All rights reserved. © Crown Copyright and database right 2018. Ordnance Survey licence number 100024198.

Figure 1. Environment Agency Flood Map for Planning



© Environment Agency copyright and / or database rights 2018. All rights reserved. © Crown Copyright and database right 2018. Ordnance Survey licence number 100024198.

Figure 2. Environment Agency Flood Map for Planning – Site Entrance

3 SITE SETTING

3.1 Site Description and Location

3.1.1 A summary of the site and its characteristics is provided in Table 2.

Table 2: Site Location Summary	
Site Name	Coventry MRF
Site Address	Land off London Road, Coventry, West Midlands, CV3 4AR
Site Area (ha)	4.45ha
National Grid Reference	434812, 277541
Existing Land Use	Former allotments
Proposed Land Use	Materials Recovery Facility
Local Planning Authority	Coventry City Council
Sewer Undertaker	Severn Trent Water

3.1.2 The site is located off London Road (A4082) in Coventry, approximately 1.25km to the south-east of the city centre. The National Grid Reference for the approximate centre of the site is 434812, 277541 and the nearest postcode is CV3 4AR. The location of the site is shown on Drawing No CA11485-021 'Site Location Plan'.

3.1.3 The site can be divided into two areas. The main, and northern, area of the development site is generally rectangular in shape and comprises a number of disused allotment plots. This area is bounded to the north and south by other disused allotments; to the west by woodland and the Coventry Household Waste Recycling and Re-Use Centre for an adjacent Energy from Waste Facility; and to the east by occupied allotments.

3.1.4 The small former allotment plots within the site area have been disused for a number of years and are now heavily overgrown by rough vegetation, trees and shrubs. A number of pathways cross the site area and there is also the presence of a number of old building foundations.

3.1.5 The remaining southern part of the site comprises a 300m section of access road directly off London Road which is located over areas of hardstanding within Coventry City Council's existing Whitley Depot. This section of the development site is bounded to the east by light industrial units (Whitley Depot) and to the west by disused allotments and woodland, with the River Sherbourne located further beyond.

3.1.6 The topography of the main site is shown on Drawing No CA11485-025 'Site Topography'. Ground levels within the main part of the site area fall north-westwards,

westwards and south-westwards from a maximum elevation of approximately 89.15mAOD on the eastern site boundary to a minimum elevation of approximately 72.90mAOD in the south-western corner. Ground levels fall most steeply in the north-western and south-western area of the site, with typical gradients of approximately 1 in 6 and 1 in 9 respectively. Slopes in central and eastern parts of the main site area are less steep with typical gradients of approximately 1 in 15.

- 3.1.7 Ground levels along the route of the access road fall in a southerly direction from a maximum of approximately 79.49mAOD at the northern extent, where it meets the main part of the site, to approximately 72mAOD at its junction with London Road in the south. The topography at the junction with London Road is shown on Drawing No CA11486-038 '*London Road Entrance Topography*'.

3.2 Existing Watercourses and Waterbodies

- 3.2.1 There are no watercourses or bodies of water within the site area. The closest watercourse to the site is the River Sherbourne, a Main River, located approximately 20m to the west of the site boundary at its closest point. The River Sherbourne flows southwards to ultimately join the River Sher, approximately 2km to the south of the site.
- 3.2.2 The River Sherbourne, whilst located close to the site, is situated several metres lower than the site entrance with London Road (A4082). As shown on Drawing No CA11485-038 '*London Road Entrance Topography*', based on LIDAR data, the banks of the watercourse are situated at an elevation of approximately 67mAOD in comparison to an elevation of approximately 72mAOD at the site entrance.
- 3.2.3 There are two small ponds located to the east of the site, approximately 170m and 240m from the site boundary. Both ponds appear to be isolated waterbodies with no obvious inlets or outlets.
- 3.2.4 There are no other watercourses or waterbodies identified in the vicinity of the site.

3.3 Flood Risk Setting

- 3.3.1 As shown on the Flood Map for Planning in Figures 1 and 2 above, the site is located wholly within Flood Zone 1 with an annual probability of flooding of less than 1 in 1000 (ie a probability of less than 0.1%). Areas of Flood Zone 3 associated with the River Sherbourne are located immediately to the south and west of the site, with an annual probability of flooding of greater than 1 in 100 (ie a probability of greater than 1 in 100). There are no Ordinary Watercourses identified in the vicinity of the site which could affect this classification.

3.4 Existing Drainage

- 3.4.1 Public sewer records, obtained from Severn Trent Water (see Appendix 1), show that a large diameter public combined gravity sewer crosses the site, flowing in a south-easterly direction. The brick egg-shaped sewer, 1.52m by 1.02m in size, is approximately 3m deep at the upstream manhole (ref: SP34777701) located to the north-west of the site and 7m deep at the downstream manhole (ref: SP34778301) located close to the south-eastern boundary of the site within Whitley Depot. The sewer is also shown to be approximately 15m deep in central areas of the site (ref: SP34778501).
- 3.4.2 As stated in the Severn Trent Water Developer Enquiry response (see Appendix 2), the status of the sewer is unknown as sections of the sewer upstream have been abandoned and the incoming flows diverted. A CCTV survey was undertaken on the sewer in April 2019 by OnSite (see report in Appendix 3) and recorded that the sewer upstream of manhole SP34778301 was dry with no evidence of any incoming flows from upstream manhole SP34777701. As the majority of the site area has been used as allotments for over 90 years, it is assumed that there are no private drainage networks within the site area discharging to the public sewer. It is, therefore, unclear why the section of sewer crossing the site has not also been abandoned as there appears to be no incoming flows from either upstream of the site or within the site itself. The status of the sewer is to be investigated as part of future works.
- 3.4.3 The light industrial estate to the south of the main part of the site is served by a private drainage network as shown on Drawing No 2/15816 (*'Whitley Depot, London Road, Coventry'*) and 2/14014 (*'Whitley Depot London Road Main Yard Plan 2'*). The surface water drainage present within the existing access road falls within the ownership boundary of the proposed development. Gullies within the access road and the wider industrial estate discharge to one of three surface water drainage networks with outfalls to the River Sherbourne to the south and south-west of the site. Private combined sewer networks serving the industrial estate flow under the access road and discharge to the public combined sewer.
- 3.4.4 The existing site drainage has been collated and is shown on Drawing No. CA11485-034 *'Existing Drainage Layout'*.

3.5 Ground Conditions

- 3.5.1 The online British Geological Survey (BGS) 'Geology of Britain Viewer'¹ shows the majority of the site to be underlain by sandstone bedrock of the Keresley Member. Bedrock of the Helsby Sandstone Formation is present within eastern parts of the main site. Both are classified by the Environment Agency as Principal Aquifers, defined as *'layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale'*.
- 3.5.2 There are no superficial deposits shown to be present within the site boundary. Superficial alluvium deposits are located immediately to the west of the site. These are classified as a Secondary A Aquifer by the Environment Agency, defined as *'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers'*. Clay deposits of the Bosworth Clay Member are shown to be located immediately to the east of the site. These are classified as Unproductive Strata by the Environment Agency, defined as *'rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow'*.
- 3.5.3 A series of boreholes and trial pits were undertaken within the site area in 2009 as part of an earlier site investigation. Made Ground, consisting of reworked superficial deposits mixed with brick, glass and wood, was encountered to depths of between 0.2m and 2m in northern and eastern areas of the site. Superficial clay deposits were encountered in several boreholes in northern and central areas of the site at elevations of between 88.2mAOD and 68.9mAOD. The upper layer of the sandstone bedrock was encountered at elevations of between 83.5mAOD and 74.8mAOD.
- 3.5.4 The site is shown to be located within the Total Catchment of a groundwater Source Protection Zone, defined as *'the area around a source within which all groundwater recharge is presumed to be discharged at the source'*.

¹ BRITISH GEOLOGICAL SURVEY 'Geology of Britain Viewer' Available at:
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

4 DEVELOPMENT PROPOSALS

4.1 Description of the Proposed Development

- 4.1.1 It is proposed to redevelop the site for use as a Materials Recycling Facility as shown on Drawing No CA11485-057 '*Proposed Layout Option 8*'. The main site area will consist of a large processing building with an approximate floor space of 1.4 ha housing a reception hall, processing hall and outfeed hall. A 0.4ha office building will be situated to the south of the main building, with an odour treatment plant, pumphouse and firewater treatment tank located close to the north-western corner of the site. Buildings at the site will be surrounded by areas of hardstanding and car parking. An access road will be constructed over areas of hardstanding within the Whitley Road depot to extend between the new development and the existing access road to the depot off London Road.
- 4.1.2 As part of the proposed development, existing ground levels will be modified to provide flat areas on which the buildings will be situated. The finished floor level of the process hall will be in the order of 1.5m higher than the adjacent reception hall and outfeed hall to the north-west and south and there will be a step between each building. Ground levels within the service yard area will also be modified to give them an even fall.
- 4.1.3 The most significant modifications to the existing ground levels will be in northern areas of the site. Ground levels in the north-eastern corner will be reduced by over 5m to provide a finished floor level of approximately 84mAOD within the process hall. Ground levels in the north-western corner will be increased by up to 8m to provide a level ground on which to situate the odour treatment plant, pumphouse and firewater treatment tank.

5 FLOOD RISK

5.1 Flood Risk to the Development

5.1.1 The main sources of flooding identified within the NPPF are rivers, tidal waters and the sea, surface water, groundwater, sewers and drains, and artificial sources such as canals and reservoirs.

5.1.2 The presence of a potential flooding source does not necessarily translate into a high risk of flooding. Table 3 below summarises the potential flood sources and the related flood risk posed to the site.

Flood Source	Presence at Site	Potential Risk at Site	Description
Rivers <i>(fluvial flooding)</i>	Y	Very Low	Located wholly within Flood Zone 1. Areas of Flood Zone 2/3 are approximately 5m lower than ground levels at the site as a minimum.
Tidal	N	n/a	n/a
Groundwater	Y	Very Low	Groundwater at sufficient depth
Surface Water Flooding <i>(pluvial flooding)</i>	Y	Very Low	Main site at Very Low risk, small area of access route at Low risk, approximately 3m lower than ground levels within the main site.
Sewer	Y	Very Low	Public sewer crossing the main site between 3m to 14m deep.
Artificial	N	n/a	n/a

Historical Flooding Incidents

5.1.3 The 'Historical Fluvial Flooding Records' figure in the Coventry City Council Strategic Flood Risk Assessment (SFRA)² shows a fluvial flooding incident in the vicinity of the River Sherbourne approximately 100m to the south of the site adjacent to the A4114 road. Due to the scale of the map the exact location and extent of flooding cannot be accurately confirmed. However, as ground levels adjacent to the watercourse are approximately 5m lower than ground levels at the site, it is considered that the site was unaffected by this flooding event.

5.1.4 The 'Historic Flood Events from Local Sources of Flooding' figure in the Coventry City Council Preliminary Flood Risk Assessment (PFRA)³ shows two fluvial flooding

² COVENTRY CITY COUNCIL (2015) *Level 1 and 2 Strategic Flood Risk Assessment*

³ COVENTRY CITY COUNCIL (2017) *Preliminary Flood Risk Assessment – Second Cycle Final Report*

incidents, recorded between 1990 and 2011, adjacent to the River Sherbourne located approximately 10m and 100m to the south of the site. As with the figure in the SFRA, an accurate location and extent of the flooding incident cannot be confirmed, however, as ground levels are approximately 5m lower than ground levels at the site, it is considered that the site was unaffected.

- 5.1.5 The Environment Agency confirmed in correspondence that they do not hold any record of historical flooding in the vicinity of the site (see Appendix 5).

Fluvial Flooding

- 5.1.6 The Environment Agency Flood Map for Planning (see Figure 1) shows that the site is located wholly within Flood Zone 1, defined as an annual probability of fluvial flooding of less than 1 in 1,000 (<0.1%).
- 5.1.7 Areas to the south and west of the site, coincident with low-lying ground adjacent to the River Sherbourne, are shown to be located in Flood Zone 2 and Flood Zone 3, defined as an annual probability of between 1 in 1000 and 1 in 100 (0.1% - 1.0%) and greater than 1 in 100 (>1.0%) respectively. Figure 2 focusses on the area in the vicinity of the site entrance of London Road (A4082). In all instances, areas of Flood Zone 2 and 3 are located below the existing ground levels of the site and are not considered to pose a risk of flooding to the site.
- 5.1.8 Drawing CA11485-038 '*London Road Entrance Topography*' shows that the existing entrance off London Road is approximately 5m higher than the River Sherbourne. Furthermore, vehicles must turn left upon leaving the site and progress eastwards, upslope away from the watercourse. Based on the significant level difference and route out of the site, it is considered there will be safe egress from the site during storm events up to and including the 1 in 1000 year extreme storm event (based on Flood Zone 1 classification in the vicinity of the site entrance).
- 5.1.9 The '*Climate Change Maps*' figure in the Coventry City SFRA applies a climate change factor to modelled watercourses to determine the extent of Flood Zone 3 including the impact of climate change. This figure shows that, with a climate change factor applied to the River Sherbourne model, Flood Zone 3 will not extend into the site area.
- 5.1.10 There are no other identified Ordinary Watercourses in the vicinity of the site which would affect this Flood Zone 1 classification and, based on the available information, the risk of fluvial flooding is considered to be **VERY LOW**.

5.1.11 Whilst the fluvial flood risk is considered to be Very Low, the risk to users of the site could be further minimised by registering for the phone, email and text message flood warnings service provided by the EA.

Surface Water Flooding (Pluvial Flooding)

5.1.12 The Environment Agency's 'Flood Risk from Surface Water' map shown in Figure 3 shows that the site is at a Very Low risk of surface water flooding (defined as a less than 1 in 1000 (0.1%) chance of flooding in any year). A small area within the existing industrial estate is shown to be at a Low risk (between 1 in 1000 and 1 in 100 annual probability) and a Medium risk (between 1 in 100 and 1 in 30 annual probability) of flooding. This area is adjacent to an existing wall within the industrial estate, where surface water runoff, flowing south-westwards and following the topography, could accumulate in a storm event. Ground levels in this area are lower than the main site area and any accumulated runoff in this location would not pose a flood risk to the main site.

5.1.13 Based on the available information, the risk of surface water flooding is considered to be **VERY LOW**.

Groundwater Flooding

5.1.14 Flooding can occur when prolonged rainfall causes the groundwater table to rise above ground level. Groundwater flooding can occur at the same time as flooding from other sources such as overland flow.

5.1.15 The 'Groundwater Flood Map' figure in the Coventry City Council SFRA shows that the 1km grid square in which the site is located has a 50% to 75% susceptibility to groundwater flooding. This susceptibility is defined as *'the proportion of each 1km grid square where geological and hydrogeological conditions show that groundwater might emerge'* and that this *'does not show the likelihood of groundwater flooding occurring. This dataset covers a large area of land, and only isolated locations within the overall susceptible area are actually likely to suffer the consequences of groundwater flooding'*.

5.1.16 The BGS Geology of Britain Viewer contains logs for a series of shallow boreholes between 1.0m and 1.2m in depth located within the Whitley Depot industrial estate. In all instances, groundwater was not encountered to the base of the borehole. These boreholes are located at elevations of approximately 80mAOD and within an area of similar geology. These are, therefore, considered to be representative of the ground conditions at the site.

Since no groundwater was encountered in any of the boreholes and that any groundwater is likely to be drawn down towards the nearby river, located over 5m lower than the site, the risk of groundwater flooding is considered to be **VERY LOW**.



Figure 3. Surface Water Flood Risk Map

Sewer Flooding

- 5.1.17 The public sewer records (see Appendix 1) show an egg-shaped brick public combined gravity sewer crossing south-eastwards through the site area. Manhole records show that the sewer is approximately 3m deep at the upstream manhole (ref SP34777701) and 7m deep at the downstream manhole, and at depths of up to 14m within the site area. As the sewer upstream of manhole ref: SP34777701 is understood to be abandoned it is assumed that there will be no incoming flows from off-site areas.
- 5.1.18 The majority of the main site area and surrounding land has been used as allotments for over 90 years. Due to this historical land use, and the relative distance of the allotments from other developments, it is considered that there are no private drainage networks serving this area.
- 5.1.19 Private drainage networks are, however, present within the industrial estate (Whitley Depot) and existing access road to the site off London Road, as shown on Drawing No 2/15816 'Whitley Depot, London Road, Coventry' and 2/14014 'Whitley Depot London Road Main Yard Plan 2'. Although the depths of the drains are not shown on the layout, this area is situated at a lower level than the developable site area and any flooding from this network would not have an impact on the proposed development.
- 5.1.20 Based on the available information, the risk of sewer flooding is considered to be **VERY LOW**.

