



# BWB

CONSULTANCY | ENVIRONMENT  
INFRASTRUCTURE | BUILDINGS

## ENVIRONMENT

Drummond Estate  
Enderby Relief Road  
Leicestershire

FLOOD RISK ASSESSMENT

## ENVIRONMENT

Drummond Estate  
Enderby Relief Road  
Leicestershire

## FLOOD RISK ASSESSMENT

Birmingham  
Livery Place, 35 Livery Street, Colmore Business  
District, Birmingham, B3 2PB  
T: 0121 233 3322

Leeds  
Whitehall Waterfront, 2 Riverside Way, Leeds LS1  
4EH  
T: 0113 233 8000

London  
11 Borough High Street  
London  
SE1 9SE  
T: 020 74073879

Manchester  
4th Floor Carvers Warehouse, 77 Dale Street  
Manchester, M1 2HG  
T: 0161 233 4260

**Nottingham**  
**Waterfront House, Station Street, Nottingham**  
**NG2 3DQ**  
**T: 0115 924 1100**

## DOCUMENT ISSUE RECORD

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S2	P1	21/06/2018	K. Alger BSc(Hons) MSc	L. Tewson BSc (Hons) PhD	D. Harvey BEng (Hons)
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S2	P4	15/12/2020	K. Alger BSc(Hons) MSc	C. Gardner BSc (Hons) MSc MCIWEM C.WEM	C. Dodd BEng (Hons) IEng MICE

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- (i) The date on which this assessment was undertaken, and
- (ii) The date on which the final report is delivered

BWB Consulting makes no representation whatsoever concerning the legal significance of its findings or the legal matters referred to in the following report.

All Environment Agency mapping data used under special license. Data is current as of December 2020 and is subject to change.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.

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## EXECUTIVE SUMMARY

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. It has been produced on behalf of the Drummond Estate in respect of a planning application for a proposed highway to serve a series of proposed commercial developments, approximate grid reference: 454000, 300290.

This report demonstrates that the proposed development is at an acceptable level of flood risk, subject to the recommended flood mitigation strategies being implemented.

The proposed Highway located to the north of Enderby village is shown to be located entirely in Flood Zone 1 (Low Probability). Located to the north of the Study Area is an unnamed watercourse that is shown to discharge into the Lubbethorpe Brook. Due to the distance and intervening topography the overall risk posed by the fluvial source is considered to be low.

A review of Strategic Flood Risk Assessment (SFRA) mapping has identified the Study Area and surrounding areas as having between a 50% and 75% chance of being susceptible to groundwater flooding, based upon a 1km spatial resolution. However, British Geological Survey data identifies the Study Area to have an underlying geology comprised of Edwalton Member-Mudstone. Due to the impermeable nature of the underlying geology the overall risk posed is considered to be low.

A small area in the western portion of the Study Area is shown to have a 'low susceptibility' to surface water flooding, depths are not expected to exceed 300mm. The remaining area of the Study Area is shown to have a 'very low' susceptibility. There are no records within the SFRA of the Study Area or surrounding area having been affected by a pluvial incident.

In compliance with the requirements of NPPF, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the study area.

# CONTENTS PAGE

<b>DOCUMENT ISSUE RECORD</b>	<b>i</b>
<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>CONTENTS PAGE</b>	<b>2</b>
<b>1.0 INTRODUCTION</b>	<b>3</b>
Sources of Data	3
Existing Study Area	3
Proposed Development	4
Flood Risk Planning Policy	5
Other Relevant Policy and Guidance	6
<b>2.0 POTENTIAL SOURCES OF FLOOD RISK</b>	<b>9</b>
Fluvial Flood Risk	9
Groundwater Flood Risk	10
Flood Risk from Reservoirs & Large Waterbodies	10
Flood Risk from Sewers	11
Pluvial Flood Risk	11
Effect of Development on Wider Catchment	13
<b>3.0 FLOOD RISK MITIGATION</b>	<b>14</b>
Site Arrangements	14
Surface Water Drainage	14
<b>4.0 CONCLUSIONS AND RECOMMENDATIONS</b>	<b>15</b>

## TABLES

Table 1.1 - Site Summary
Table 2.1 - Pre-Mitigation Sources of Flood Risk
Table 4.1 - Summary of Flood Risk Assessment

## FIGURES

Figure 1.1 - Site Location
Figure 1.2 - Environment Agency Flood Map for Planning (Rivers and Sea)

## APPENDICES

Appendix 1 - Topographical Survey
Appendix 2 - Development Proposals

## 1.0 INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Drummond Estate in respect of a planning application for a proposed highway to serve existing and proposed developments.

**Table 1.1 - Site Summary**

Site Name	Enderby Relief Road
Location	Enderby, Leicestershire
NGR (approx.)	454000, 300290
Study Area Area (ha)	4.0 (approximately)
Development Type	Infrastructure
NPPF Vulnerability	Less Vulnerable
Environment Agency Flood Zone	Flood Zone 1
Environment Agency Region	Derbyshire, Nottinghamshire and Leicestershire - Trentside
Local Planning Authority	Blaby District Council

### Sources of Data

- 1.2 The report is based on the following information:
- (i) Site Layout Plan, Ref: ERR-BWB-HGN-8B-DR-D-500
  - (ii) Topographical Survey by BWB, reference, END-BWB-XX-00-DR-G-001
  - (iii) OS Explorer Series mapping
  - (iv) Hinckley & Bosworth Borough Council, Blaby District Council, Oadby and Wigston Borough Council Strategic Flood Risk Assessment
  - (v) Leicestershire and Leicester City Strategic Flood Risk Assessment
  - (vi) British Geological Survey Drift & Geology Maps

### Existing Study Area

- 1.3 The existing Study Area, located approximately 1km to the north of Enderby village, is considered to be greenfield with general levels sloping downwards to the east, from approximately 87.6m AOD to 73.3m AOD. A topographical survey is included for reference as **Appendix 1**.
- 1.4 Located to the east of the Study Area is Warren Park Industrial units, with the M69 located approximately 230m to the north of the Study Area. Part of the Study Area is considered to have been part of land known as Enderby Warren. Previously mined, it is now considered to be greenfield.



**Figure 1.1 – Study Area Location**

## Proposed Development

- 1.5 It is proposed that a relief road is constructed from the Warren Park development to the west, with a roundabout providing a number of spur roads to future development areas. It is proposed that the relief road heads in a southerly direction, joining with the existing highway to Leicester Lane (development proposals are included as **Appendix 2**).