Artificial Sources

- 5.1.21 Artificial sources of flooding include reservoirs, canals and any other impounded water body which is elevated above the level of the site. Flooding can occur when the impounding structures such as dams and embankments fail, when culverts become blocked, or during extreme rainfall events when the waterbodies overflow.
- 5.1.22 Environment Agency mapping shows that the site is not located within the maximum extents of a reservoir flooding event, and there are no other canals or impounded water bodies within the vicinity of the site. The risk of flooding from artificial sources is, therefore, discounted.

5.2 Flood Risk from the Proposed Development

- 5.2.1 New development can pose a risk of flooding to neighbouring properties and areas downstream of the site, often as a result of an increase in impermeable area which has the effect of increasing the rate and volume of surface water runoff. In addition,

climate change can be expected to cause an increase in rainfall intensity and surface water runoff over the lifetime of the development.

- 5.2.2 Flood risk can also be increased as a result of new development if the development reduces the floodplain storage area or alters flood flow paths, ultimately displacing flood water and resulting in an increased risk to the surrounding area.

Fluvial Flooding

- 5.2.3 As the proposed area to be redeveloped is located within Flood Zone 1, there will be no effect on the 1 in 100 year floodplain storage or flood flow paths and the risk of fluvial flooding will, therefore, not increase as a result of the proposed development.

Surface Water Runoff

- 5.2.4 New developments can also pose a risk of flooding to neighbouring properties and areas downstream of the site, often as a result of an increase in impermeable area which has the effect of increasing the rate and volume of surface water runoff, or by diverting existing overland flow routes crossing the site to off-site areas previously unaffected.
- 5.2.5 The proposed development can be divided into two areas: the 3.31ha main site area accommodating the proposed structures and hardstanding; and the 1.14ha narrow section of land, which includes the existing industrial estate access road. As this access road will not be redeveloped as part of the proposed development, there will be no increase in impermeable area and the impact on flood risk in this location is not considered further in this assessment.
- 5.2.6 Notwithstanding the previous usage of the main site area, and the presence of access tracks and demolished building foundations, it is considered that the site has the characteristics of a greenfield site with surface water runoff dispersing by a combination of overland flow, infiltration and evaporation. Surface water runoff will follow the natural topography, flowing generally westwards beyond the site boundary and ultimately discharging to the River Sherbourne or the adjacent compound area for the existing Energy from Waste site. It is considered that runoff within this compound area either discharges by overland flow to the River Sherbourne or via a private drainage network within this area.
- 5.2.7 The existing greenfield runoff rates for the 3.31ha main site area have been calculated following the IH124 methodology (see Appendix 6) and are summarised in Table 4 below.

Table 4: Existing Runoff Rates				
Area Positively Drained	Greenfield Runoff Rate			
	1 in 1 Year	1 in 30 Year	1 in 100 Year	QBAR
3.31 ha	12.3 l/s	29.6 l/s	38.0 l/s	14.8 l/s
	3.7 (l/s/ha)	8.9 (l/s/ha)	11.5 (l/s/ha)	4.5 (l/s/ha)

5.2.8 The proposed development will comprise the construction of a large building and a separate office building, plus associated hardstanding and access roads. The total impermeable area will be 2.77ha (consisting of 1.43ha of roof areas and 1.34ha of hardstanding/access roads). There are presently minimal areas of impermeable ground within the development, with existing paths consisting of bare ground rather than a formal concrete or asphalt construction. The proposed development will, therefore, increase the impermeable area at the site, potentially increasing the rate and volume of surface water runoff generated post-development.

5.2.9 As shown on Drawing No CA11485-057 'Proposed Layout Option 8', the existing sloped ground will be modified to create a relatively flat area ('plateau') on which the proposed buildings and hardstanding will be accommodated. The necessary use of retaining walls against the higher ground to the north and east has the potential to disrupt the south-westward progression of any surface water runoff, diverting these flows to other areas previously unaffected. In these areas it is considered that precautionary measures should be implemented to minimise any impact of the proposed development.

Climate Change

5.2.10 It is also necessary to take account of climate change for the lifetime of the development when assessing future flood risk. In assessing surface water runoff from the proposed development, the climate change predictions for peak rainfall intensity for the lifetime of the development need to be taken into account. Based on correspondence with Coventry City Council, the Lead Local Flood Authority, a 40% increase in peak rainfall intensity shall be used (see Appendix 4).

5.2.11 It is considered, therefore, that the risk of surface water flooding could increase as a result of the proposed development and that mitigation measures are required.

5.3 Flood Risk Mitigation Measures

Surface Water Management

5.3.1 To mitigate the increased risk of surface water flooding, it is proposed that surface water runoff from the development is discharged from site at a restricted rate, with

any flows in excess of this restricted rate being attenuated on site for all storm events up to and including the 1 in 100 year event with a 40% allowance for climate change.

- 5.3.2 Retaining walls (to retain higher ground) to the north and east of the development plateau have the potential to truncate existing westward overland flow routes. Drainage features will need to be constructed to ensure these flows are not diverted to areas previously unaffected.
- 5.3.3 The surface water management proposals for the site will ensure that flood risk due to surface water runoff is not increased as a result of the development.

5.4 Residual Risk

- 5.4.1 There is always a possibility of a storm event that exceeds the design standards of the proposed flood risk management measures for new developments. Potential risks include the exceedance of the surface water attenuation facilities during extreme storm events.
- 5.4.2 On-site attenuation will be provided for storm events up to and including the 1 in 100 year event with a 40% climate change allowance. For storm events with an annual probability of occurrence greater than this, the on-site attenuation may be exceeded.
- 5.4.3 The layout of the site will be designed so that exceedance flows are diverted away from the buildings and retained within the site as far as is possible, for example, with the use of kerbing or in areas adjacent to the retaining walls, with no risk to adjacent land. During storm events where rainfall exceeds the capacity even to do this, runoff will be directed off site to the watercourse in a controlled manner, away from vulnerable areas.

6 DRAINAGE STRATEGY

6.1 Surface Water Drainage Strategy

- 6.1.1 Surface water runoff from the development will be controlled on site to ensure that there is no increase in the risk of flooding to areas downstream of the site and to the development itself. To help achieve this, Sustainable Drainage Systems (SuDS) will be incorporated into the development to provide attenuation and water treatment. An Indicative Surface Water Management Plan for the site is included as Drawing No CA11485-064 '*Indicative Drainage Strategy*'.
- 6.1.2 The Building Regulations (2010) Part H stipulate a hierarchy for the disposal of surface water which should be followed as part of any surface water drainage design. This hierarchy is as follows:
- i. an adequate soakaway or some other adequate infiltration system; or, where that is not practicable,
 - ii. a watercourse; or, where that is not practicable,
 - iii. a sewer.
- 6.1.3 In accordance with this hierarchy, it is proposed that SuDS features are designed to promote infiltration to the underlying bedrock. Detailed permeability testing will be carried out at the detailed design stage in accordance with BRE-365 in order to assess the permeability of the underlying ground and to determine the feasibility of infiltration drainage. If there is any risk of mobilising pollutants in existing Made Ground, SuDS features will be lined to prevent infiltration.
- 6.1.4 In accordance with the Building Regulations hierarchy, it is proposed to discharge the remaining surface water runoff, that exceeds the infiltration capacity of the ground, to the River Sherbourne via the existing private drainage network within the existing access road to the south-east of the main site area (see Drawing No 2/14014 '*Whitley Depot London Road Main Yard Plan 2*'). This is also in accordance with the requirements of Severn Trent Water (see Developer Enquiry response Appendix 2).
- 6.1.5 The rate of discharge will be restricted to 10.0 l/s for all storm events up to and including the 1 in 100 year storm event (plus 40% climate change allowance). This restricted rate is based on a post-development impermeable area of 2.77ha and a greenfield runoff rate of 3.6 l/s/ha. The greenfield runoff rate used gives a 20% betterment to the existing QBAR rate of 4.5 l/s/ha in accordance with the

requirements of the Coventry City Council '*Flood Risk Management and Drainage – Planning Standing Advice*' (see Appendix 4).

6.1.6 As part of the proposed development, the ground in the vicinity of the buildings will be levelled to provide a relatively flat 'plateau' on which the main building, office building and the majority of the hardstanding will be located. Ground levels then fall southwards and eastwards to create a second 'plateau' adjacent to the weighbridge adjacent to the entrance to the MRF site, with the weighbridge situated approximately 1.5m lower than the adjacent car park. It is proposed, therefore, to position the majority of the required surface water attenuation within these flatter open areas within the main plateau of the site as opposed to within the narrower section of land around the weighbridge immediately upstream of the final outfall at the site entrance. To achieve this, the discharge will be restricted both immediately downstream of the main plateau area and at the final outfall from the site.

Attenuation Estimates

6.1.7 Based on the proposed site layout (see Drawing No CA11485-057 '*Proposed Layout Option 8*'), there will be approximately 2.45ha of impermeable roof and hardstanding areas within the main plateau area, consisting of approximately 1.43ha of roof and 1.02ha of hardstanding. There will be approximately 0.32ha of impermeable access road at the second plateau around the weighbridge and site entrance.

6.1.8 Staged discharge will be used to best suit the site layout, with discharge from upper areas of the site restricted pro-rata based on the contributing area. This will allow the large areas of open ground within this area to be utilised for attenuation. The final outfall from the site will restrict the rate of discharge to the proposed 10 l/s with additional attenuation provided upstream.

6.1.9 Preliminary estimates of the volume of attenuation required have been made using the Storage Estimate module in the Causeway 'Flow' software package. The attenuation calculations are based on there being no infiltration to ground as a 'worst case' scenario. The infiltration rate for the site will, however, be confirmed at the detailed design stage by in situ soakaway testing in accordance with BRE Digest 365.

6.1.10 Attenuation calculations are contained in Appendix 7 and summarised in Table 6 below.

Table 6: Preliminary Attenuation Estimates				
Location	Contributing Impermeable Area	Restricted Discharge Rate	Attenuation Volume	
			1 in 30 Year	1 in 100 year + 40% Climate Change
Main Plateau	2.45ha	8.8 l/s	967m ³	1,937m ³
Weighbridge Area	0.32ha	-	125m ³	252m ³
Total Attenuation	2.77ha	10.0 /ls-	1,092m³	2,189m³
Calculations are based on no infiltration to ground as a 'worst-case' scenario. Drainage from main plateau to discharge to final outfall at restricted 8.8l/s rate (pro-rata contributing area)				

Sustainable Drainage System

- 6.1.11 Based on the minimal areas of open space within the site, is proposed that the majority of the required attenuation will be provided within underground geocellular units.
- 6.1.12 The geocellular storage will be unlined, where feasible, to allow infiltration to the underlying ground and will be sufficiently sized to provide temporary storage for all storm events up to and including the 1 in 100 year storm event, including a 40% allowance for climate change, where inflow rates exceed the infiltration rate.
- 6.1.13 The depth of made ground at the site will be confirmed as part of subsequent site investigation works and any infiltration SuDS features within the drainage network will be located at depths below the extent of the made ground to prevent the mobilisation of any contaminants within the material.
- 6.1.14 All surface water runoff will be conveyed through an appropriate number of SuDS features to provide the necessary water quality treatment. Generally, this will include two or three stages of treatment for runoff from roads and parking areas, and one stage of treatment for roof water runoff. The features will act as a '*SuDS Management Train*' as described in the SuDS Manual.
- 6.1.15 To provide treatment to surface water runoff, all gullies and drainage channels will be fitted with silt traps and runoff from hardstanding will discharge via oil separators.
- 6.1.16 Lined filter trenches will be constructed around retaining walls in the north and east of the site which will convey intercepted flows south-westwards and north-westwards, as per the pre-development overland flow routes, around the development plateau to disperse within open ground.

6.2 Foul Water Drainage

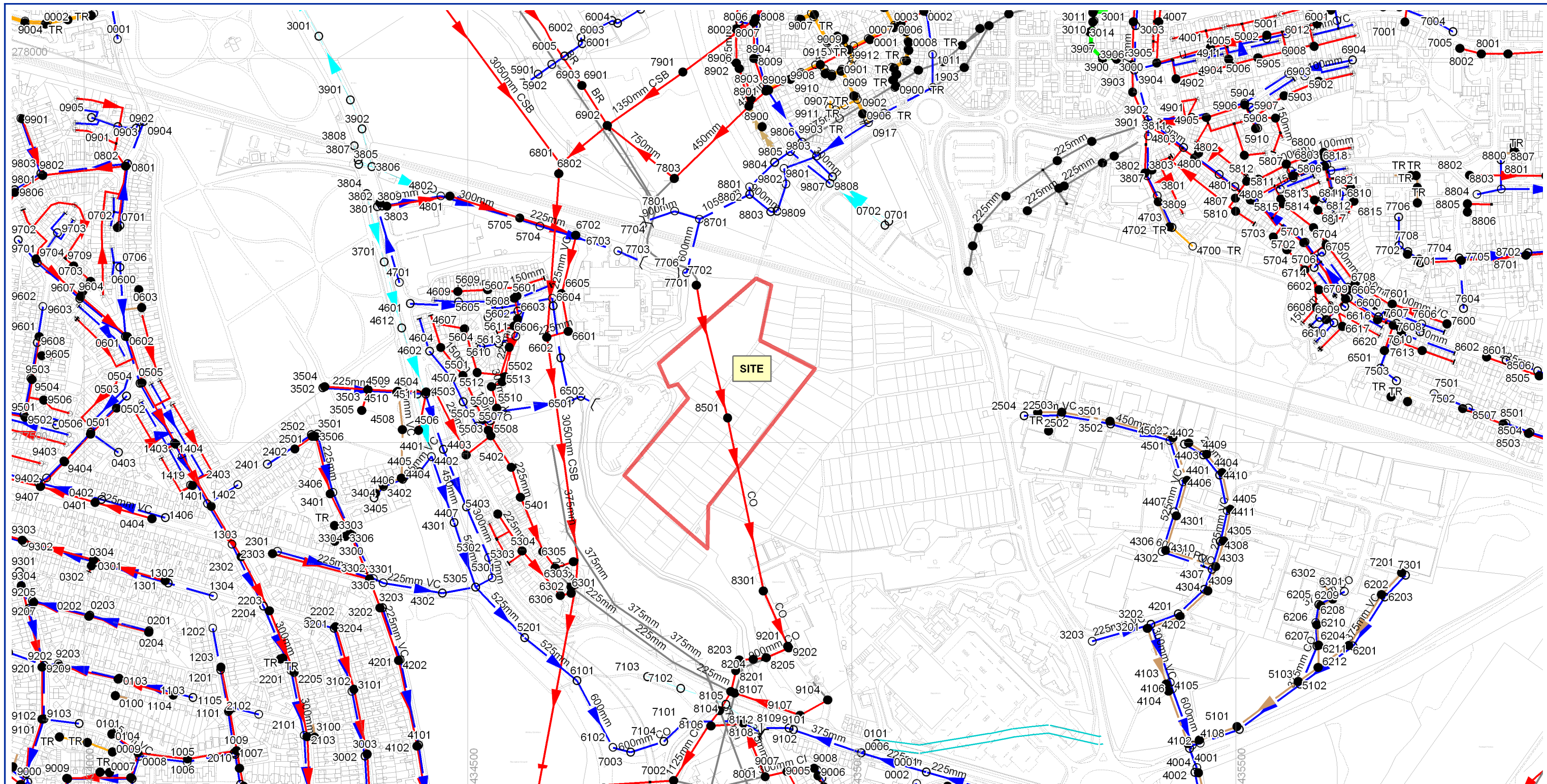
- 6.2.1 It is proposed that foul water flows from the offices and processing building will discharge to the public foul sewer via manhole 8301 in the adjacent industrial estate. This is in accordance with the requirements of Severn Trent Water (see Developer Enquiry response, Appendix 2). An indicative route, subject to the location of incoming connections and flow rates from the buildings, is shown on Drawing No. CA11485-064 '*Indicative Drainage Strategy*'.