## Flood Risk Planning Policy

### *National Planning Policy Framework*

- 1.6 The NPPF<sup>1</sup> sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online<sup>2</sup>.
- 1.7 The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 1.8 The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should be considered when preparing a Flood Risk Assessment.
- 1.9 The Planning Practice Guidance includes a series of tables that define Flood Zones (Table 1), the flood risk vulnerability classification of development land uses (Table 2) and 'compatibility' of development within the defined Flood Zones (Table 3).
- 1.10 This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

### *Flood Map for Planning*

- 1.11 The Flood Map for Planning has been prepared by the Environment Agency. This identifies areas potentially at risk of flooding from fluvial or tidal sources. An extract from the mapping is included as **Figure 1.2**.
- 1.12 With particular reference to planning and development, the Flood Map for Planning produced by the Environment Agency identifies Flood Zones in accordance with Table 1 of the Planning Practice Guidance.
- 1.13 Flood Zone 1 (Low Probability) is defined as land having less than a 1 in 1000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability).
- 1.14 Flood Zone 2 (Medium Probability) is defined as land having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1% AEP); or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1% AEP).
- 1.15 Flood Zone 3a (High Probability) is defined as land having a 1 in 100 or greater annual probability of river flooding (>1% AEP); or land having a 1 in 200 or greater annual probability of flooding from the sea (>0.5% AEP). This is represented by "Flood Zone 3" on the Flood Map for Planning.
- 1.16 Flood Zone 3b (The Functional Floodplain) is defined as land where water has to flow or be stored in times of flood. This is not identified or separately distinguished from Zone 3a on the Flood Map for Planning.

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<sup>1</sup> Revised National Planning Policy Framework, Ministry of Housing, Communities & Local Government, February 2019

<sup>2</sup> Planning Practice Guidance: <https://www.gov.uk/government/collections/planning-practice-guidance>



1.17 The site is shown to be entirely in Flood Zone 1, as shown in **Figure 1.2**.



**Figure 1.2 - Environment Agency Flood Map for Planning (Rivers and Sea)**

## The Design Flood

- 1.18 The Planning Practice Guidance identifies that new developments should be designed to provide adequate flood risk management, mitigation, and resilience against the 'design flood' for their lifetime.
- 1.19 This is a flood event of a given annual flood probability, which is generally taken as fluvial (river) flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), or tidal flooding with a 0.5% annual probability (1 in 200 chance each year), against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

## Climate Change

- 1.20 Predicted future change in peak river flows caused by climate change are provided by the Environment Agency within their online guidance<sup>3</sup>, with a range of projections applied to regionalised 'River Basin Districts'.
- 1.21 The catchment falls within the Humber River Basin District. Table 2.1 identifies the relevant peak river flow allowances from this river basin district.

**Table 1.2: Peak River Flow Allowance for the Humber River Basin District**

Allowance Category	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
H++	20%	35%	65%
Upper End	20%	30%	50%
Higher Central	15%	20%	30%
Central	15%	20%	30%

- 1.22 When determining the appropriate allowance for use in a Flood Risk Assessment the Flood Zone classification, flood risk vulnerability and the anticipated lifespan of the development should be considered. Table 1.3 provides a matrix summarising the Environment Agency's guidance on determining the appropriate allowances.

**Table 1.3: Application of the Appropriate Climate Change Allowance**

Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	Use the central allowance				Use none of the allowances
2 or 3a	Use the upper end allowance	Use the higher central and upper end to assess a range of allowances	Use the higher central and upper end to assess a range of allowances	Use the central and higher central to assess a range of allowances	Use the central allowance
3b	Use the upper end allowance	Development should not be permitted	Development should not be permitted	Development should not be permitted	Use the central allowance
*If development is considered appropriate when not in accordance with Flood Zone vulnerability categories, then it would be appropriate to use the upper end allowance.					

<sup>3</sup> Environment Agency, Flood risk assessments: climate change allowances: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#table-1>

- 1.23 The site is located entirely/partially within Flood Zone 1/2/3, the proposed development is classified as 'flood risk vulnerability', and it has an anticipated lifespan of over 60 years. Therefore, the Central/Higher Central/Upper End allowances for the '2080s' epoch will be considered.
- 1.24 Therefore, to ensure the development is designed adequately for its lifetime an allowance of 30 % will be applied to the design flood to identify minimum development levels.
- 1.25 The extreme climate change scenarios (H++) allowances are reserved for Nationally Significant Infrastructure Projects (NSIPs), new settlements and urban extensions, where an additional 'sensitivity test' is required. Therefore, this does not need to be considered for this development.

## Other Relevant Policy and Guidance

### *Strategic Flood Risk Assessment*

- 1.26 The Study Area is located within the study area covered by Hinckley & Bosworth Borough Council, Blaby District Council, Oadby and Wigston Borough Council. The Strategic Flood Risk Assessment (SFRA)<sup>4</sup> was produced in October 2014 in order to identify the potential sources of flood risk in the area. A series of maps have been produced to accompany the report.
- 1.27 Appendix B of the SFRA identifies a number of key areas from a flood risk perspective, the Study Area is within a larger area defined as 'END003'. The risk posed by fluvial and pluvial sources is shown to be of similar magnitude to EA sources with similar affected areas being shown.
- 1.28 The study area is also located in an area covered by the Leicestershire and Leicester City SFRA<sup>5</sup>. With it being produced following the changes to the climate change allowances the assessment of climate change is deemed to be the most relevant of the two SFRA that cover the area. One of the maps produced to accompany the SFRA identifies areas where previous flooding has been recorded. Enderby is shown not to have any previously recorded flood events.
- 1.29 It should be noted that some of the mapping included in the SFRA does not include the surrounding districts, and concentrates just on the Leicester City area.

### *Preliminary Flood Risk Assessment*

- 1.30 The Leicestershire County Council Preliminary Flood Risk Assessment (PFRA)<sup>6</sup> has been produced by LCC as part of their role as a Lead Local Flood Authority. The report identifies the potential sources of flood risk in the wider Leicestershire study area. There is no specific reference to the Study Area and immediate surrounding area within the report.

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<sup>4</sup> Hinckley & Bosworth Borough Council, Blaby District Council, Oadby and Wigston Borough Council Strategic Flood Risk Assessment, Produced by JBA, October 2014

<sup>5</sup> Leicestershire and Leicester City Strategic Flood Risk Assessment, produced by JBA Consulting, October 2017.

<sup>6</sup> Leicestershire County Council Preliminary Flood Risk Assessment, produced by URS Scott Wilson, June 2011.

## 2.0 POTENTIAL SOURCES OF FLOOD RISK

2.1 The table below identifies the potential sources of flood risk to the Study Area, and the impacts which the development could have in the wider catchment prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within **Section 3.0**.

**Table 2.1 - Pre-Mitigation Sources of Flood Risk**

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		The Study Area is located in Flood Zone 1.
Groundwater			X		The study area is shown to fall within an area predicted to be at a low susceptibility to groundwater flooding.
Reservoirs and waterbodies			X		The Study Area is shown to fall outside of the area at risk of reservoir failure.
Sewers			X		Small sewer network shown in far western portion of the study area. May have limited capacity in extreme rainfall events.
Pluvial runoff			X		A small area of the Study Area is identified as having a low susceptibility to surface water flooding.
Effect of Development on Wider Catchment			X		Development will not result in loss of fluvial floodplain or impedance of pluvial flow route.
		X			The development will increase the area of impermeable surfaces leading to a potential increase in run-off.

### Fluvial Flood Risk

- 2.2 Located approximately 20m from the far north eastern corner of the site is an unnamed watercourse which runs from west to east before discharging into the Lubbesthorpe Brook, approximately 1.3km to the north east of the Study Area.
- 2.3 The Lubbesthorpe Brook is shown to be located approximately 380m to the north of the Study Area, north of the M69. Areas of Flood Zone 2 (Medium Probability) and Flood Zone 3 (High Probability) are associated with the Lubbesthorpe Brook. The site is located entirely within Flood Zone 1.

- 2.4 It is understood that prior to the watercourse discharging into Lubbesthorpe Brook, it passes through a series of culverts to enable it to pass beneath the M69.
- 2.5 A review of the topographical survey identifies the invert level of the channel to be at 71.7m AOD with the top of bank being in the region of 73.30m AOD. The land is identified to rise upwards from the watercourse, with levels at the edge of the site at approximately 73.6m AOD.
- 2.6 A review of the catchment area using the FEH Web Service, identifies the catchment area at the point when it passes beneath the M1 to the east of the site to be 0.7km<sup>2</sup>. With the site's far north eastern boundary being approximately 440m from this downstream point, the catchment area at the watercourse adjacent to the site would be less than this.
- 2.7 A review of the pluvial mapping, **Figure 2.1**, identifies a low susceptibility flow route commensurate with the watercourse, flows shown to remain within the channel. The overall flows within the watercourse are therefore indicated to be low.
- 2.8 There are no historical records of the Study Area or immediate surrounding area having been affected by past flood events. The nearest recorded incident is approximately 750m to the north of the Study Area.
- 2.9 Due to the distance and the intervening topography between the watercourse and the site, along with the fact the flows being conveyed are expected to be low, the overall risk posed to the Study Area from the fluvial source is considered to be low. This is also the case when considering the potential increase of 30% on top of the 100 year event, to account for the design flood event.

## Groundwater Flood Risk

- 2.10 Details within the SFRA identify that the Study Area and immediate surrounding area are located within an area classified as having a 50%-75% chance of being susceptible to groundwater flooding. It should be noted that modelling undertaken is at a spatial resolution of 1km, therefore an area within the 1km, not part of the Study Area, could be determining the value for the cell.
- 2.11 Bedrock below the Study Area is identified as Secondary B Aquifer which is considered to be comprised of low permeability layers which have the potential to yield limited amounts of groundwater. British Geological mapping identifies the underlying geology to be comprised of Edwalton Member – Mudstone.
- 2.12 The potential for groundwater emergence is considered to be greatly reduced due to local areas having a geology comprised of an impermeable rock type such as mudstone.
- 2.13 There are no details within the SFRA of flooding from a groundwater source.
- 2.14 The overall risk posed from the groundwater source is considered to be low.

## Flood Risk from Reservoirs & Large Waterbodies

- 2.15 Reservoir failure flood risk mapping has been prepared by the Environment Agency; this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds.

- 2.16 Mapping identifies the Study Area and immediate surrounding area to be outside of the area considered to be affected by a reservoir breach. The nearest affected area is alongside the River Soar, located approximately 2.2km to the east of the Study Area.
- 2.17 Located approximately 300m to east of the eastern boundary of the Study Area is a minor waterbody covering an area of approximately 1300m<sup>2</sup>. No inflows or outflows are shown on the topographical survey. Due to the size of the waterbody and its distance from the Study Area, the risk posed to the Study Area from this source is considered to be low.
- 2.18 The overall risk from this source is considered to be low.