7 CONCLUSIONS

- 7.1.1 This report gives details of the Flood Risk Assessment, which has been carried out in accordance with the National Planning Policy Framework.
- 7.1.2 The proposed development comprises a Materials Recycling Facility and consists of a large processing building, office building and associated hardstanding. As part of the proposed development ground levels in northern and central areas of the site will be modified to produce a flat plateau.
- 7.1.3 The proposed development area is located within Flood Zone 1 according to the Environment Agency's current Flood Map for Planning and is defined as a 'Less Vulnerable' development in Table 2 of the NPPG. Less Vulnerable development is an appropriate development type within Flood Zone 1.
- 7.1.4 The risk of flooding from fluvial sources, surface water, groundwater and sewers is considered to be Very Low. The site is not considered to be at risk of flooding from artificial sources.
- 7.1.5 Flood risk management measures will be put in place to ensure that the risk of flooding to areas downstream of the site is not increased as a result of the development. This will include a surface water drainage strategy that will mimic greenfield performance for a range of storm events in accordance with the NPPF, Environment Agency requirements and local planning policy.
- 7.1.6 Surface water runoff will be managed in a sustainable manner and will be disposed of by infiltration to the ground, where possible, in accordance with the Building Regulations hierarchy. Where the infiltration rate is exceeded, surface water will be discharged to the River Sherbourne at a restricted rate of 10.0 l/s equivalent to 20% betterment of the existing greenfield (Q_{bar}) runoff rate. On-site attenuation will be provided to accommodate flows up to and including the 1 in 100 year storm event, including a 40% climate change allowance.
- 7.1.7 As the risk of flooding to the site is considered to be Very Low, and the risk of flooding to surrounding areas will not increase as a result of the proposed development, it is considered that, from a flood risk and drainage perspective, the site is suitable for the type of development propose

APPENDICES

APPENDIX 1
Severn Trent Water Sewer Records



<ul style="list-style-type: none"> — x — x — x Abandoned Gravity Sewer — Private Combined Gravity Sewer — Private Foul Gravity Sewer — Private Surface Water Gravity Sewer — Public Combined Gravity Sewer — Public Foul Gravity Sewer — Public Surface Water Gravity Sewer — Trunk Combined Gravity Sewer — Trunk Foul Gravity Sewer — Trunk Surface Water Gravity Sewer — Combined Use Pressurised Sewer — Foul Use Pressurised Sewer — Surface Water Pressurised Sewer — Highway Drain — Combined Lateral Drain (SS) — Foul Lateral Drain (SS) — Surface Water Lateral Drain (SS) 	<ul style="list-style-type: none"> — Culverted Watercourse — Cable, Earthing — Cable Junction — Cable, Optical Fibre/Instrumentation — Cable, Low Voltage — Cable, High Voltage — Cable, Other — Housing, Building — Housing, Kiosk — Disposal Site — Sewage Treatment Works — Housing, Other — Pipe Support Structure — Sewage Pumping Facility — Sewer Facility Connection Inlet / Outlet 	<ul style="list-style-type: none"> ● Blind Shaft ● Combined Use Manhole □ Flushing Chamber ● Foul Use Manhole ● Grease Trap ● Head Node — Hydrobrake □ Lamphole — Outfall □ Overflow — Penstock ● Petrol Interceptor 	<ul style="list-style-type: none"> — Sewer Chemical Injection Point — Sewer Junction — Sewerage Air Valve — Sewerage Hatch Box Point — Sewerage Isolation Valve — Soakaway — Surface Water Manhole — Vent Column — Waste Water Storage — Pre-1937 Properties
---	--	--	--

		Severn Trent Water Limited Asset Data Management PO Box 5344 Coventry CV3 9FT Telephone: 0845 601 6616
SEWER RECORD		
O/S Map scale:	1:5000	This map is centred upon:
Date of issue:	28.01.19	O / S Grid reference:
		x : 434903
		y : 277559
<p>Disclaimer Statement:</p> <p>1. Do not scale off this Map.</p> <p>2. This map and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this Map and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of Severn Trent Water's assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems.</p> <p>3. On 1 October 2011 most private sewers and private lateral drains in Severn Trent Water's sewerage area, which were connected to a public sewer as at 1 July 2011, transferred to the ownership of Severn Trent Water and became public sewers and public lateral drains. A further transfer takes place on 1 October 2012 (date to be confirmed). Private pumping stations, which form part of these sewers or lateral drains, will transfer to the ownership of Severn Trent Water on or before 1 October 2016. Severn Trent Water does not possess complete records of these assets. These assets may not be displayed on this Map.</p> <p>4. Reproduction by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2004. All rights reserved. Ordnance Survey licence number 100018202. Document users other than Severn Trent Water business users are advised that this document is provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it.</p>		

All Private Sewers are shown in magenta
 All section 104 sewers are shown in green
 All Sewers that have been transferred to Severn Trent Water after the 1st October 2011, but have not been surveyed and confirmed by Severn Trent Water are shown in orange

Sewer Node

Sewer Pipe Data

REFERENCE	COVER LEVEL	INV LEVEL UPSTR	INV LEVEL DOWNSTR	PURP	MATL	SHAPE	MAX SIZE	MIN SIZE	GRADIENT	YEAR LAID
SP34775201	76.92	73.73	72.69	S	nil	C	525	nil	84.70	nil
SP34775301	78.99	75.03	74.81	S	nil	C	525	nil	113.91	nil
SP34775302	78.56	75.09	75.03	S	nil	C	300	nil	441.33	nil
SP34775303	75.37	73.49	72.68	C	nil	C	225	nil	94.54	nil
SP34775304	73.88	69.46	69.28	C	VC	C	225	nil	146.67	nil
SP34775401	72.15	70.17	69.51	C	VC	C	225	nil	116.20	nil
SP34775402	72.19	70.35	70.17	C	nil	C	225	nil	226.67	nil
SP34775403	76.10	74.04	73.49	C	nil	C	225	nil	104.89	nil
SP34775501	74.61	73.67	71.75	C	nil	C	150	nil	16.22	nil
SP34775502	72.64	71.06	70.68	C	nil	C	225	nil	20.05	nil
SP34775503	73.11	70.56	70.35	C	nil	C	225	nil	233.76	nil
SP34775505	nil	nil	nil	C	nil	C	150	nil	0.00	nil
SP34775506	nil	nil	70.56	C	nil	C	150	nil	0.00	nil
SP34775507	73.45	72.42	71.24	S	nil	C	225	nil	15.58	nil
SP34775508	72.63	71.24	69.29	S	nil	C	225	nil	10.57	nil
SP34775509	70.92	69.29	nil	S	nil	C	300	nil	0.00	nil
SP34775510	71.71	70.44	70.56	C	VC	C	300	nil	0.00	nil
SP34775512	71.52	70.58	70.45	C	VC	C	300	nil	222.00	nil
SP34775513	71.54	70.66	70.58	C	VC	C	300	nil	190.38	nil
SP34775601	74.57	72.19	71.33	C	VC	C	150	nil	32.88	nil
SP34775602	73.87	71.33	71.06	C	nil	C	225	nil	281.22	nil
SP34775604	nil	nil	nil	S	nil	C	150	nil	0.00	nil
SP34775605	75.33	74.40	72.03	S	VC	C	150	nil	16.80	nil
SP34775606	74.94	73.25	71.20	S	nil	C	225	nil	34.73	nil
SP34775607	74.24	72.31	72.20	C	nil	C	150	nil	38.55	nil
SP34775608	73.98	72.03	70.94	S	nil	C	150	nil	42.69	nil
SP34775609	nil	nil	nil	C	nil	C	150	nil	0.00	nil
SP34775610	nil	nil	nil	S	nil	C	150	nil	0.00	nil
SP34775611	nil	nil	nil	S	nil	C	nil	nil	0.00	nil
SP34775613	nil	nil	71.75	C	nil	C	nil	nil	0.00	nil
SP34775615	nil	nil	nil	C	nil	C	nil	nil	0.00	nil
SP34775616	nil	nil	nil	S	nil	C	100	nil	0.00	nil
SP34775704	75.69	72.31	69.87	S	CO	C	375	nil	43.94	nil
SP34775705	75.93	72.87	70.63	C	nil	C	225	nil	34.04	nil
SP34776101	75.01	72.61	71.98	S	nil	C	600	nil	156.95	nil
SP34776301	73.63	70.16	69.91	C	VC	C	225	nil	32.00	nil
SP34776302	73.27	69.20	68.45	C	VC	C	225	nil	9.61	nil
SP34776303	73.24	65.54	65.29	C	CSB	C	3050	nil	1118.76	nil
SP34776304	74.65	69.28	nil	C	VC	C	225	nil	0.00	nil
SP34776305	nil	nil	nil	C	VC	C	225	nil	0.00	nil
SP34776306	74.48	70.54	70.19	C	VC	C	225	nil	40.91	nil
SP34776501	nil	nil	67.39	S	nil	C	300	nil	0.00	nil
SP34776503	nil	nil	nil	S	nil	C	300	nil	0.00	nil
SP34776601	73.93	70.64	67.85	C	nil	C	225	nil	10.44	nil
SP34776602	70.78	69.18	nil	S	nil	C	225	nil	0.00	nil
SP34776603	72.50	70.94	69.18	S	nil	C	225	nil	39.05	nil

MATERIALS

-	- NONE	PE	- POLYETHYLENE
AC	- ASBESTOS CEMENT	PF	- PITCH
BR	- BRICK	PP	- POLYPROPYLENE
CC	- CONCRETE BOX CULVERT	PSC	- PLASTIC STEEL COMPOSITE
CI	- CAST IRON	PVC	- POLYVINYL CHLORIDE
CO	- CONCRETE	RPM	- REINFORCED PLASTIC MATRIX
CSB	- CONCRETE SEGMENTS (BOLTED)	SI	- SPUN (GREY) IRON
CSU	- CONCRETE SEGMENTS (UNBOLTED)	ST	- STEEL
DI	- DUCTILE IRON	U	- UNKNOWN
GRC	- GLASS REINFORCED CONCRETE	VC	- VITRIFIED CLAY
RP	- GLASS REINFORCED PLASTIC	XXX	- OTHER
MAC	- MASONRY IN REGULAR COURSES		
MAR	- MASONRY RANDOMLY COURSED		

SHAPE

C	- CIRCULAR	C	- COMBINED
E	- EGG SHAPED	E	- FINAL EFFLUENT
O	- OTHER	F	- FOUL
R	- RECTANGLE	L	- SLUDGE
S	- SQUARE	S	- SURFACE WATER
T	- TRAPEZOIDAL		
U	- UNKNOWN		

PURPOSE

TABULAR KEY

- Sewer pipe data refers to downstream sewer pipe.
- Where the node bifurcates (splits) X and Y indicates downstream sewer pipe.
- Gradient is stated a 1 in...



Severn Trent Water Limited
Asset Data Management
PO Box 5344
Coventry
CV3 9FT
Telephone: 0845 601 6616

SEWER RECORD DATA TABLE

O/S Map scale:	1:3500	This map is centred upon:	
Date of issue:	09.01.19	O / S Grid reference:	x: 434845
Sheet No.	2 of 3		y: 277541

Disclaimer Statement:

- Do not scale off this Map.
- This map and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this Map and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of Severn Trent Water's assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems.
- On 1 October 2011 most private sewers and private lateral drains in Severn Trent Water's sewerage area, which were connected to a public sewer as at 1 July 2011, transferred to the ownership of Severn Trent Water and became public sewers and public lateral drains. A further transfer takes place on 1 October 2012 (date to be confirmed). Private pumping stations, which form part of these sewers or lateral drains, will transfer to the ownership of Severn Trent Water on or before 1 October 2016. Severn Trent Water does not possess complete records of these assets.
- Reproduction by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2004. All rights reserved. Ordnance Survey licence number 100018202. Document users other than Severn Trent Water business users are advised that this document is provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it. should be made from it.

Sewer Node

Sewer Pipe Data

REFERENCE	COVER LEVEL	INV LEVEL UPSTR	INV LEVEL DOWNSTR	PURP	MATL	SHAPE	MAX SIZE	MIN SIZE	GRADIENT	YEAR LAID
SP34776604	72.73	71.20	70.94	S	nil	C	225	nil	38.65	nil
SP34776605	nil	nil	71.64	C	nil	C	225	nil	0.00	nil
SP34776606	71.18	65.77	nil	C	CSB	C	3050	nil	0.00	nil
SP34776702	76.03	70.61	nil	C	VC	C	225	nil	0.00	nil
SP34776703	71.31	69.87	69.17	S	CO	C	450	nil	39.01	nil
SP34776801	70.41	66.56	nil	C	nil	C	nil	nil	0.00	nil
SP34776801	70.41	66.51	nil	C	nil	C	nil	nil	0.00	nil
SP34776802	70.53	65.98	65.77	C	CSB	C	3050	nil	1017.14	nil
SP34777102	72.13	nil	nil	nil	nil	nil	nil	nil	0.00	nil
SP34777103	nil	nil	nil	nil	nil	nil	nil	nil	0.00	nil
SP34777701	72.35	69.95	69.99	C	nil	C	nil	nil	0.00	nil
SP34777706	nil	nil	nil	S	nil	C	600	nil	0.00	nil
SP34777801	71.14	69.57	68.64	S	nil	C	900	nil	36.39	nil
SP34777803	72.30	70.30	69.37	C	nil	C	750	nil	119.40	nil
SP34778201	71.37	67.70	67.60	C	CO	C	1125	nil	276.60	nil
SP34778203	70.79	67.86	67.70	C	nil	C	900	nil	92.94	nil
SP34778204	nil	nil	67.86	C	CI	C	900	nil	0.00	nil
SP34778205	72.26	69.35	nil	C	CI	C	900	nil	0.00	nil
SP34778301	76.84	69.57	69.60	C	CO	E	1520	1020	0.00	nil
SP34778501	84.83	69.99	69.56	C	CO	E	1520	1020	534.56	nil
SP34778701	71.17	nil	69.57	S	nil	C	900	nil	0.00	nil
SP34778701	71.17	nil	nil	S	nil	C	600	nil	0.00	nil
SP34778801	72.17	70.03	nil	S	nil	C	1050	nil	0.00	nil
SP34778802	72.31	70.75	70.35	S	nil	C	600	nil	25.00	nil
SP34778803	nil	nil	70.17	S	nil	C	900	nil	0.00	nil
SP34779201	74.17	69.59	69.60	C	BR	E	1635	1020	0.00	nil
SP34779202	74.05	69.50	69.35	C	CO	C	900	nil	211.87	nil
SP34779801	72.88	70.54	70.47	S	nil	C	900	nil	542.14	nil
SP34779802	72.32	70.59	70.57	S	nil	C	900	nil	1011.00	nil
SP34779803	73.32	70.83	nil	S	nil	C	900	nil	0.00	nil
SP34779804	72.59	71.12	70.85	S	CO	C	600	nil	170.26	nil
SP34779805	72.64	71.23	71.13	S	nil	C	600	nil	244.10	nil
SP34779806	73.03	71.36	71.27	S	CO	C	nil	nil	222.22	nil
SP34779806	73.03	71.57	70.87	S	nil	C	450	nil	36.37	nil
SP34779807	73.95	72.43	nil	S	nil	C	300	nil	0.00	nil
SP34779808	73.99	72.47	71.27	S	VC	C	nil	nil	55.70	nil
SP34779809	73.34	70.44	nil	S	nil	C	900	nil	0.00	nil
SP35770701	nil	nil	nil	nil	nil	nil	nil	nil	0.00	nil
SP35770702	nil	nil	nil	nil	nil	nil	nil	nil	0.00	nil

MATERIALS

-	- NONE	PE	- POLYETHYLENE
AC	- ASBESTOS CEMENT	PF	- PITCH
BR	- BRICK	PP	- POLYPROPYLENE
CC	- CONCRETE BOX CULVERT	PSC	- PLASTIC STEEL COMPOSITE
CI	- CAST IRON	PVC	- POLYVINYL CHLORIDE
CO	- CONCRETE	RPM	- REINFORCED PLASTIC MATRIX
CSB	- CONCRETE SEGMENTS (BOLTED)	SI	- SPUN (GREY) IRON
CSU	- CONCRETE SEGMENTS (UNBOLTED)	ST	- STEEL
DI	- DUCTILE IRON	U	- UNKNOWN
GRC	- GLASS REINFORCED CONCRETE	VC	- VITRIFIED CLAY
RP	- GLASS REINFORCED PLASTIC	XXX	- OTHER
MAC	- MASONRY IN REGULAR COURSES		
MAR	- MASONRY RANDOMLY COURSED		

SHAPE

C	- CIRCULAR
E	- EGG SHAPED
O	- OTHER
R	- RECTANGLE
S	- SQUARE
T	- TRAPEZOIDAL
U	- UNKNOWN

PURPOSE

C	- COMBINED
E	- FINAL EFFLUENT
F	- FOUL
L	- SLUDGE
S	- SURFACE WATER

TABULAR KEY

- Sewer pipe data refers to downstream sewer pipe.
- Where the node bifurcates (splits) X and Y indicates downstream sewer pipe.
- Gradient is stated a 1 in...



Severn Trent Water Limited
Asset Data Management
PO Box 5344
Coventry
CV3 9FT
Telephone: 0845 601 6616

SEWER RECORD DATA TABLE

O/S Map scale:	1:3500	This map is centred upon:
Date of issue:	09.01.19	O / S Grid reference:
Sheet No.	3 of 3	x: 434845
		y: 277541

Disclaimer Statement:

- Do not scale off this Map.
- This map and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this Map and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of Severn Trent Water's assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems.
- On 1 October 2011 most private sewers and private lateral drains in Severn Trent Water's sewerage area, which were connected to a public sewer as at 1 July 2011, transferred to the ownership of Severn Trent Water and became public sewers and public lateral drains. A further transfer takes place on 1 October 2012 (date to be confirmed). Private pumping stations, which form part of these sewers or lateral drains, will transfer to the ownership of Severn Trent Water on or before 1 October 2016. Severn Trent Water does not possess complete records of these assets.
- Reproduction by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2004. All rights reserved. Ordnance Survey licence number 100018202. Document users other than Severn Trent Water business users are advised that this document is provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it. should be made from it.

APPENDIX 2
Severn Trent Water Developer Enquiry Response

Wardell Armstrong
Sir Henry Doulton House
Forge Lane
Etruria
Stoke on Trent
ST1 5BD

FAO: Bryn Griffiths

Severn Trent Water Ltd
Leicester Water Centre
Gorse Hill
Anstey
Leicester
LE7 7GU

Tel: 024 777 16843

www.stwater.co.uk

net.dev.east@severntrent.co.uk

Contact: Asset Protection East
(waste water)

Your Ref:

Our Ref: 8343120

28th January 2019

Dear Sir,

Land off Shortley Road, Coventry, West Midlands, CV3 4AE
Proposed Recycling Facility (434812, 277541)

I refer to your 'Development Enquiry Request' in respect of the above named site. Please find enclosed the sewer records that are included in the fee together with the Supplementary Guidance Notes (SGN) which refer to surface water disposal from development sites.

Protective Strips

Due to recent change in legislation, there could be sewers, which have transferred over to the Company that are not shown on the statutory sewer records, but are located on your clients land. These sewers will have protective strips that we will not allow to be built over. The sewers could be identified whilst the land is being surveyed. If this is the case, please contact us for further guidance upon discovery.

Please note there is a 1520mm x 1020mm dia public combined sewer crossing diagonally through the site north to south. I note from the submitted drawing that the intention is to build over this sewer. Severn Trent do not allow any new buildings over public sewers, and certainly not one that is this large.

However, I note from the sewer records that the sewer feeding into this large combined sewer to the north of the site (at manhole 7701) is shown on the record as an abandoned sewer. This incoming sewer looks to have been diverted in another direction at manhole 7803 (please see attached plan – abandoned sewer north). I will need to

investigate this further to understand why the remainder of this sewer crossing through the site has not been abandoned, it may still be in use or is being mothballed in case of further future use. This may take several days to find out that information.

If the above sewer is abandoned, then it will need to be officially divested as a public sewer and the ownership handed over to the developer / land owner who will then be able to build over the sewer as it will be then private, subject to the proposed build and the sewer position under that being made acceptable to building regulations. Sewer grouting may be required to achieve this, if it has not already been carried.

I will write to you again on this matter within the next working week.

Foul Water Drainage

Subject to the previous section, if the sewer is abandoned, a suitable connection point could be at manhole 8301 in the neighbouring industrial property (Whitley Depot) and with their consent for a connection, or alternatively a new sewer constructed in the proposed new access road to the south and into the sewer where it will be crossing that access road, between MHs 8205 and 8204. The sewer at this point is 900mm dia. The type of connection at this point will be determined by the Developer Services S106 New Connections team.

Surface Water Drainage

Under the terms of Section H of the Building Regulations 2010, the disposal of surface water by means of soakaways should be considered as the primary method. If this is not practical and no watercourse is available as an alternative, the use of sewerage should be considered. In addition, other sustainable drainage methods should also be explored before a discharge to the public sewerage system is considered.

If ground conditions are not favourable, for soakaways and other SUDs techniques, evidence should be submitted. The evidence should be either percolation test results or by the submission of a statement from the SI consultant (extract or a supplementary letter). This would satisfy the SGN (enclosed).

Subject to the above, I believe that there is unlikely to be any formal drainage of the existing allotment site to the public sewer with all buildings being temporary types such as sheds, greenhouses etc. It is therefore very likely any surface water run-off from footpaths and sheds will drain to ground and eventually will run-off to the adjacent watercourse.

For this application of a new build all surface water run-off from the new buildings and surfaces shall be discharged to the nearby watercourse. This will need to be determined for quantity and quality by the Environment Agency. Please note some form of onsite treatment or filtering may be required depending upon the nature of the materials to be processed within this site and the nature of the sw run-off from the road/storage areas.

Where the EA raise concerns for quality reasons to discharge to the watercourse a Trade Effluent (TE) licence can be applied for from Severn Trent, details for which are on our website at www.stwater.co.uk. There will be a fee for the TE licence and ongoing charges levied against the business owners. Please note wherever possible any roof rainwater shall be disposed of to the watercourse and not the public sewer.

Any flows generated by the site in excess of the permitted discharge rate will have to be attenuated within the development site, subject to EA / STW TE requirements.

Connections

For any new connections including the use, reuse and indirect to the public sewerage system, the developer will need to submit Section 106 application. Our Developer Services department are responsible for handling all such enquiries and applications. To contact them for an application form and associated guidance notes please call 0800 707 6600 or download from www.stwater.co.uk

Please quote the above reference number in any future correspondence (including e-mails) with STW Limited. Please send **all correspondence** to the net.dev.east@severntrent.co.uk email inbox address, a response will be made within 15 days.

Please note that Developer Enquiry responses are only valid for 6 months from the date of this letter.

Yours sincerely,



Keith Baker
Senior Evaluation Technician
Asset Protection East (wastewater)
Asset Data
Wholesale Operations

WONDERFUL ON TAP

SEVERN

TRENT

SUPPLEMENTARY GUIDANCE NOTES RELATING TO DISPOSAL OF SURFACE WATER



Introduction

The purpose of this guidance note is to provide advice to applicants when completing the surface water drainage design for a new development, both for Greenfield and Brownfield sites. This does not affect foul drainage disposal which should be discussed with Severn Trent as early as possible to ensure additional flows can be accommodated without undue delay to the development.

Lead Local Flood Authority (LLFA) Consultation

Since April 2015, the LLFA have assumed the role of being a statutory consultee in the planning process for developments of 10 dwellings or more; or equivalent non-residential and/or mixed development. The LLFAs role is vital to ensure that surface water disposal on new development is adequately assessed so that the local planning authority can satisfy themselves that drainage proposals are satisfactory and to make sure, through the use of planning conditions or planning obligations, that there are clear arrangements in place for future maintenance of sustainable drainage systems (SuDS) over the lifetime of the development. This will also ensure surface water disposal aligns with local planning policies, flood risk strategies and national policies, such as the National Planning Policy Framework (NPPF).

It is strongly recommend that the LLFA are involved in early pre-application discussions when the development of a site is initially being considered. Pre-application discussions will help to ensure that SuDS are appropriately considered ahead of or as part of preliminary development layouts, and that they are fully integrated into the final development layout. Whilst Severn Trent are willing to advise on sewerage availability this does to negate the planning requirement relating to adequacy of SuDS on new development.

SuDS Hierarchy

Severn Trent is fully supportive of the fundamental SuDS principle that priority should be given to managing surface water as close to source as possible. In accordance with national standards and guidance a sequential series of checks should be undertaken to ensure the relevant SuDS features are being proposed whereby (in order of priority) rainwater re-use, infiltration to ground and controlled discharge to a water body are properly considered ahead of any controlled connection to a culverted watercourse/other drainage system or public surface water sewer.

A controlled connection to a public combined/foul sewer would only be considered under rare exceptional circumstances where all other options have been completely exhausted. Acceptance of surface water into a combined sewer is not only unsustainable because of the need to convey/treat rainwater but is also takes away existing capacity which could constraint the connection of foul flows on future development. It is also possible that connection of additional surface water flows will require capacity upgrades to the existing sewerage system which may delay development.

Connection to a Public Sewer

Whilst Severn Trent will be able to provide advice on potential public surface water sewer connection options, it is essential that a developer contacts the LLFA as early as possible to discuss surface water disposal as they will be able to provide guidance on surface water flood risk policy which may influence SuDS requirements. It is strongly recommended that LLFA discussions take place before contacting Severn Trent. Where the outcome of LLFA discussions concludes that a controlled discharge to the public sewerage system is the only viable option then Severn Trent would be pleased to discuss sewer connection options, satisfied that the LLFA have been consulted in line with their surface water management role and in their capacity as statutory consultee.

Evidence must be provided to demonstrate why the sequential SuDS checks have concluded that a connection to the public sewer is required. This must include a Site Investigation Report including percolation test data/graphs/calculations/results together with relevant correspondence with the LLFA.

Design Standards

Surface water disposal design should consider the interactions between the adoptable sewer design criteria based on a 30 year design storm (outlined in 'Sewers For Adoption') and the "Non-statutory technical standards for SuDS" requirement to restrict discharge from a site up to and including the 1 in 100 year critical storm event plus an allowance for climate change as required by the LLFA.

For Greenfield development, the peak runoff rate should never exceed the peak pre-development run-off rates/volumes for the same rainfall event irrespective of the design storm duration consistent with the national non-statutory technical standards. For developments which were previously developed (Brownfield), the peak runoff rate must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment again for the same rainfall event. This requirement to remove pre-development surface water discharges to the sewerage system will help remove capacity constraints and aid future development.

To establish the pre-development run-off rates a detailed existing drainage survey will be required indicating pipe locations including sizes and levels, impermeable area connectivity to each pipe and topographical information to support existing drainage assumptions. Photographs of the existing buildings and surface features should be provided and where necessary a CCTV sewer survey should be provided to support the drainage survey to demonstrate connectivity.

In line with 'Sewers for Adoption', the drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event. For higher storm return periods the drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station, electricity substation, water booster station) within the development.

Small Developments

Whilst developments of fewer than 10 dwellings (or their equivalent) are excluded from the post April 2015 planning requirements the underlying principles regarding sustainable surface water management are still valid. The collective impacts of surface water discharges from smaller developments can have an adverse impact on flood risk, especially in smaller rural catchments where smaller sewerage systems are more susceptible to increases in surface water inflow. On small developments infiltration to ground and peak flow attenuation must be considered to mitigate flood risk in the community but where a sewer connection is envisaged then the developer is recommended to discuss surface water disposal options with Severn Trent as early as possible.

Contact

For further assistance please contact our Asset Protection teams via:

net.dev.west@severntrent.co.uk

(Birmingham & Black Country, Staffordshire, Shropshire, Worcestershire, Gloucestershire, Herefordshire, Powys)

net.dev.east@severntrent.co.uk

(Derbyshire, Leicestershire, Nottinghamshire, Warwickshire, Coventry)

Additional Guidance Notes

If you experience difficulty in the provision of off-site sewers to serve your proposed development, an application for requisition sewers under Section 98 Water Act 2003 may be appropriate on request to this office.

If there are existing public sewers within the curtilage of the development site that may affect the proposed development, the option to divert them under Section 185 Water Act 2003 may be available. All costs incurred would lay with the Applicant.

All potentially adoptable sewers must be designed and constructed in accordance with the guidelines in Sewers for Adoption (6th Edition), after 1st May 2006. A Severn Trent Water Addendum for Foul Sewage Pumping Stations will be available at www.wrcplc.co.uk/sfa.

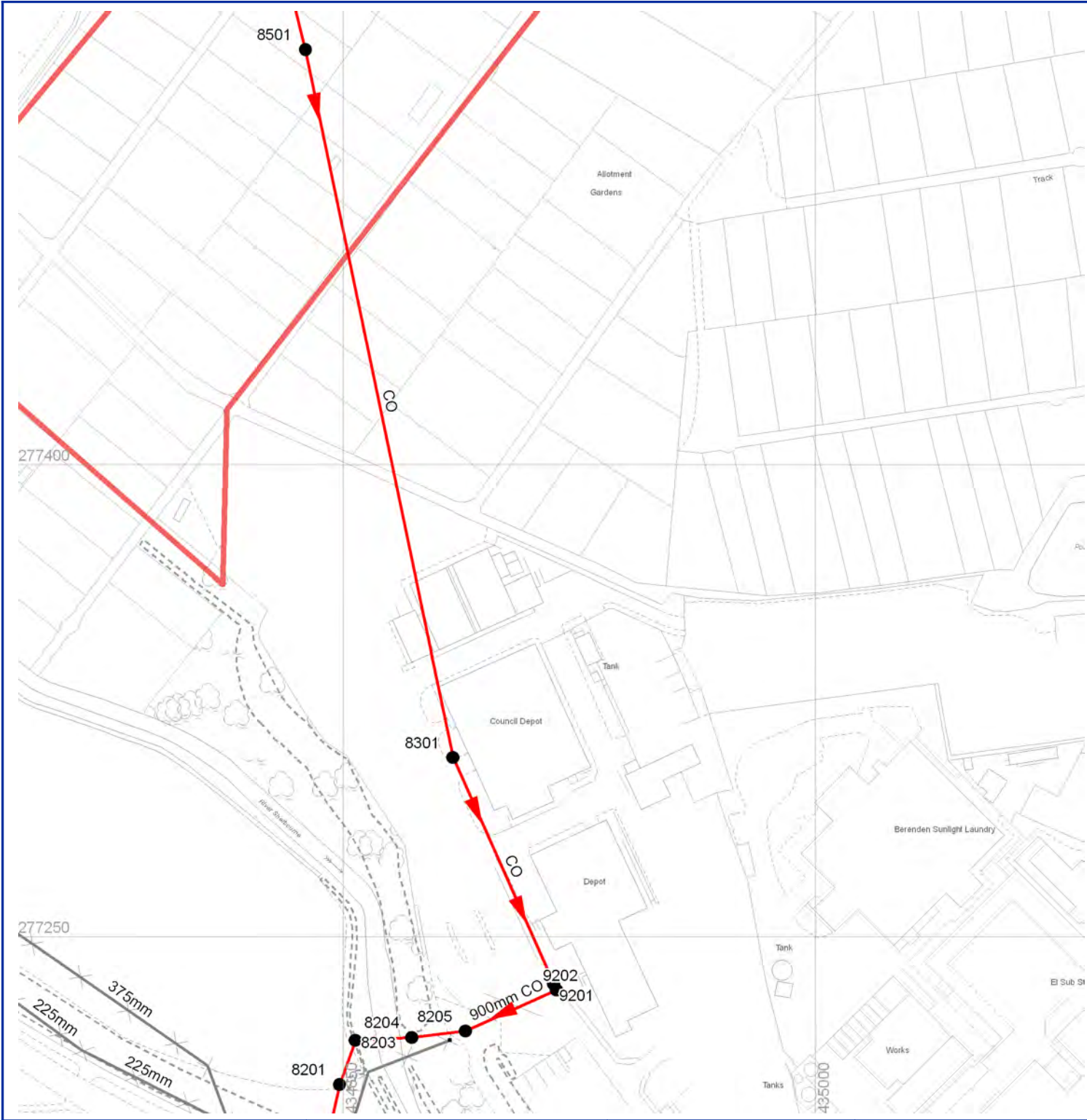
If the sewers are to be offered for adoption or if the development works could affect the public sewerage system, the Developer should approach Severn Trent Water Ltd to discuss their proposals in detail. This is to ensure the Developer is aware of the Company's requirements which could affect the development design and/or programme.

In cases where the complexity of both the existing receiving sewerage system and the proposed additional sewerage necessitates the construction of a suitable computer model, Severn Trent Water will carry this out where required.

Severn Trent Water has no knowledge of any specific land drainage issues involving this site. The Developer is to contact and seek approval of The Environment Agency, Local Authority etc. regarding any means of surface water disposal to the land drainage system, required attenuation, discharge consent etc.

All enquiries with respect to the supply of sewer records only should be directed to Severn Trent Water Limited, Asset Data Management, PO Box 5344, Coventry. CV3 9FT (Tel. 0845 601 6616).