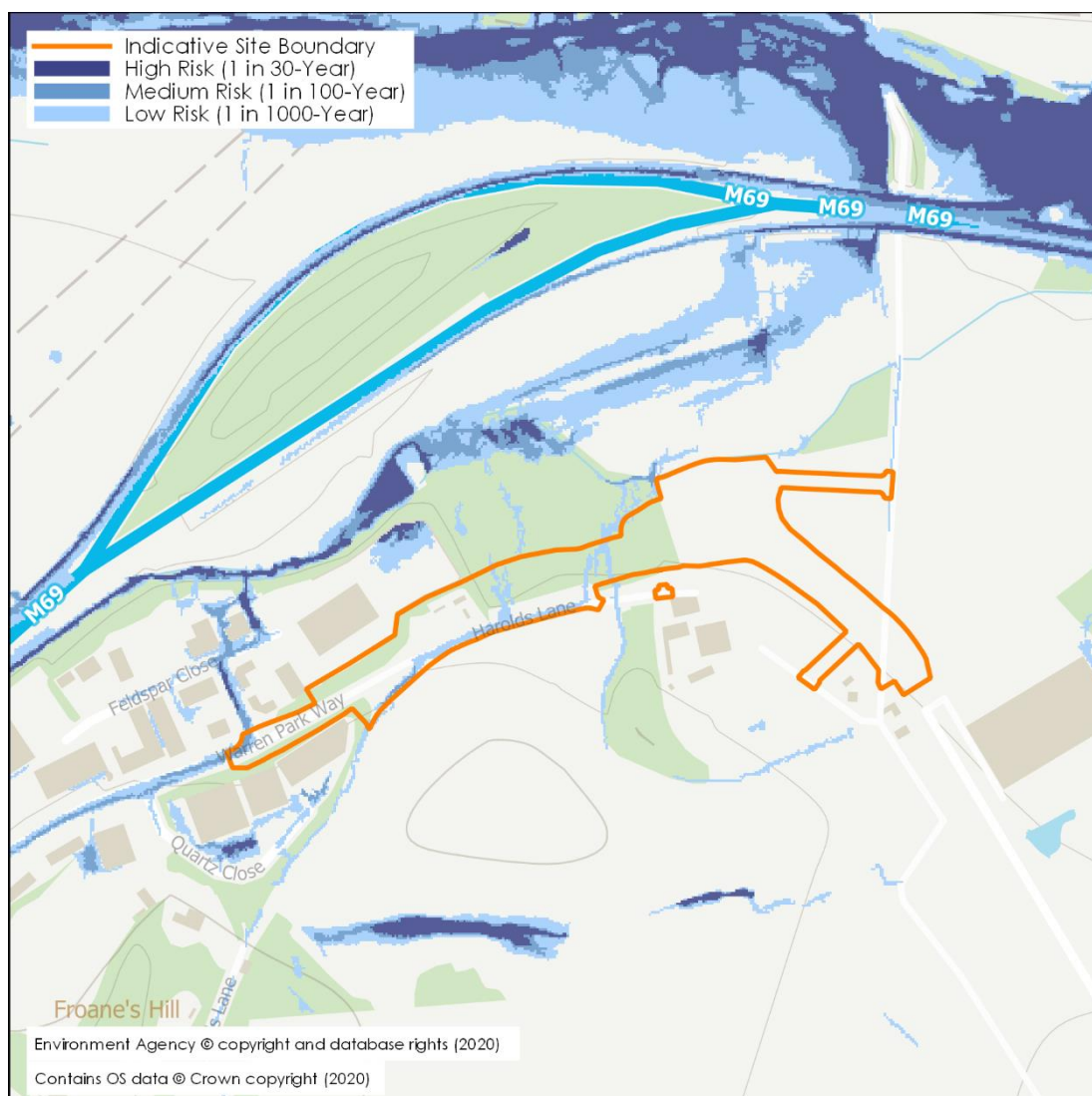
### **Flood Risk from Sewers**

- 2.19 Based upon a review of the topographical survey there is the potential for sewers to be present within the area, these are most likely to be located in the far western portion of the site, adjacent to the Warren Park Industrial Estate.
- 2.20 The rural nature of the site is such that it is unlikely that there will be any public sewers within the other areas of the site.
- 2.21 It is expected that the sewers in the area have been designed and constructed to appropriate standards.
- 2.22 In the unlikely event that the sewer capacity within the study area is exceeded, flows would be expected to flow in a northerly direction away from the highway.
- 2.23 The overall risk posed from the source is considered to be low.

### **Pluvial Flood Risk**

- 2.24 Risk of flooding from surface water mapping has been prepared by the Environment Agency. This shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. An extract from the mapping is included as **Figure 2.1**.





**Figure 2.1 - Risk of Flooding from Surface Water Mapping**

- 2.25 The majority of the Study Area is shown to have a 'very low' susceptibility to surface water flooding, with flow routes identified in the western portion of the Study Area shown to have a 'low' susceptibility. The potential depth in this area is not expected to exceed 300mm.
- 2.26 There are no records within the SFRA of the Study Area or surrounding area having previously been affected by pluvial flooding.
- 2.27 The overall risk posed to the Study Area from the pluvial source is considered to be low.
- 2.28 Simple mitigation outlined in **Section 3.0** would aim to reduce the risk further.



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## Effect of Development on Wider Catchment

### *Development Drainage*

- 2.29 The proposed highway will increase the impermeable area; thus runoff will increase. A surface water drainage strategy is to be implemented in order to manage the increased volume of runoff.

## 3.0 FLOOD RISK MITIGATION

- 3.1 **Section 2.0** has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be incorporated within the proposed development to address and reduce the risk of flooding to within acceptable levels.

### Site Arrangements

#### *Ground Levels*

- 3.2 The vertical and horizontal alignment of the proposed highway should be designed in order to enable surface water and pluvial runoff to be directed to positively drained areas in the first instance.

### Surface Water Drainage

- 3.3 To mitigate the developments impact on the current runoff regime it is proposed to incorporate a surface water drainage network to manage surface water runoff.
- 3.4 A separate detailed surface water drainage strategy has been developed, ref ERR-BWB-HGN-8B-DR-D-500. It is proposed that runoff is to be restricted to greenfield rates with discharge being to the unnamed watercourse to the north.

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

- 4.1 This FRA is compliant with the requirements set out in the NPPF and the associated Planning Practice Guidance. The FRA has been produced on behalf of the Drummond Estate in respect of a planning application for the proposed highway to the north of Enderby.
- 4.2 This report demonstrates that the proposed development is not at significant flood risk, subject to the recommended flood mitigation strategies being implemented. The identified risks and mitigation measures are summarised within **Table 4.1**:

**Table 4.1 - Summary of Flood Risk Assessment**

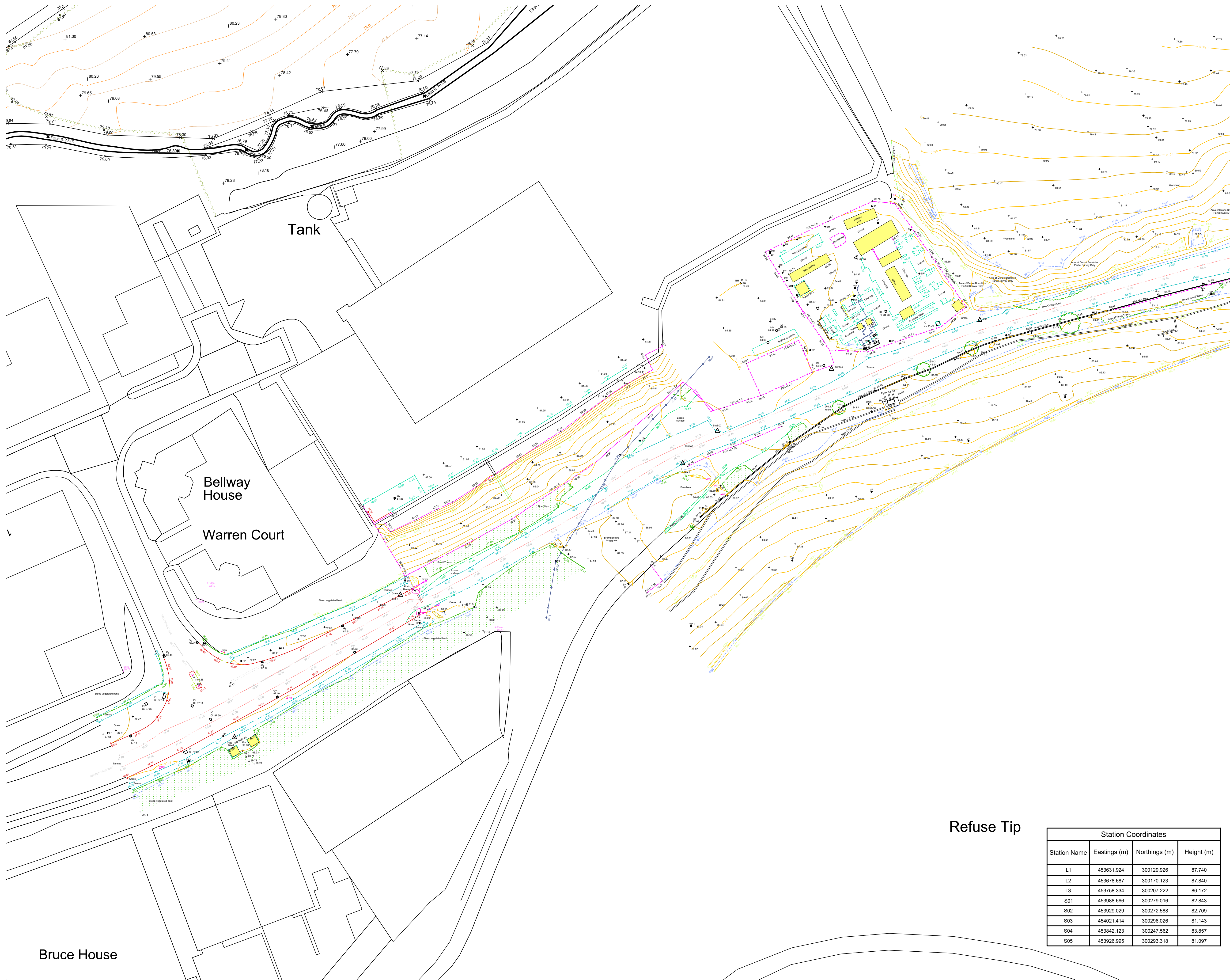
Flood Source	Proposed Mitigation Measure
Pluvial	Highway to be designed to enable surface water and pluvial runoff to be directed towards positively drained areas.
Impact of the Development	New drainage network to provide a modern standard of drainage. Runoff from the highway to be restricted to greenfield rates with discharge to the nearby watercourse.
This summary should be read in conjunction with BWB's full report. It reflects an assessment of the Study Area based on information received by BWB at the time of production.	

- 4.3 In compliance with the requirements of NPPF and, subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.

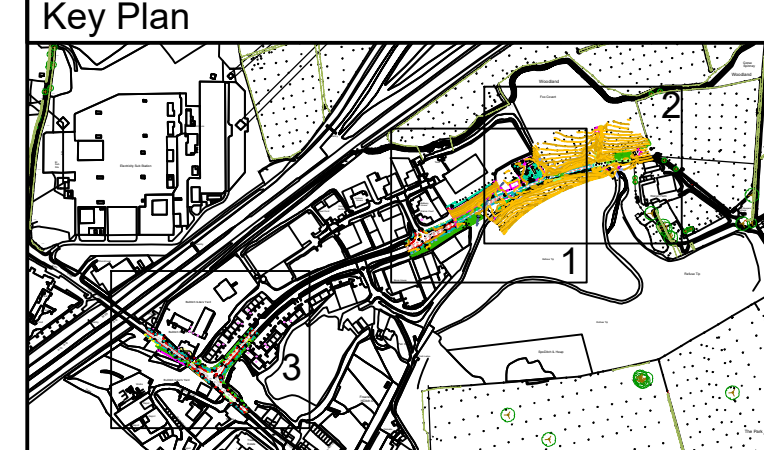
## **APPENDIX 1**

Topographical Survey





- Notes**
1. Do not scale this drawing. All dimensions must be checked/verified on site. If in doubt ask.
  2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
  3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
  4. Any discrepancies noted on site are to be reported to the engineer immediately.
  5. No scale factor has been applied to this survey, therefore the OS coordinates are to be treated as arbitrary. Please refer to survey station information below for on site control establishment.
  6. All coordinates and height data relate to OSGB36 unless otherwise stated. Control stations are coordinated by means of GPS receiving real time corrections via OS smart net.
  7. All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
  8. OS license number: 100022432



- Legend**
- OS Buildings
  - Surveyed Buildings
  - Building
  - Wall
  - Kerb Channel Line
  - Top of Kerb
  - Edge of Surface
  - Canopy / Overhang
  - Line Marking
  - Centre Line
  - Watercourse
  - Centre Line
  - Barrier
  - Fence
  - Gate
  - Overhead Powerline
  - Overhead Utilities
  - Contour Lines
  - Inspection Chamber
  - Flow direction and pipe diameter
  - Station and Name
  - Benchmark
  - Monitoring Borehole
  - Tree / Bush / Sapling
  - Area of Vegetation/ Extent of Tree Canopy
  - Hedge
  - Body of Water
  - Body of Water from OS
  - Slope Arrow
  - Spot Level