Asset Protection
Waste Water East



Sewer Node	Sewer Pipe Data										
	REFERENCE	COVER LEVEL	INV LEVEL UPSTR	INV LEVEL DOWNSTR	PURP	MATL	SHAPE	MAX SIZE	MIN SIZE	GRADIENT	YEAR LAID
	SP34778201	71.37	67.70	67.60	C	CO	C	1125	nil	276.60	nil
	SP34778203	70.79	67.86	67.70	C	nil	C	900	nil	92.94	nil
	SP34778204	nil	nil	67.86	C	CI	C	900	nil	0.00	nil
	SP34778205	72.26	69.35	nil	C	CI	C	900	nil	0.00	nil
	SP34778301	76.84	69.57	69.60	C	CO	E	1520	1020	0.00	nil
	SP34778501	84.83	69.99	69.56	C	CO	E	1520	1020	534.56	nil
	SP34779201	74.17	69.59	69.60	C	BR	E	1635	1020	0.00	nil
	SP34779202	74.05	69.50	69.35	C	CO	C	900	nil	211.87	nil

<ul style="list-style-type: none"> ✕✕✕✕ Abandoned Gravity Sewer — Private Combined Gravity Sewer — Private Foul Gravity Sewer — Private Surface Water Gravity Sewer — Public Combined Gravity Sewer — Public Foul Gravity Sewer — Public Surface Water Gravity Sewer — Trunk Combined Gravity Sewer — Trunk Foul Use Gravity Sewer — Trunk Surface Water Gravity Sewer — Combined Use Pressurised Sewer — Foul Use Pressurised Sewer — Surface Water Pressurised Sewer — Highway Drain — Combined Lateral Drain (SS) — Foul Lateral Drain (SS) — Surface Water Lateral Drain (SS) 	<ul style="list-style-type: none"> — Culverted Watercourse — Cable, Earthing — Cable Junction — Cable, Optical Fibre/Instrumentation — Cable, Low Voltage — Cable, High Voltage — Cable, Other — Housing, Building — Housing, Kiosk — Disposal Site — Sewage Treatment Works — Housing, Other — Pipe Support Structure — Sewage Pumping Facility — Sewer Facility Connection Inlet / Outlet 	<ul style="list-style-type: none"> ● Blind Shaft ● Combined Use Manhole □ Flushing Chamber ● Foul Use Manhole ● Grease Trap ● Head Node — Hydrobrake □ Lamphole ○ Outfall □ Overflow — Penstock ● Petrol Interceptor 	<ul style="list-style-type: none"> — Sewer Chemical Injection Point ● Sewer Junction — Sewerage Air Valve — Sewerage Hatch Box Point — Sewerage Isolation Valve ● Soakaway ○ Surface Water Manhole — Vent Column — Waste Water Storage — Pre-1937 Properties
--	--	--	--

MATERIALS

- NONE
- AC - ASBESTOS CEMENT
- BR - BRICK
- CC - CONCRETE BOX CULVERT
- CI - CAST IRON
- CO - CONCRETE
- CSB - CONCRETE SEGMENTS (BOLTED)
- CSU - CONCRETE SEGMENTS (UNBOLTED)
- DI - DUCTILE IRON
- GRC - GLASS REINFORCED CONCRETE
- GRP - GLASS REINFORCED PLASTIC
- MAC - MASONRY IN REGULAR COURSES
- MAR - MASONRY RANDOMLY COURSED
- PE - POLYETHYLENE
- PF - PITCH
- PP - POLYPROPYLENE
- PSC - PLASTIC STEEL COMPOSITE
- PVC - POLYVINYL CHLORIDE
- RPM - REINFORCED PLASTIC MATRIX
- SI - SPUN (GREY) IRON
- ST - STEEL
- U - UNKNOWN
- VC - VITRIFIED CLAY
- XXX - OTHER

CATEGORIES

- W - WEIR
- C - CASCADE
- DB - DAMBOARD
- SE - SIDE ENTRY
- FV - FLAP VALVE
- BD - BACK DROP
- S - SIPHON
- HD - HIGHWAY DRAIN
- S104 - SECTION 104

SHAPE

- C - CIRCULAR
- E - EGG SHAPED
- O - OTHER
- R - RECTANGLE
- S - SQUARE
- T - TRAPEZOIDAL
- U - UNKNOWN

PURPOSE


- C - COMBINED
- E - FINAL EFFLUENT
- F - FOUL
- L - SLUDGE
- S - SURFACE WATER

TABULAR KEY

A. Sewer pipe data refers to downstream sewer pipe.

B. Where the node bifurcates (splits) X and Y indicates downstream sewer pipe.

C. Gradient is stated a 1 in...



Sewer Trent Water Limited
Asset Data Management
PO Box 5344
Coventry
CV3 9FT
Telephone: 0845 601 6616

SEWER RECORD (Tabular)

O/S Map scale:	1:1750	This map is centred upon:	
Date of issue:	28.01.19	O / S Grid reference:	
Sheet No.	1 of 1	x :	434916
		y :	277368

Disclaimer Statement:

1. Do not scale off this Map.

2. This map and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this Map and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of Severn Trent Water's assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems.

3. On 1 October 2011 most private sewers and private lateral drains in Severn Trent Water's sewerage area, which were connected to a public sewer as at 1 July 2011, transferred to the ownership of Severn Trent Water and became public sewers and public lateral drains. A further transfer takes place on 1 October 2012 (date to be confirmed). Private pumping stations, which form part of these sewers or lateral drains, will transfer to the ownership of Severn Trent Water on or before 1 October 2016. Severn Trent Water does not possess complete records of these assets. **These assets may not be displayed on this Map.**

4. Reproduction by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2004. All rights reserved. Ordnance Survey licence number 100018202. Document users other than Severn Trent Water business users are advised that this document is provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it.

APPENDIX 3
CCTV Sewer Survey Report



Project-information

Project name:
Coventry

Contract number:
1901617

Contact:
Andrew Smith

Date:
03/05/2019

Client **Wardell Armstrong LLP**
 Contact: **Andrew Smith**
 Position: **Principal Civil Engineer**
 Road **41-50 Futura Park, Aspinal Way**
 Town **Middlebrook, Bolton**
 County **Greater Manchester BL6 6SU**
 Telephone: **01204 227 227**
 Fax:
 Mobile:
 E-Mail:

Site
 Contact:
 Position:
 Road **Off Bar Road**
 Town **Whitley, Coventry**
 County **West Midlands**
 Telephone:
 Fax:
 Mobile:
 E-Mail:

Contractor **OnSite Central Limited**
 Contact:
 Position:
 Road **89 Blackpole West, Blackpole**
 Town **Worcester**
 County **Worcestershire WR3 8TJ**
 Telephone: **01905 340054**
 Fax: **01905 751571**
 Mobile:
 E-Mail:


 $\Sigma \emptyset$

Project name:
Coventry

Contract number:
1901617

Contact:
Andrew Smith

Date:
03/05/2019

No.	start MH	end MH	Date	Road	Tape No.	Material	m	(m)
1	SP34777701	SP34778501	18/04/2019	OFF BAR ROAD	00001	Brick	182.3	182.3
2	SP34778501	SP34778301	18/04/2019	OFF BAR ROAD	00001	Brick	229.9	17.8
3	SP34777701	UPSTREAM	18/04/2019	OFF BAR ROAD	00001	Brick	20	12.2
4	SP34778301	SP34778301	18/04/2019	OFF BAR ROAD	00001	Brick	229.9	6.5

Profile: EGG SHAPED 1500/1020 = 662.1 m (218.8 m)

all sections = 662.1 m (218.8 m)



Inspection report

Date: 18/04/2019	Job N°: OSCC1901607	Weather: No rain or snow	Operator: ONSITE BG	section number: 1	PLR: SP3477701X
Video Volume No.: 00001	Flow Ctrl: No flow control	Temperature: above freezing	Year laid: Z	Cleaned: No	Strat. Drain: not known

Road: OFF BAR ROAD	Div/Dist:	start MH: SP3477701
Place: COVENTRY	Drain. Area:	end MH: SP34778501
Location: Difficult access	Standard: BS EN 13508-2:2003	Total length: 182.3 m

Purpose: Other	Shape/Size: Egg shaped 1500/1020
Type: Gravity drain/sewer	Material: Brick Pipe length:
Use: Combined	Lining: Lining Type:

Comment:

1:1350	position	code	observation	MPEG	photo	grade
	0.00	MH	Start node type, manhole, reference number: SP3477701	00:00:00		(Misc) 0
	0.00	WL	Water level 5 % height/diameter	00:00:00		(Serv) 0
	0.00	S1	DEE Attached deposits encrustation from 07 to 11 o'clock 5 % cross-sectional area loss, Start	00:00:00		
	0.00	S2	DEE Attached deposits encrustation from 02 to 05 o'clock 5 % cross-sectional area loss, Start	00:00:00		
	20.00	REM	General remark, Remark: CONCRETE SOFFIT	00:02:55		
	28.00	REM	General remark, Remark: BRICK SOFFIT	00:03:26		
	30.90	CN	Connection at 12 o'clock, dia 100 mm	00:03:41		(Constr) 0
	126.50	WL	Water level 10 % height/diameter	00:16:35		(Serv) 0
	182.30	F1	DEE Attached deposits encrustation from 07 to 11 o'clock 05 % cross-sectional area loss, Finish	00:32:14		
	182.30	F2	DEE Attached deposits encrustation from 02 to 05 o'clock 05 % cross-sectional area loss, Finish	00:32:14		
	182.30	MHF	Finish node type, manhole, reference number: SP34778501	00:32:14		

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features



Inspection report

Date: 18/04/2019	Job N°: OSCC1901607	Weather: No rain or snow	Operator: ONSITE BG	section number: 2	PLR: SP34778501X
Video Volume No.: 00001	Flow Ctrl: No flow control	Temperature: above freezing	Year laid: Z	Cleaned: No	Strat. Drain: not known

Road: OFF BAR ROAD	Div/Dist:	start MH: SP34778501
Place: COVENTRY	Drain. Area:	end MH: SP34778301
Location: Difficult access	Standard: BS EN 13508-2:2003	Total length: 229.9 m
Purpose: Other	Shape/Size: Egg shaped 1500/1020	
Type: Gravity drain/sewer	Material: Brick Pipe length:	
Use: Combined	Lining: Lining Type:	

Comment:

1:150	position	code	observation	MPEG	photo	grade
	0.00	MH	Start node type, manhole, reference number: SP34778501	00:00:00		(Misc) 0
	0.00	WL	Water level 05 % height/diameter	00:00:00		(Serv) 0
	0.00	S1	DEE Attached deposits encrustation from 07 to 11 o'clock 05 % cross-sectional area loss, Start	00:00:00		
	0.00	S2	DEE Attached deposits encrustation from 02 to 05 o'clock 05 % cross-sectional area loss, Start	00:00:00		
	16.80	WL	Water level 20 % height/diameter	00:05:52		(Serv) 0
	17.50	WL	Water level 10 % height/diameter	00:06:37		(Serv) 0
	17.80	F1	DEE Attached deposits encrustation from 07 to 11 o'clock 05 % cross-sectional area loss, Finish	00:31:20		
	17.80	F2	DEE Attached deposits encrustation from 02 to 05 o'clock 05 % cross-sectional area loss, Finish	00:31:20		
	17.80	SA	Survey abandoned, Remark: DUE TO LOSS OF TRACTION	00:31:20		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features



Inspection report

Date: 18/04/2019	Job N°: OSCC1901607	Weather: No rain or snow	Operator: ONSITE BG	section number: 3	PLR: UPSTREAM X
Video Volume No.: 00001	Flow Ctrl: No flow control	Temperature: above freezing	Year laid: Z	Cleaned: No	Strat. Drain: not known

Road: OFF BAR ROAD	Div/Dist:	start MH: SP34777701
Place: COVENTRY	Drain. Area:	end MH: UPSTREAM
Location: Difficult access	Standard: BS EN 13508-2:2003	Total length: 20 m

Purpose: Other	Shape/Size: Egg shaped 1500/1020
Type: Gravity drain/sewer	Material: Brick Pipe length:
Use: Combined	Lining: Lining Type:

Comment:

1:100	position	code	observation	MPEG	photo	grade
	0.00	MH	Start node type, manhole, reference number: SP34777701	00:00:00		(Misc) 0
	0.00	WL	Water level 0 % height/diameter	00:00:00		(Serv) 0
	0.00	REM	General remark, Remark: CONCRETE SOFFIT	00:00:00		
	7.70	LL	Line of drain/sewer deviates left	00:00:56		
	12.20	SA	Survey abandoned, Remark: POINT OF REQUIRED SURVEY	00:01:32		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features



Inspection report

Date: 18/04/2019	Job N°: OSCC1901607	Weather: No rain or snow	Operator: ONSITE BG	section number: 4	PLR: SP34778301X
Video Volume No.: 00001	Flow Ctrl: No flow control	Temperature: above freezing	Year laid: Z	Cleaned: No	Strat. Drain: not known

Road: OFF BAR ROAD	Div/Dist:	start MH: SP34778301
Place: COVENTRY	Drain. Area:	end MH: SP34778301
Location: Difficult access	Standard: BS EN 13508-2:2003	Total length: 229.9 m

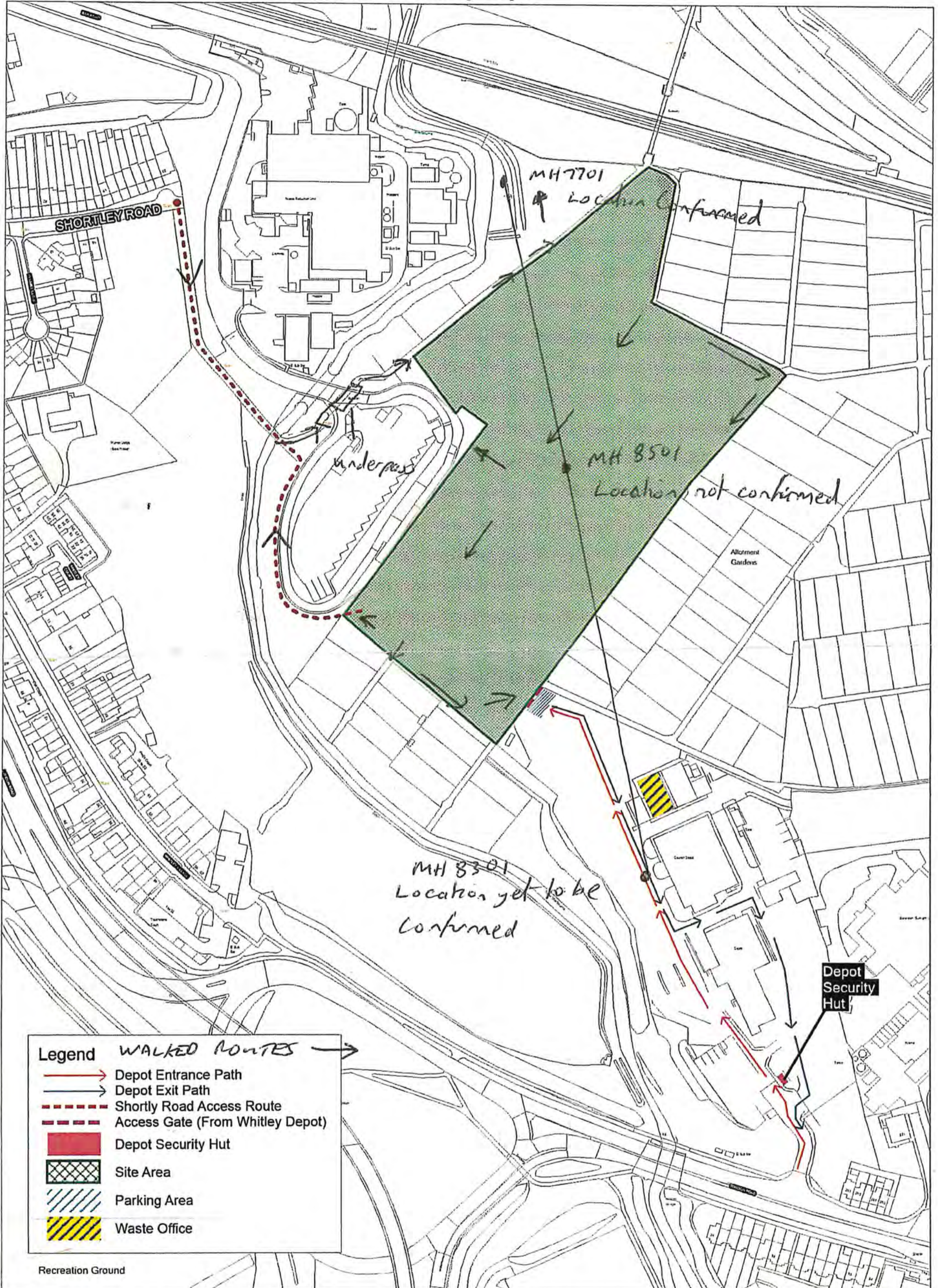
Purpose: Other	Shape/Size: Egg shaped 1500/1020
Type: Gravity drain/sewer	Material: Brick Pipe length:
Use: Combined	Lining: Lining Type:

Comment:

1:50	position	code	observation	MPEG	photo	grade
	0.00	MH	Start node type, manhole, reference number: SP34778301	00:00:00		(Misc) 0
	0.00	WL	Water level 10 % height/diameter	00:00:00		(Serv) 0
	1.10	MM	Missing mortar at 03 o'clock	00:00:22		(Struct) 2
	2.00	REM	General remark, Remark: DEBRIS UNDERWATER	00:01:00		
	6.50	DER	Settled deposits coarse 20 % cross-sectional area loss, Remark: BUILT UP UNDER CRAWLER	00:04:05		
	6.50	SA	Survey abandoned, Remark: DUE TO LOSS OF TRACTION	00:04:06		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features

Access Paths to Site Via Shortly Road & Whitley Depot



182.3 126.5m

Manhole 7701 - Upstream



Channel upstream of MH7701 is dry with no incoming flows

Manhole 7701 - 8501



Shallow depth of water downstream of manhole 7701

Manhole 7701 - 8501



Water increases in depth with distance downstream of 7701. Standing water assumed to be caused partially by incoming warm air from a laundrette downstream of the site within the industrial estate

Manhole 8501 to 8301



Silt and standing water downstream of manhole 8501

APPENDIX 4
Lead Local Flood Authority Correspondence

Griffiths, Bryn

From: Speed, Harvey <Harvey.Speed@coventry.gov.uk>
Sent: 16 January 2019 17:15
To: Griffiths, Bryn
Cc: Flooding
Subject: RE: Flood Risk Assessment Pre-Application Advice
Attachments: FRM & Drainage Standing Advice.pdf

Categories: Saved

Good afternoon Ben,

Thank you for your email. We would be happy to support you with this important development for the city.