- AP Anchor Point
- BG Back Gully
- BO Bollard
- BS Bus Stop
- BT British Telecom
- C Crest
- CL Cover Level
- CMP Cable Marker
- CTV Cable TV
- DC Drainage
- DK Drop Kerb
- Elec Electric
- EP Electricity Post
- ER Earth Rod
- FH Fire Hydrant
- FL Floodlight
- FBW Fence Barbed Wire
- FCB Fence Closed Board
- FCL Fence Chain Link
- FEL Fence Electric
- FMP Fence Metal Panel
- FMR Fence Metal Railing
- FOB Fence Open Board
- FPW Fence Post & Wire
- FSP Fence Steel Palisade
- FWM Fence Wire Mesh
- FFL Finished Floor Level
- FP Flagpole
- Gas Gas
- GV Gas Valve
- GY Gully
- Ht Height
- IC Inspection Chamber
- IFL Internal Floor Level
- IL Invert Level (as a reduced level)
- LB Litter Bin
- LP Lamp Post
- MH Manhole
- Mkr Service Marker
- PB Post Box
- PT Post
- RE Rodding Eye
- SIP Sign Post
- ST Stop Tap
- SV Stop Valve
- TCB Telephone
- Call Box
- Threshold Level
- Traffic Light
- Telegraph Post
- Traffic Signal
- Unable to Survey
- Water Level
- Water Meter
- Wash Out

P5	02.11.20	Additional Survey Data Added	IR	DS
P4	16.03.20	Additional Survey Data Added	IR	DS
P3	25.08.16	Additional Survey Data Added	SDS	JM
P2	07.04.16	Additional Survey Data Added	LP	JD
P1	29.03.16	Preliminary Issue	LP	JD
Rev	Date	Details of issue / revision	Drw	Rev

**Issues & Revisions**

**BWB**  
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- Birmingham | 0121 233 3322
- Leeds | 0113 233 8000
- London | 020 7407 3879
- Manchester | 0161 233 4260
- Nottingham | 0115 924 1100

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Client  
**The Trustee of Drummond Estate**

Project Title  
**Enderby Bypass Part A & B**

Drawing Title  
**Existing Site Plan Sheet 1 of 3**

Drawn:	L.Padmore	Reviewed:	J.Draycott
BWB Ref:	NTH 2304	Date:	29.03.16
Scale@A1:	1:500		

**INFORMATION**

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
END-BWB-XX-00-DR-G-001	S2	P5

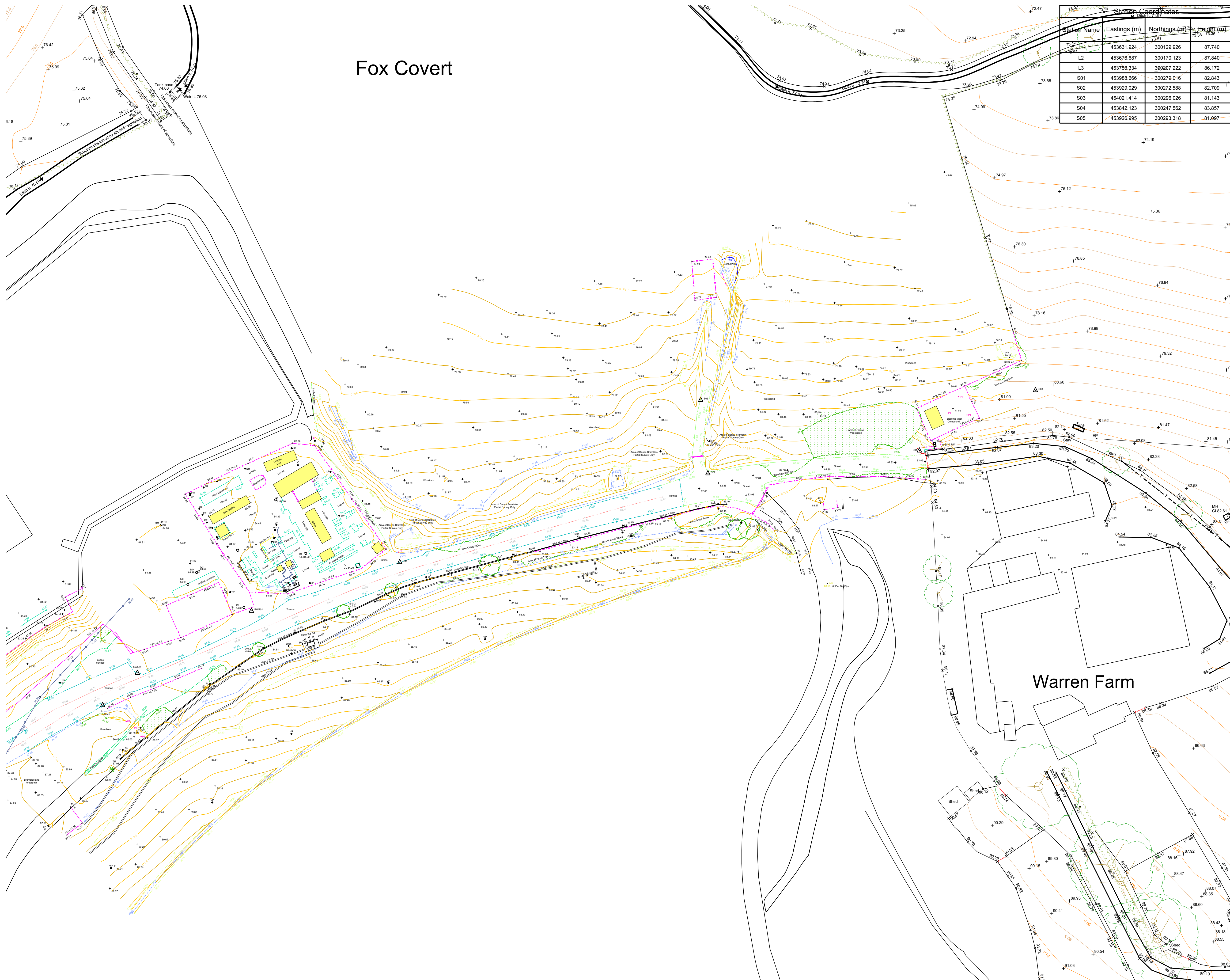
Refuse Tip

Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
L1	453631.924	300129.826	87.740
L2	453678.687	300170.123	87.840
L3	453758.334	300207.222	86.172
S01	453988.666	300279.016	82.843
S02	453929.029	300272.588	82.709
S03	454021.414	300296.026	81.143
S04	453842.123	300247.562	83.857
S05	453926.995	300293.318	81.097