As the site has historically been for the use of allotments, we have not been made aware of any flooding issues here.

I have attached our standing advice for developers which should give you a solid foundation for developing a robust FRA for the site.

Please let me know if I can be of any further assistance.

Kind regards,

Harvey

Harvey Speed

Drainage & Flood Risk Engineer
Coventry City Council
Whitley Depot, 259 London Road
Coventry, CV3 4AR
E: harvey.speed@coventry.gov.uk
T: 02476 834314
M: 07552 277026

From: Griffiths, Bryn <bgriffiths@wardell-armstrong.com>
Sent: 08 January 2019 15:51
To: Flooding <Flooding@coventry.gov.uk>
Subject: Flood Risk Assessment Pre-Application Advice

Mimecast Attachment Protection has deemed this file to be safe, but always exercise caution when opening files.

Good afternoon,

I am producing a Flood Risk Assessment and Surface Water Drainage Strategy in support of outline planning for a proposed Materials Recovery Facility on land off Shortley Road, Coventry, CV3 4AE. As part of the assessment I was looking to get planning advice off yourselves as the Lead Local Flood Authority. Having looked at the Coventry City Council Lead Local Flood Authority Pre-Application Charging Scheme document, it would seem the information we would need to provide to receive pre-application advice is a bit too extensive for what we would have at this stage of the project as it is your advice (along with that of the EA and Severn Trent Water) which we would use to produce the Flood Risk Assessment, discharge calculations and drainage design. There is currently no

Is there a way of obtaining advice such as historic flood incidents or drainage problems with respect to ordinary watercourses, surface water and groundwater and also advice on local guidance and policies relating to surface water management/SuDS in this area, which could then be used to assist our assessment?

Many thanks,
Bryn

Bryn Griffiths | Senior Environmental Scientist
Wardell Armstrong LLP
Sir Henry Doulton House, Forge Lane, Etruria, Staffordshire, UK
t: 01782 276700 m: 07469 856653



All e-mails are monitored by Coventry City Council's ICT Security, using Mimecast in accordance with the Regulations of Investigatory Powers Act 2000.



This e-mail and any files transmitted with it are confidential and are intended solely for the use of the addressee. If you have received this e-mail in error, you are requested to contact the sender. All e-mails are monitored by Coventry City Council's ICT Security, using Mimecast. The views contained in this e-mail are those of the author and not necessarily those of Coventry City Council.

Coventry City Council

Flood Risk Management & Drainage – Planning Standing Advice

Policy

Coventry City Council as Lead Local Flood Authority (LLFA) has the responsibility of managing local surface water and groundwater flood risk within its area. The LLFA is also a statutory consultee on planning applications within certain specific criteria, ensuring the delivery of sustainable development. The Council has produced a number of documents relating to flood risk and surface water management and contributed to the emerging Coventry Local Plan with the Strategic Flood Risk Assessment as a Supplementary Planning Document. The documents listed below can be found online at <http://www.coventry.gov.uk/watermanagementandflooding>.

- Preliminary Flood Risk Assessment (PFRA)
- Surface Water Management Plan (SWMP)
- Local Flood Risk Management Strategy (LFRMS)
- Strategic Flood Risk Assessment (SFRA)

Flood risk mapping

The Environment Agency's fluvial, pluvial and reservoir flood risk mapping for individual properties in England can be found at <https://www.gov.uk/check-flood-risk>.

Surface water discharge

In accordance with Building Regulations 2010, Part H, rainwater shall discharge to one of the following, in order of priority; (i) an adequate infiltration system; (ii) a watercourse or; (iii) a sewer. Where a development cannot infiltrate, runoff should be restricted to the Qbar greenfield discharge rate minus 20%, or 5l/s, whichever is greater.

Climate Change

The Environment Agency revised its climate change allowances in February 2016 and these can be located at <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>. Based on this data, the LLFA requires all development to apply a 40% climate change allowance to surface water drainage design, unless justification for a lower allowance can be made, strictly in accordance with the national criteria.

Adoption and maintenance

The adoption and maintenance of all drainage features are a key consideration to ensure the long term operation at the designed standards. Underground drainage infrastructure such as pipes and tanks will be considered for adoption by a Sewerage Undertaker. The Council will consider the adoption of open air sustainable drainage within areas of public open space, such as semi-dry detention basins, forming joint-use amenity space.

Open attenuation features must be accessible by appropriate maintenance vehicles and require a maintenance strip with a minimum width of 3 metres. The maintenance strip adjoining a watercourse should be a minimum width of 5 metres. However, these figures are only a minimum guide and wider strips may be required to suit the specific development.

Exceedance flows

Developers should demonstrate flood flow routes through a site in the event of design exceedance or blockage scenario, and where the site topography naturally channels through the site prior to development. Flood flows should be managed to be safe and not enter any buildings

or disrupt emergency access routes. Exceedance flows should not be routed through private residential plots. If flooding occurs, the hazard should be considered in line with the latest guidance from the Environment Agency.

Prevention of flows onto the Public Highway

Developers should ensure that surface water is managed to prevent flows onto the Public Highway. Private parking and hardstanding with a gradient falling towards the Public Highway should ensure that adequate private drainage is provided to intercept surface water flows.

Water quality

The Water Framework Directive (WFD) established a legal framework for the protection, improvement and sustainable use of water bodies such as rivers, brooks and groundwater. Developers are required to contribute to the aims of the WFD, which broadly involve:

- prevent deterioration in water body status;
- reduce water pollution;
- conserve aquatic ecosystem and habitats;
- reduce the effects of floods and droughts on water bodies;
- promote sustainable use of water as a natural resource; and
- removal of physical man-made modifications to watercourses, i.e. culverts.

Useful guidance and design standards

A range of drainage design guidance documents and British Standards are available. Some examples are listed below, but is not exhaustive:

The Building Regulations, Part H	Free download from Planning Portal
National Planning Policy Framework	Free to access at GOV.UK
Planning Practice Guidance	Free to access at GOV.UK
The SuDS Manual (C753)	Free download from CIRIA
Planning for SuDS – making it happen (C687)	Free download from CIRIA
Designing for exceedance in urban drainage – good practice (C635)	Free download from CIRIA
Assessing and managing flood risk in development – Code of Practice (BS 8533:2011)	Purchase from BSI
Drain and sewer systems outside buildings (BS EN 752:2008)	Purchase from BSI
Design Manual for Roads and Bridges: Volume 4 Geotechnics and Drainage	Free downloads available from Standards for Highways
Sewers for Adoption: A design and construction guide for developers (7 th Edition)	Purchase from WRC
BRE Digest 365 – Soakaway Design	Purchase from BRE

Detailed pre-application advice and meetings

More detailed and site-specific flood risk management and drainage advice can be sought by submitting a request for pre-application advice to the LLFA. Further details on the LLFA pre-application charging scheme can be found online. A summary of the costs for this service are as follows:

Category A – Small Scale Development	£60
Category B – Small Scale Development	£120
Category C – Medium Scale Development	£600
Category D – Large Scale Development	£1200
Category E – Major Scale Development	£1800
Category F – Project/Major Work	£2400 (minimum)

APPENDIX 5
Environment Agency Correspondence

Griffiths, Bryn

From: Enquiries_Westmids <Enquiries_Westmids@environment-agency.gov.uk>
Sent: 31 January 2019 14:12
To: Griffiths, Bryn
Subject: Our Ref 112369 Flood Level Data and Planning Advice - Bar Road, Coventry

Categories: Saved



Our Ref: 112369

Your Ref:

Date: 31 January 2019

Dear Bryn

Enquiry regarding: flood level data and planning advice – Bar Road, Coventry

Thank you for your enquiry which was received on 10 January.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

There is no historic flooding in this area. We have no planning advice to offer regarding flood risk as the site is located within Flood Zone 1.

We would advise you to contact the LLFA (local lead flood authority) for guidance on your drainage strategy.

Their details are

Email: flooding@coventry.gov.uk

Tel: 08085 834333

Whitley Depot
259 London Road
Coventry
CV3 4AR

Please refer to [Open Government Licence](#) which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely

Diane Edwards
Customers & Engagement Officer
West Midlands Area

For further information please contact the Customers & Engagement team on
Tel. 02084 747856
E-mail:- Enquiries_WestMids@environment-agency.gov.uk

From: Griffiths, Bryn [<mailto:bgriffiths@wardell-armstrong.com>]
Sent: 08 January 2019 15:06
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: Flood Level Data and Planning Advice - Bar Road, Coventry

Good afternoon,

I am preparing a Flood Risk Assessment and Drainage Strategy for a proposed c.3.6 hectare Materials Recovery Facility off Bar Road, Coventry (grid reference 434812, 277541). As shown on the attached Flood Map for Planning, the site is adjacent to areas of Flood Zone 3 associated with the River Sherbourne. In order to assist me, I would like to request any flood level data you hold for this watercourse.

To assist me further with the drainage strategy, I would welcome any pre-planning comments that you wish to make with respect to flood risk and drainage at the site. In particular, if you have any local knowledge of historic flood incidents or drainage problems with respect to ordinary watercourses, surface water and groundwater, I would be grateful if you could comment. I would also be grateful for any advice on local guidance and policies relating to surface water management/SuDS in this area.

Please let me know if I can provide further information to assist you.

Many thanks,
Bryn

Bryn Griffiths | Senior Environmental Scientist
Wardell Armstrong LLP
Sir Henry Doulton House, Forge Lane, Etruria, Staffordshire, UK
t: 01782 276700 m: 07469 856653



APPENDIX 6
Greenfield Runoff Calculations



estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:

Site name:

Site location:

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:

Longitude:

Reference:

Date:

Runoff estimation approach

Site characteristics

Total site area (ha):

Methodology

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	655	655
Hydrological region:	4	4
Growth curve factor 1 year:	0.83	0.83
Growth curve factor 30 years:	2	2
Growth curve factor 100 years:	2.57	2.57
Growth curve factor 200 years:	3.04	3.04

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	14.78	14.78
1 in 1 year (l/s):	12.27	12.27
1 in 30 years (l/s):	29.57	29.57
1 in 100 year (l/s):	38	38
1 in 200 years (l/s):	44.95	44.95

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

APPENDIX 7
Surface Water Attenuation Calculations

Calculation Sheet



REF:

CLIENT: Coventry City Council	PROJECT: Coventry MRF	JOB NO.: CA11485	CALC. REF. NO.:
			PAGE: 1 OF 2
CALCULATION: Attenuation Calculation - Development Plateau	CALC. BY: (NAME AND SIGNATURE) B Griffiths DATE: 21/07/2020	CHECKED BY: (NAME AND SIGNATURE) DATE:	APPROVED BY: (NAME AND SIGNATURE) DATE:

Quick Storage Estimate

FSR Region	England & Wales
M5-60 (mm)	20.000
Ratio-R	0.400
Summer CV	<input checked="" type="checkbox"/> 0.750
Winter CV	<input checked="" type="checkbox"/> 0.840

Estimate is based on no infiltration to ground to provide a 'worst case' estimate

Infiltration rate to be confirmed by BRE-365 soakaway testing

1 in 30 Year Storm Event

<u>Storage Estimate</u>	
Return Period (years)	30
Climate Change (%)	0
Impermeable Area (ha)	2.450
Peak Discharge (l/s)	8.800
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	
Required Storage (m ³)	Calc
from	812
to	1122

Approximate storage required: 967m³

1 in 100 Year + Climate Change Storm Event

<u>Storage Estimate</u>	
Return Period (years)	100
Climate Change (%)	40
Impermeable Area (ha)	2.450
Peak Discharge (l/s)	8.800
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	
Required Storage (m ³)	Calc
from	1712
to	2163

Approximate storage required: 1937m³

Calculation Sheet



REF:

CLIENT: Coventry City Council	PROJECT: Coventry MRF	JOB NO.: CA11485	CALC. REF. NO.:
			PAGE: 2 OF 2
CALCULATION: Attenuation Calculation - Final Outfall	CALC. BY: (NAME AND SIGNATURE) B Griffiths DATE: 21/07/2020	CHECKED BY: (NAME AND SIGNATURE) DATE:	APPROVED BY: (NAME AND SIGNATURE) DATE:

Quick Storage Estimate

FSR Region	England & Wales
M5-60 (mm)	20.000
Ratio-R	0.400
Summer CV	<input checked="" type="checkbox"/> 0.750
Winter CV	<input checked="" type="checkbox"/> 0.840

Estimate is based on no infiltration to ground to provide a 'worst case' estimate

Infiltration rate to be confirmed by BRE-365 soakaway testing

1 in 30 Year Storm Event

Storage Estimate	
Return Period (years)	30
Climate Change (%)	0
Impermeable Area (ha)	2.770
Peak Discharge (l/s)	10.000
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	
Required Storage (m ³)	Calc
from	917
to	1267

Approximate storage required: 1,092m³

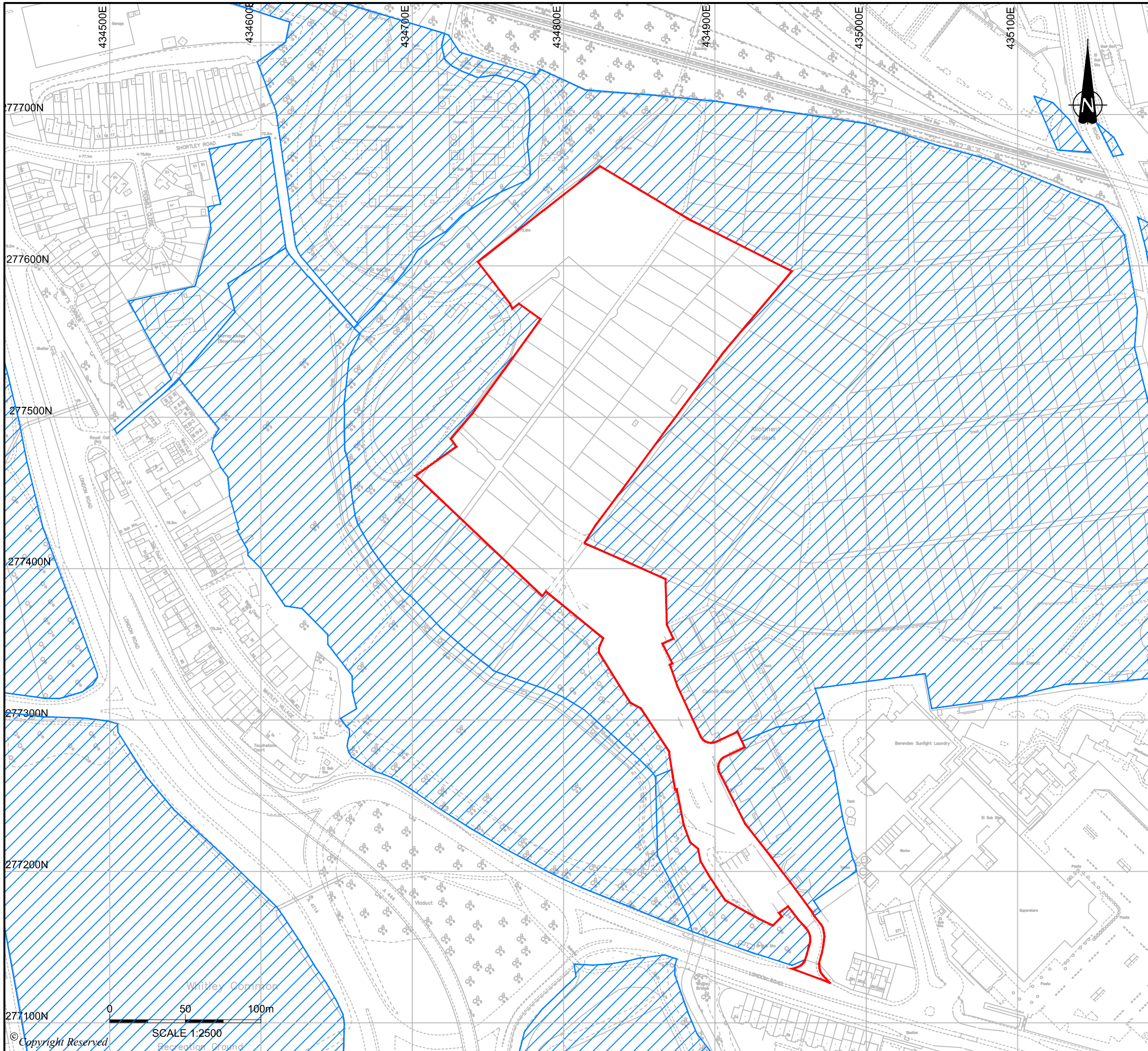
1 in 100 Year + Climate Change Storm Event

Storage Estimate	
Return Period (years)	100
Climate Change (%)	40
Impermeable Area (ha)	2.770
Peak Discharge (l/s)	10.000
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	
Required Storage (m ³)	Calc
from	1933
to	2444

Approximate storage required: 2,189m³



Additional 252m³ of storage required in weighbridge area

DRAWINGS



DO NOT SCALE FROM THIS DRAWING

KEY

	SITE BOUNDARY
	OTHER LAND IN THE OWNERSHIP/CONTROL OF THE APPLICANT

NOTE:
BACKGROUND OS DATA PROVIDED BY
COVENTRY COUNTY COUNCIL.