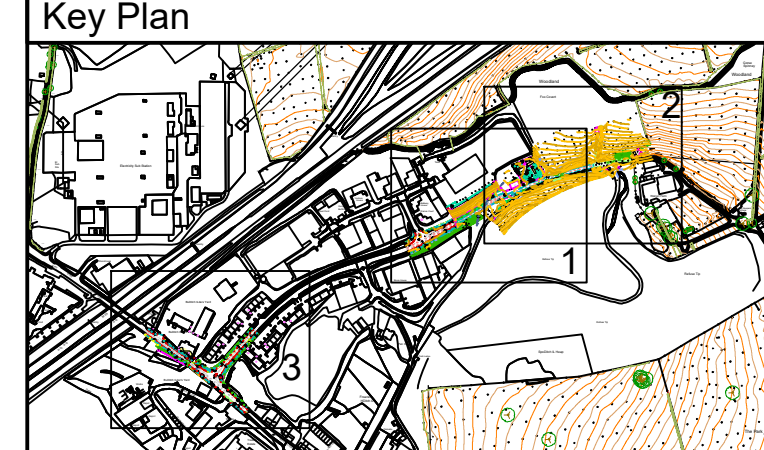


# Fox Covert

Station Name	Eastings (m)	Northings (m)	Height (m)
L1	453631.924	300129.926	87.740
L2	453678.687	300170.123	87.840
L3	453758.334	300207.222	86.172
S01	453988.666	300279.016	82.843
S02	453929.029	300272.588	82.709
S03	454021.414	300296.026	81.143
S04	453842.123	300247.562	83.857
S05	453926.995	300293.318	81.097



- ### Notes
- Do not scale this drawing. All dimensions must be checked/verified on site. If in doubt ask.
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  - Any discrepancies noted on site are to be reported to the engineer immediately.
  - No scale factor has been applied to this survey, therefore the os coordinates are to be treated as arbitrary. Please refer to survey station information below for on site control establishment.
  - All coordinates and height data relate to OSGB36 unless otherwise stated. Control stations are coordinated by means of GPS receiving real time corrections via OS smart net.
  - All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
  - OS license number: 100022432



### Legend

	OS Buildings		Inspection Chamber
	Surveyed Buildings		Flow direction and pipe diameter
	Building		Station and Name
	Wall		BM
	Kerb Channel Line		100.00 Benchmark
	Top of Kerb		BH 1
	Edge of Surface		Monitoring Borehole
	Canopy / Overhang		Tree / Bush / Sapling
	Line Marking		Area of Vegetation/ Extent of Tree Canopy
	Centre Line		Hedge
	Watercourse		Body of Water
	Centre Line		Body of Water from OS
	Barrier		Slope Arrow
	Fence		Spot Level
	Gate		
	Overhead Powerline		
	Overhead Utilities		
	Contour Lines		

AP	Anchor Point	FBW	Fence Barbed Wire	LB	Litter Bin
BG	Back Gully	FCB	Fence Closed Board	LP	Lamp Post
BO	Bollard	FCL	Fence Chain Link	MH	Manhole
BS	Bus Stop	FEL	Fence Electric	Mx	Service Marker
BT	British Telecom	FMP	Fence Metal Panel	PB	Post Box
C	Crest	FMR	Fence Metal Railing	PT	Post
CL	Cover Level	FOB	Fence Open Board	RE	Rodding Eye
CMP	Cable Marker	FPW	Fence Post & Wire	SP	Sign Post
CTV	Cable TV	FSP	Fence Steel Palletade	ST	Stop Tap
DC	Drainage	FWM	Fence Wire Mesh	SV	Stop Valve
DK	Drop Kerb	FFL	Finished Floor Level	TCB	Telephone
DP	Down Pipe	FP	Flagpole	TL	Threshold Level
Elec	Electric	GV	Gas Valve	TL	Traffic Light
EP	Electricity Post	GY	Gully	TP	Telegraph Post
ER	Earth Rod	Ht	Height	TS	Traffic Signal
FH	Fire Hydrant	IC	Inspection Chamber	UTS	Unable to Survey
FL	Floodlight	IFL	Internal Floor Level	WL	Water Level
		IL	Invert Level (as a reduced level)	WM	Water Meter
		WO	Wash Out		

P5	02.11.20	Additional Survey Data Added	IR	DS
P4	16.03.20	Additional Survey Data Added	IR	DS
P3	25.08.16	Additional Survey Data Added	SDS	JM
P2	07.04.16	Additional Survey Data Added	LP	JD
P1	29.03.16	Preliminary Issue	LP	JD
Rev	Date	Details of issue / revision	Drw	Rev

### Issues & Revisions

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Client  
**The Trustee of Drummond Estate**

Project Title  
**Enderby Bypass Part A & B**

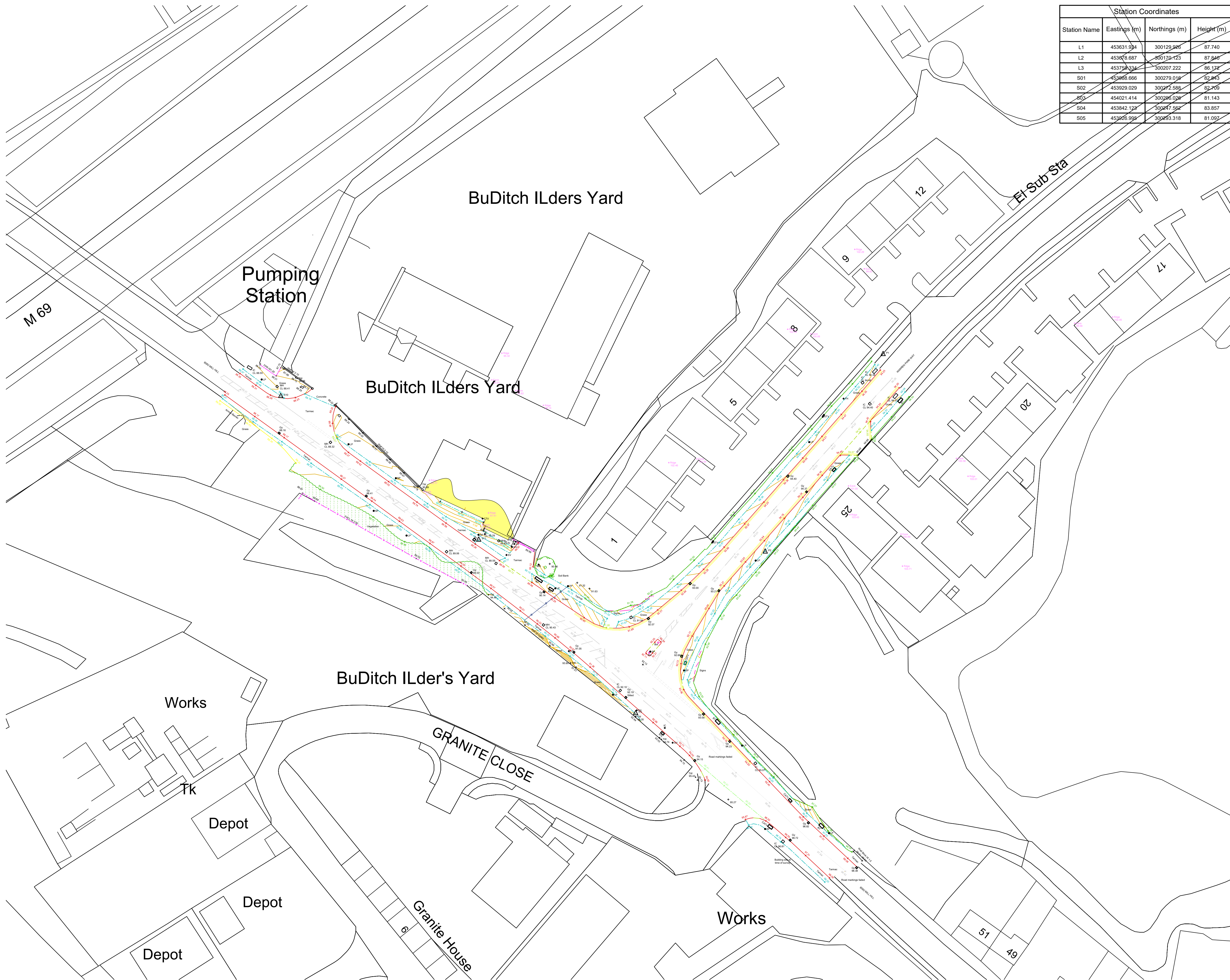
Drawing Title  
**Existing Site Plan Sheet 2 of 3**