REVISION	DETAILS	DATE	DRN	CHKD	APPD
----------	---------	------	-----	------	------

CLIENT
Coventry City Council

PROJECT
Coventry MRF

DRAWING TITLE
Site Location Plan

DRG No.	CA11485-021	REV	
DRG SIZE	A3	SCALE	1:2500
		DATE	02.01.2020
DRAWN BY	SJB	CHECKED BY	CB
		APPROVED BY	CB

 STOKES ON TRENT | TEL 01782 276700
WWW.WARDELL-ARMSTRONG.COM

<input type="checkbox"/> BIRMINGHAM	<input type="checkbox"/> GLASGOW
<input type="checkbox"/> BOLTON	<input type="checkbox"/> LONDON
<input type="checkbox"/> CARDIFF	<input type="checkbox"/> MANCHESTER
<input type="checkbox"/> CARLISLE	<input type="checkbox"/> NEWCASTLE UPON TYNE
<input type="checkbox"/> EDINBURGH	<input type="checkbox"/> SHEFFIELD

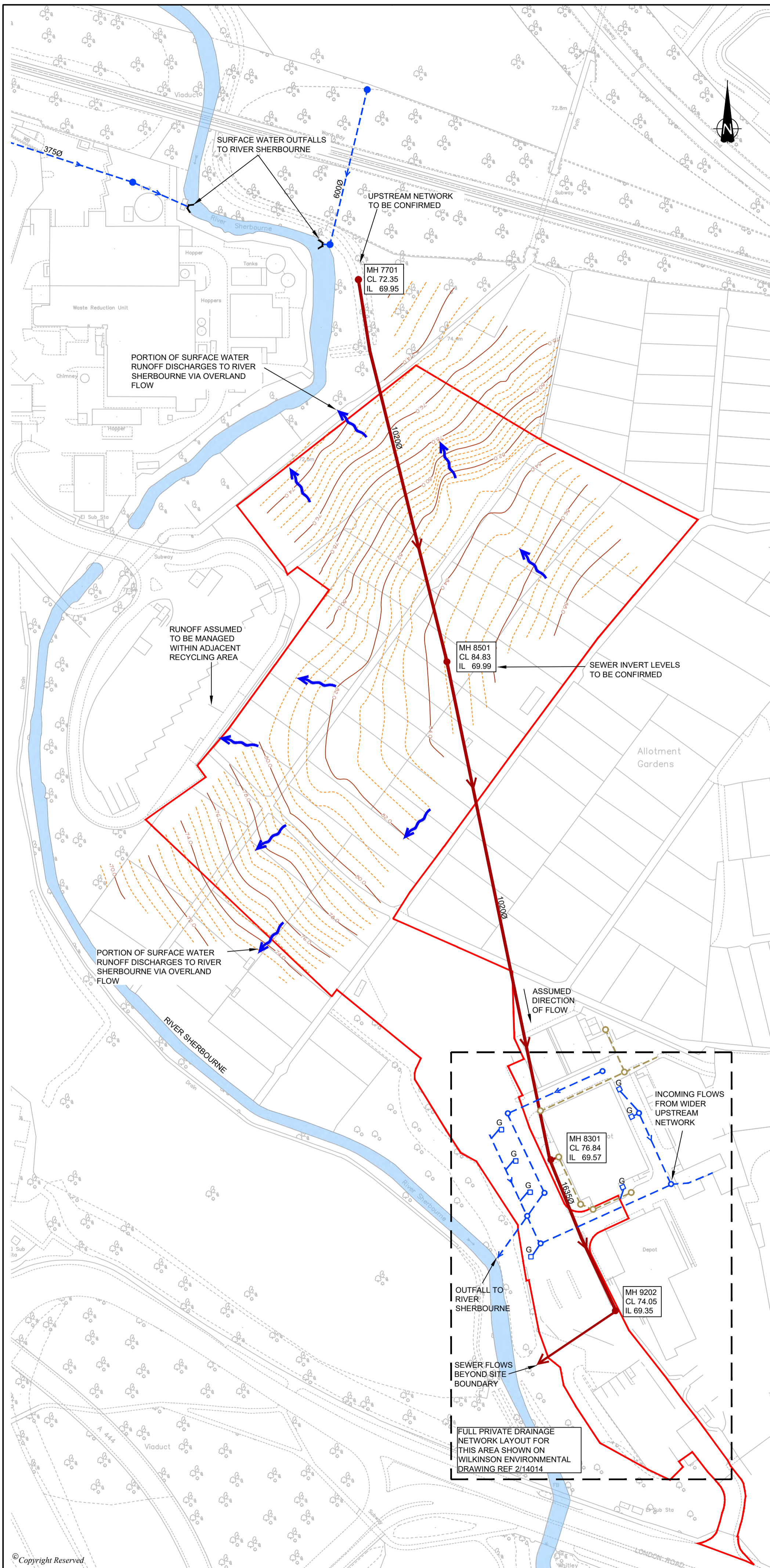
DO NOT SCALE FROM THIS DRAWING

NOTES:

1. TO BE READ IN CONJUNCTION WITH FLOOD RISK ASSESSMENT (REF: CA11485-0005).
2. PUBLIC SEWER LAYOUT BASED ON SEVERN TRENT WATER PUBLIC SEWER RECORDS.
3. SITE TOPOGRAPHY BASED ON BEACON LAND SURVEYS TOPOGRAPHICAL SURVEY APRIL 2018 (REF 18-055-01).
4. OS DATA PROVIDED BY COVENTRY CITY COUNCIL.
5. PRIVATE DRAINAGE LAYOUT BASED ON SURVEYS UNDERTAKEN BY WILKINSON ENVIRONMENTAL. FULL LAYOUT CONTAINED WITHIN FLOOD RISK ASSESSMENT.

KEY

- SITE BOUNDARY
- CONTOUR @ 2m INTERVAL
- 3750 PUBLIC SURFACE WATER SEWER
- PUBLIC SURFACE WATER SEWER MANHOLE
- PUBLIC SURFACE WATER SEWER OUTFALL
- 15200 PUBLIC COMBINED SEWER
- PUBLIC COMBINED SEWER MANHOLE
- PRIVATE SURFACE WATER SEWER
- PRIVATE SURFACE WATER MANHOLE
- PRIVATE FOUL WATER SEWER
- PRIVATE FOUL WATER MANHOLE
- INDICATIVE OVERLAND FLOW ROUTE



A	First Issue	13-01-20	DR	BG	TJP
---	-------------	----------	----	----	-----

REVISION	DETAILS	DATE	DRAWN	CHKD	APPRD
----------	---------	------	-------	------	-------

CLIENT	COVENTRY CITY COUNCIL				
--------	-----------------------	--	--	--	--

PROJECT	MATERIALS RECYCLING FACILITY				
---------	------------------------------	--	--	--	--

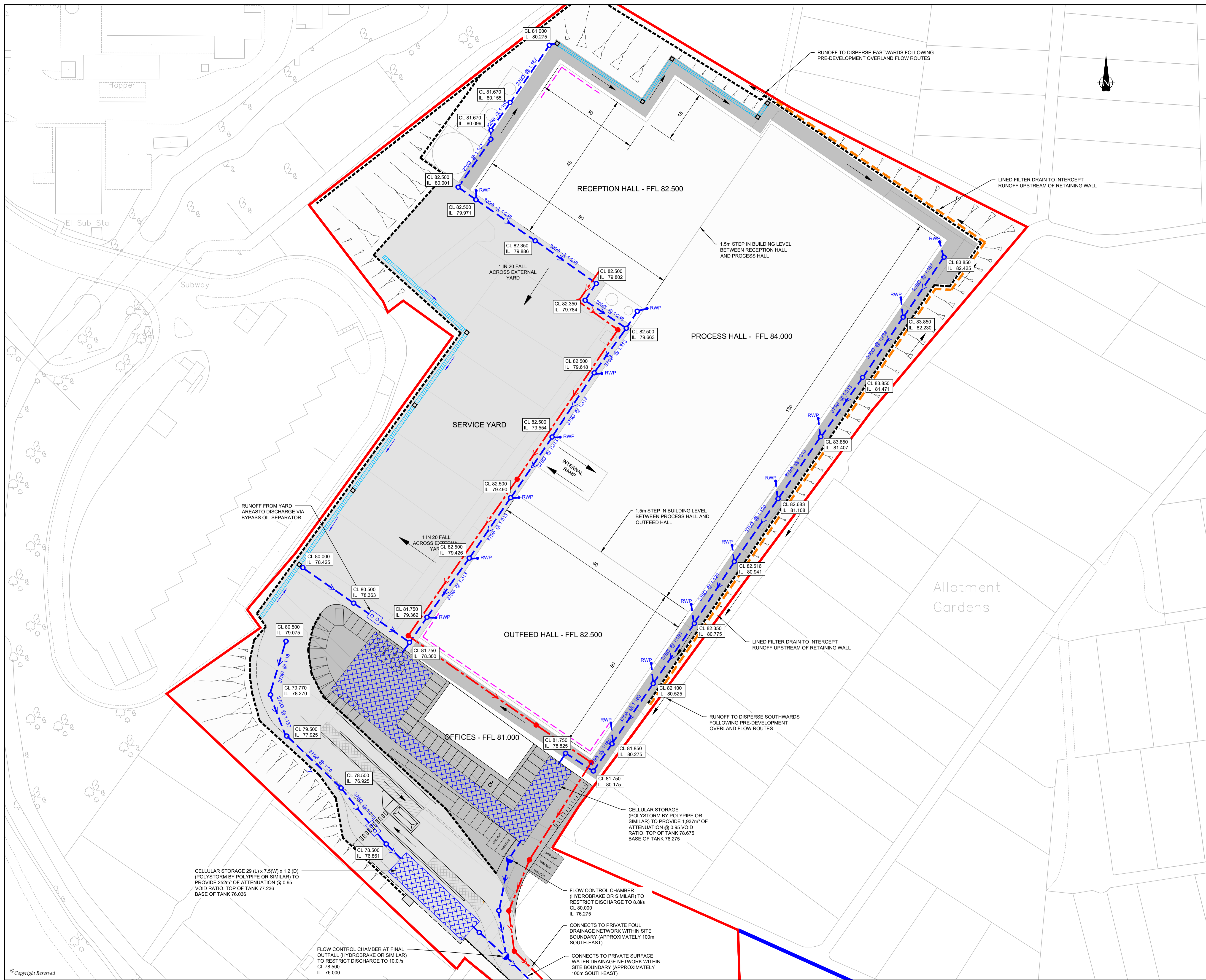
DRAWING TITLE	EXISTING DRAINAGE LAYOUT				
---------------	--------------------------	--	--	--	--

DRG No.	CA11485-034	REV	A		
---------	-------------	-----	---	--	--

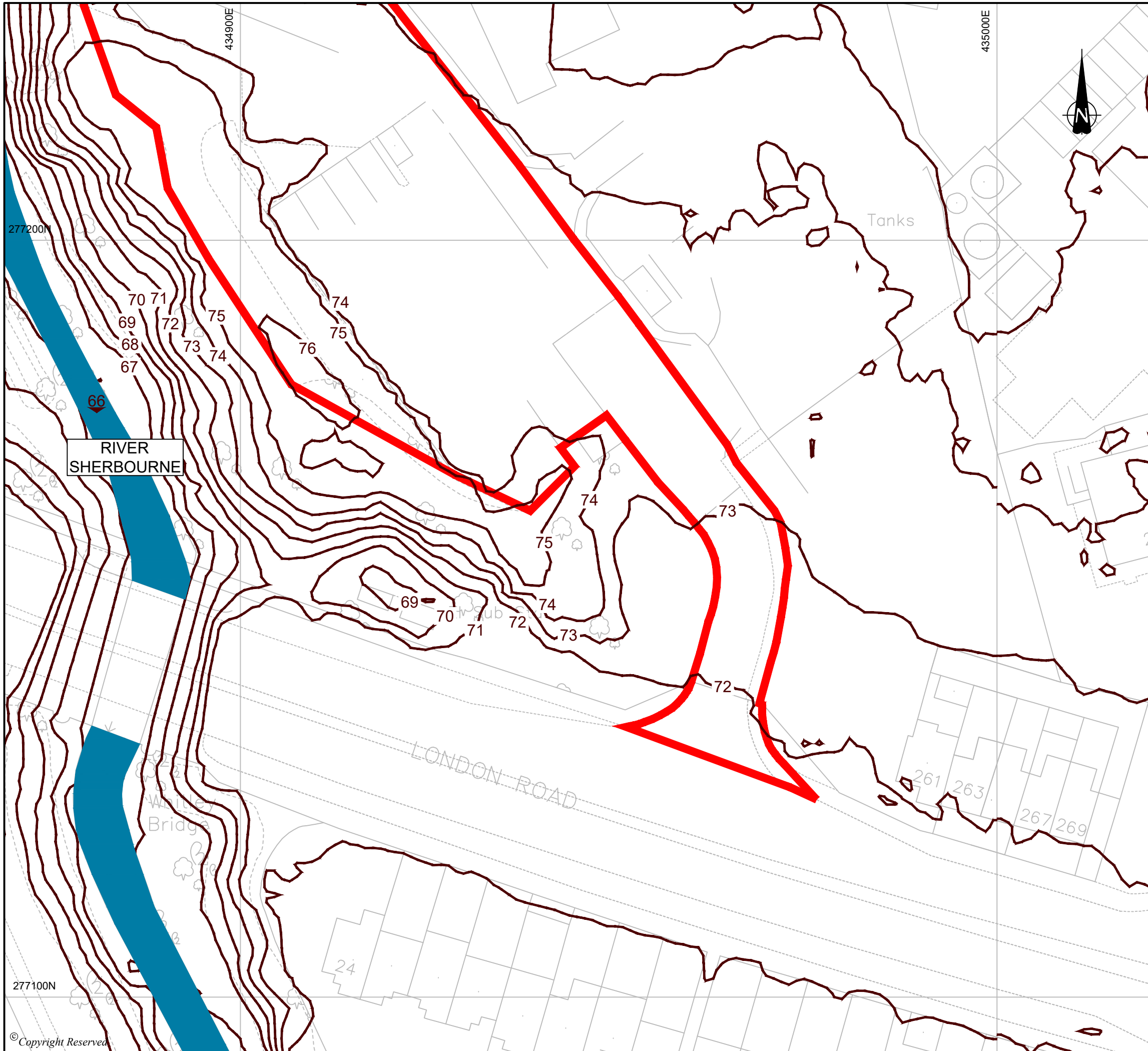
DRG SIZE	A2	SCALE	1:1250	DATE	16/01/19
----------	----	-------	--------	------	----------

DRAWN BY	SJB	CHECKED BY	BG	APPROVED BY	TJP
----------	-----	------------	----	-------------	-----

■ STAKE ON TRENT | TEL 01782 276700
 WWW.WARDELL-ARMSTRONG.COM
 BIRMINGHAM GLASGOW
 BOLTON LONDON
 CARDIFF MANCHESTER
 CARLISLE NEWCASTLE UPON TYNE
 EDINBURGH SHEFFIELD



A FOR PLANNING		DATE	LD	JS	JS
REVISION		DETAILS	DATE	ISSUED	BY
CLIENT					
COVENTRY CITY COUNCIL					
PROJECT					
COVENTRY MRF					
DRAWING TITLE					
INDICATIVE DRAINAGE STRATEGY					
DRG No.		REV		DATE	
CA11485-064		A		JUN 20	
DRG SIZE		SCALE		DATE	
A1		1:500		JUN 20	
DRAWN BY		CHECKED BY		APPROVED BY	
LD		JG		JG	
<p>STAKE ON TRENIT TEL 01782 276700 WWW.WARDELLARMSTRONG.COM</p> <p> <input type="checkbox"/> BIRMINGHAM <input type="checkbox"/> GLASGOW <input type="checkbox"/> BOLTON <input type="checkbox"/> LEEDS <input type="checkbox"/> CARDIFF <input type="checkbox"/> LONDON <input type="checkbox"/> CARLISLE <input type="checkbox"/> MANCHESTER <input type="checkbox"/> EDINBURGH <input type="checkbox"/> NEWCASTLE UPON TYNE </p>					



DO NOT SCALE FROM THIS DRAWING

NOTES

1. TO BE READ IN CONJUNCTION WITH FLOOR RISK ASSESSMENT (REF: CA11485-0005).
2. TOPOGRAPHICAL DATA FROM "DTM 1m" LIDAR MODEL.

KEY

- SITE BOUNDARY
- LIDAR TOPOGRAPHY



A	CONSTRUCTION ISSUE	29.05.20	DG		
REVISION	DETAILS	DATE	DRN	CHKD	APPD

CLIENT
COVENTRY CITY COUNCIL

PROJECT
COVENTRY MRF

DRAWING TITLE
LONDON ROAD ENTRANCE TOPOGRAPHY

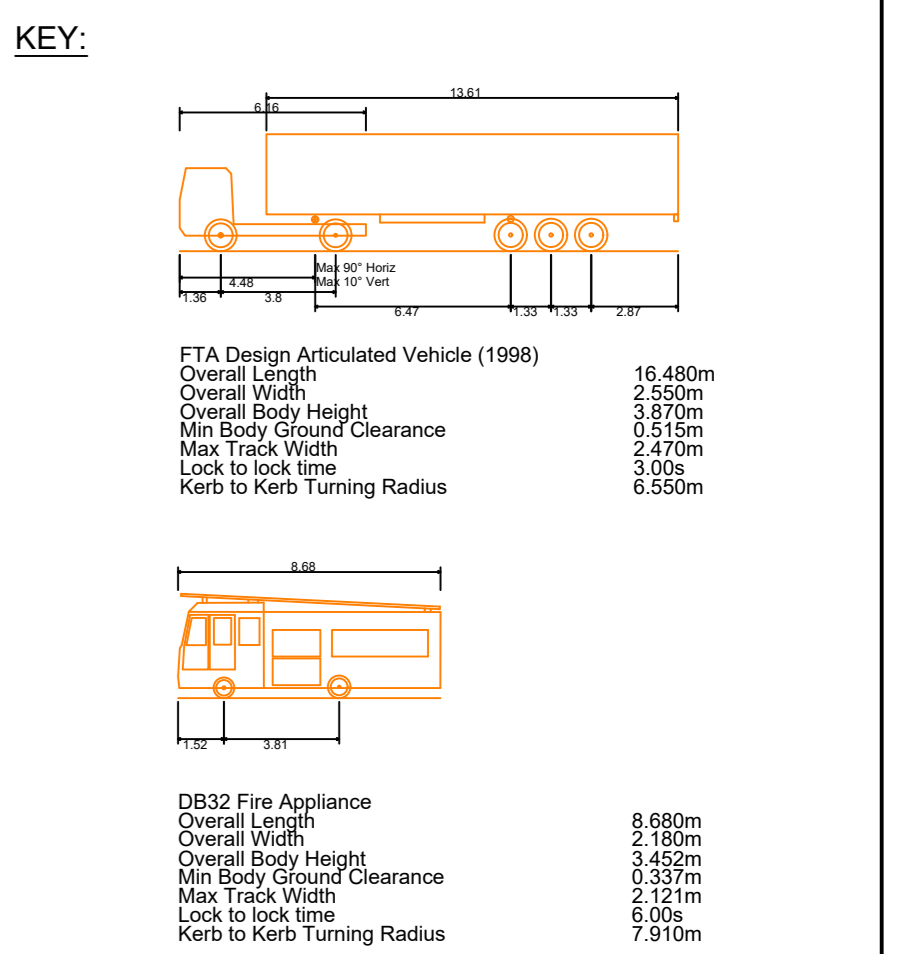
DRG No.	CA11485-038	REV	A
DRG SIZE	A3	SCALE	1:500
		DATE	MAY 2020
DRAWN BY	DG	CHECKED BY	BG
		APPROVED BY	AD

STOKES ON TRENT | TEL 01782 276700
WWW.WARDELL-ARMSTRONG.COM

- BIRMINGHAM
- BOLTON
- CARDIFF
- CARLISLE
- EDINBURGH
- GLASGOW
- LEEDS
- LONDON
- MANCHESTER
- NEWCASTLE UPON TYNE

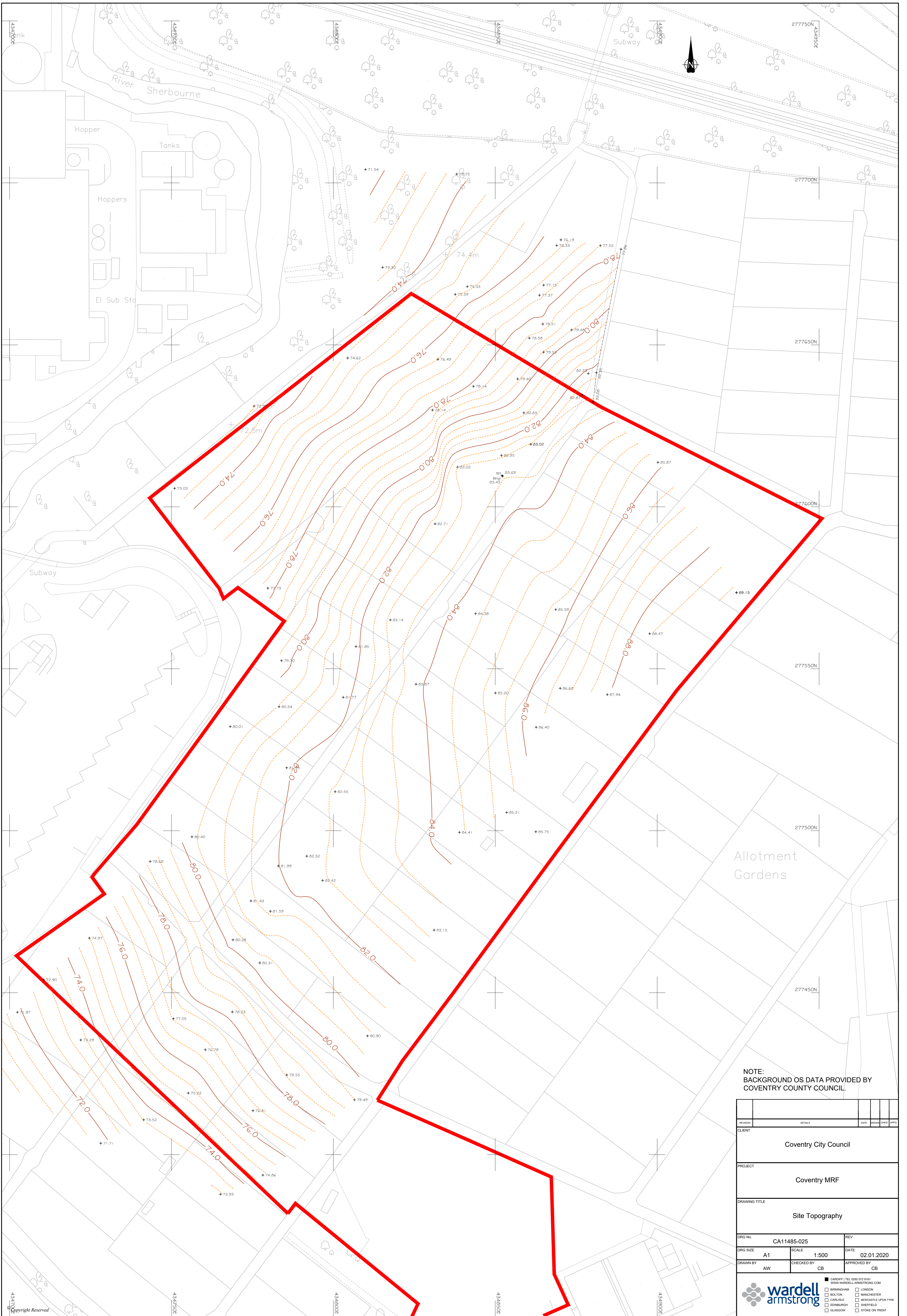


DO NOT SCALE FROM THIS DRAWING



A FOR PLANNING		DATE	ISS	REV	BY
CLIENT					
COVENTRY CITY COUNCIL					
PROJECT					
COVENTRY MRF					
DRAWING TITLE					
PROPOSED LAYOUT OPTION 8 GENERAL ARRANGEMENT					
DRG NO.	CA11485-057	REV	A		
DRG SIZE	A0	SCALE	1:500	DATE	JUN 20
DRAWN BY	LD	CHECKED BY	JG	APPROVED BY	JG
<input type="checkbox"/> STONE ON TYPED FULL SIZE DRAWING <input type="checkbox"/> WARDLELL UNDERSTOCKS.COM <input type="checkbox"/> DIMENSION <input type="checkbox"/> SHADING <input type="checkbox"/> HATCH <input type="checkbox"/> LAYER <input type="checkbox"/> CADTEXT <input type="checkbox"/> LAYOUT <input type="checkbox"/> CANNOT <input type="checkbox"/> MICROTEXT <input type="checkbox"/> DIMENSION <input type="checkbox"/> MICROTEXT					





NOTE:
BACKGROUND OS DATA PROVIDED BY
COVENTRY COUNTY COUNCIL.

REVISION	DETAILS	DATE	DRAWN	CHECKED	APPROVED
CLIENT					
Coventry City Council					
PROJECT					
Coventry MRF					
DRAWING TITLE					
Site Topography					
DRG No.			REV		
CA11485-025					
DRG SIZE		SCALE		DATE	
A1		1:500		02.01.2020	
DRAWN BY		CHECKED BY		APPROVED BY	
AW		CB		CB	
			CARDIFF TEL 0292 072 9191 WWW.WARDELLARMSTRONG.COM <input type="checkbox"/> BIRMINGHAM <input type="checkbox"/> LONDON <input type="checkbox"/> BOLTON <input type="checkbox"/> MANCHESTER <input type="checkbox"/> CARLISLE <input type="checkbox"/> NEWCASTLE UPON TYNE <input type="checkbox"/> EDINBURGH <input type="checkbox"/> SHEFFIELD <input type="checkbox"/> GLASGOW <input type="checkbox"/> STOKE ON TRENT		

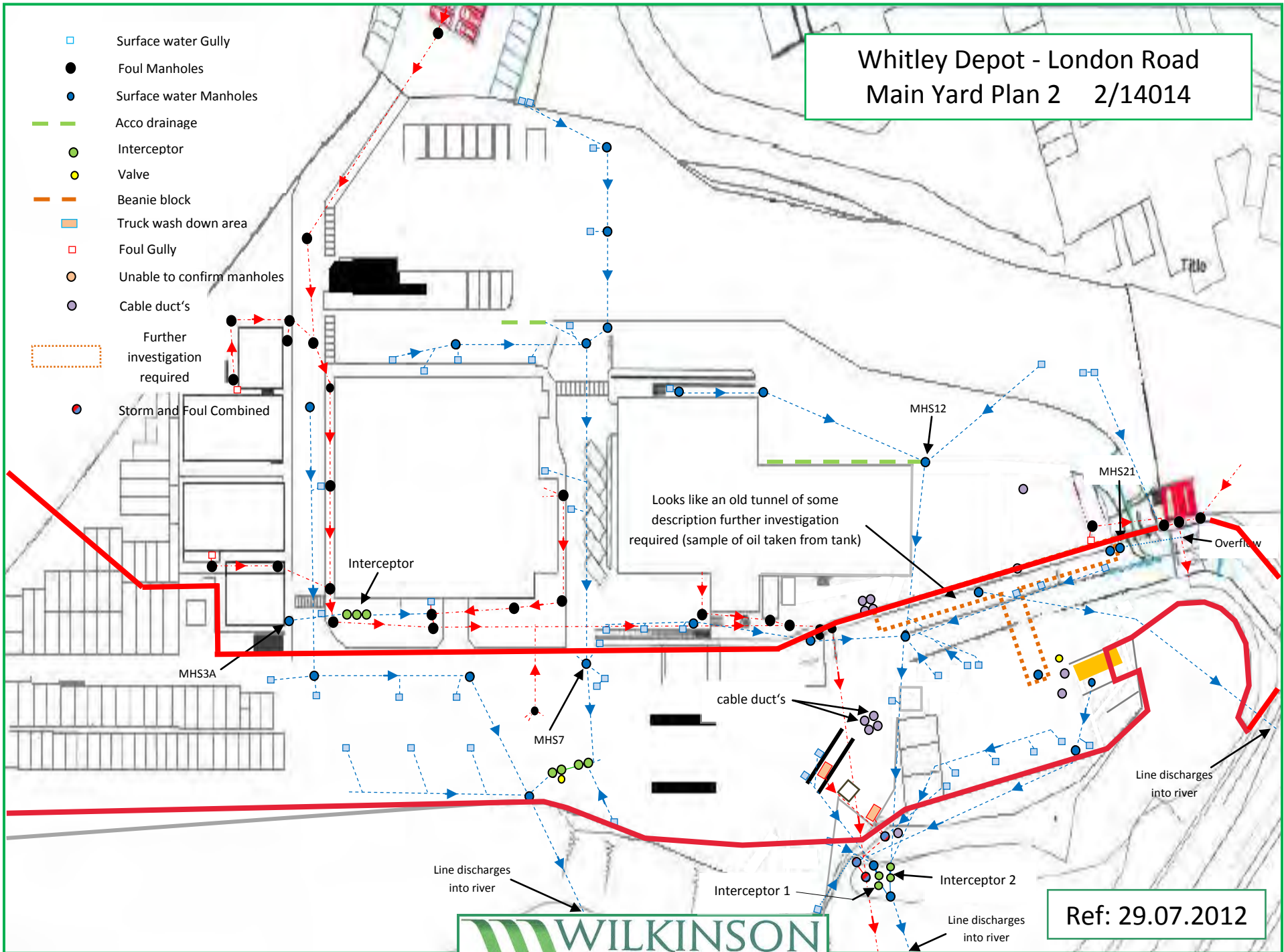
Whitley Depot, London Road, Coventry
Wilkinson's Job No. 2/15816

15.09.13



Whitley Depot - London Road Main Yard Plan 2 2/14014

- Surface water Gully
- Foul Manholes
- Surface water Manholes
- Acco drainage
- Interceptor
- Valve
- Beanie block
- Truck wash down area
- Foul Gully
- Unable to confirm manholes
- Cable duct's
- Storm and Foul Combined
- Further investigation required



Ref: 29.07.2012

STOKE-ON-TRENT

Sir Henry Doulton House
Forge Lane
Etruria
Stoke-on-Trent
ST1 5BD
Tel: +44 (0)1782 276 700

BIRMINGHAM

Two Devon Way
Longbridge Technology Park
Longbridge
Birmingham
B31 2TS
Tel: +44 (0)121 580 0909

BOLTON

41-50 Futura Park
Aspinall Way
Middlebrook
Bolton
BL6 6SU
Tel: +44 (0)1204 227 227

CARDIFF

Tudor House
16 Cathedral Road
Cardiff
CF11 9LJ
Tel: +44 (0)292 072 9191

CARLISLE

Marconi Road
Burgh Road Industrial Estate
Carlisle
Cumbria
CA2 7NA
Tel: +44 (0)1228 550 575

EDINBURGH

Great Michael House
14 Links Place
Edinburgh
EH6 7EZ
Tel: +44 (0)131 555 3311

GLASGOW

2 West Regent Street
Glasgow
G2 1RW
Tel: +44 (0)141 433 7210

LEEDS

36 Park Row
Leeds
LS1 5JL
Tel: +44 (0)113 831 5533

LONDON

Third Floor
46 Chancery Lane
London
WC2A 1JE
Tel: +44 (0)207 242 3243

MANCHESTER

76 King Street
Manchester
M2 4NH
Tel: +44 (0)161 817 5038

NEWCASTLE UPON TYNE

City Quadrant
11 Waterloo Square
Newcastle upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

TRURO

Baldhu House
Wheal Jane Earth Science Park
Baldhu
Truro
TR3 6EH
Tel: +44 (0)187 256 0738

International offices:

ALMATY

29/6 Satpaev Avenue
Regency Hotel
Office Tower
Almaty
Kazakhstan
050040
Tel: +7(727) 334 1310

MOSCOW

21/5 Kuznetskiy Most St.
Moscow
Russia
Tel: +7(495) 626 07 67