Drawn: L.Padmore    Reviewed: J.Draycott  
BWB Ref: NTH 2304    Date: 07.04.16    Scale@A1: 1:500

### INFORMATION

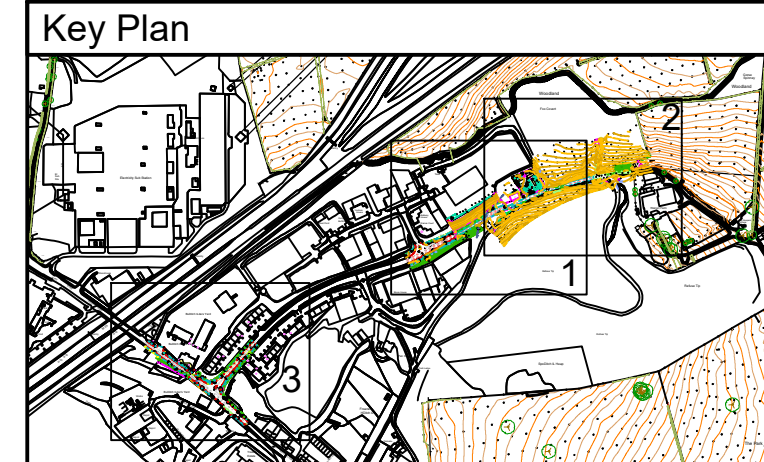
Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
END-BWB-XX-00-DR-G-002	S2	P5





Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
L1	453631.934	300129.965	87.740
L2	453678.687	300170.123	87.840
L3	453758.334	300207.222	86.172
S01	453868.666	300279.018	82.843
S02	453929.029	300272.588	82.709
S03	454021.414	300286.028	81.143
S04	453842.123	300247.582	83.857
S05	453926.992	300253.318	81.097

- Notes**
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  - All coordinates and height data relate to OSGB36 unless otherwise stated. Control stations are coordinated by means of GPS receiving real time corrections via OS smart net.
  - All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
  - OS license number: 100022432



**Legend**

OS Buildings	Surveyed Buildings	Inspection Chamber	Flow direction and pipe diameter
Building	Wall	Station and Name	Benchmark
Kerb Channel Line	Top of Kerb	Monitoring Borehole	Area of Vegetation/ Extent of Tree Canopy
Edge of Surface	Canopy / Overhang	Line Marking	Body of Water
Centre Line	Watercourse	Centre Line	Body of Water from OS
Barrier	Fence	Gate	Slope Arrow
Overhead Powerline	Overhead Utilities	Contour Lines	Spot Level

AP Anchor Point    FBW Fence Barbed Wire    LB Litter Bin  
 BG Back Gully    FCB Fence Closed Board    LP Lamp Post  
 BO Bollard    FCL Fence Chain Link    MH Manhole  
 BS Bus Stop    FEL Fence Electric    MKr Service Marker  
 BT British Telecom    FMP Fence Metal Panel    PB Post Box  
 C Crest    FMR Fence Metal Railing    PT Post  
 CL Cover Level    FOB Fence Open Board    RE Rodding Eye  
 CMP Cable Marker    FPW Fence Post & Wire    S/P Sign Post  
 Post    FSP Fence Steel Palletade    ST Stop Tap  
 CTV Cable TV    FWM Fence Wire Mesh    SV Stop Valve  
 DC Drainage    FFL Finished Floor Level    TCB Telephone  
 Channel    FP Flagpole    THL Threshold Level  
 DK Drop Kerb    Gas Gas    TL Traffic Light  
 DP Down Pipe    GV Gas Valve    TP Telegraph Post  
 Elec Electric    GY Gully    TS Traffic Signal  
 EP Electricity Post    Ht Height    UTS Unable to Survey  
 ER Earth Rod    IC Inspection Chamber    WL Water Level  
 FH Fire Hydrant    IFL Internal Floor Level    WM Water Meter  
 FL Floodlight    IL Invert Level (as a reduced level)    WO Wash Out

P1	07.04.16	Preliminary Issue	LP	JD
Rev	Date	Details of issue / revision	Drw	Rev

**Issues & Revisions**

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Client  
**Trustee of Drummond Estate**

Project Title  
**Enderby Bypass Part A & B**

Drawing Title  
**Existing Site Plan Sheet 3 of 3**

Drawn:	L.Padmore	Reviewed:	J.Draycott
BWB Ref:	NTH 2304	Date:	07.04.16
Scale:	A1: 1:500		

**INFORMATION**

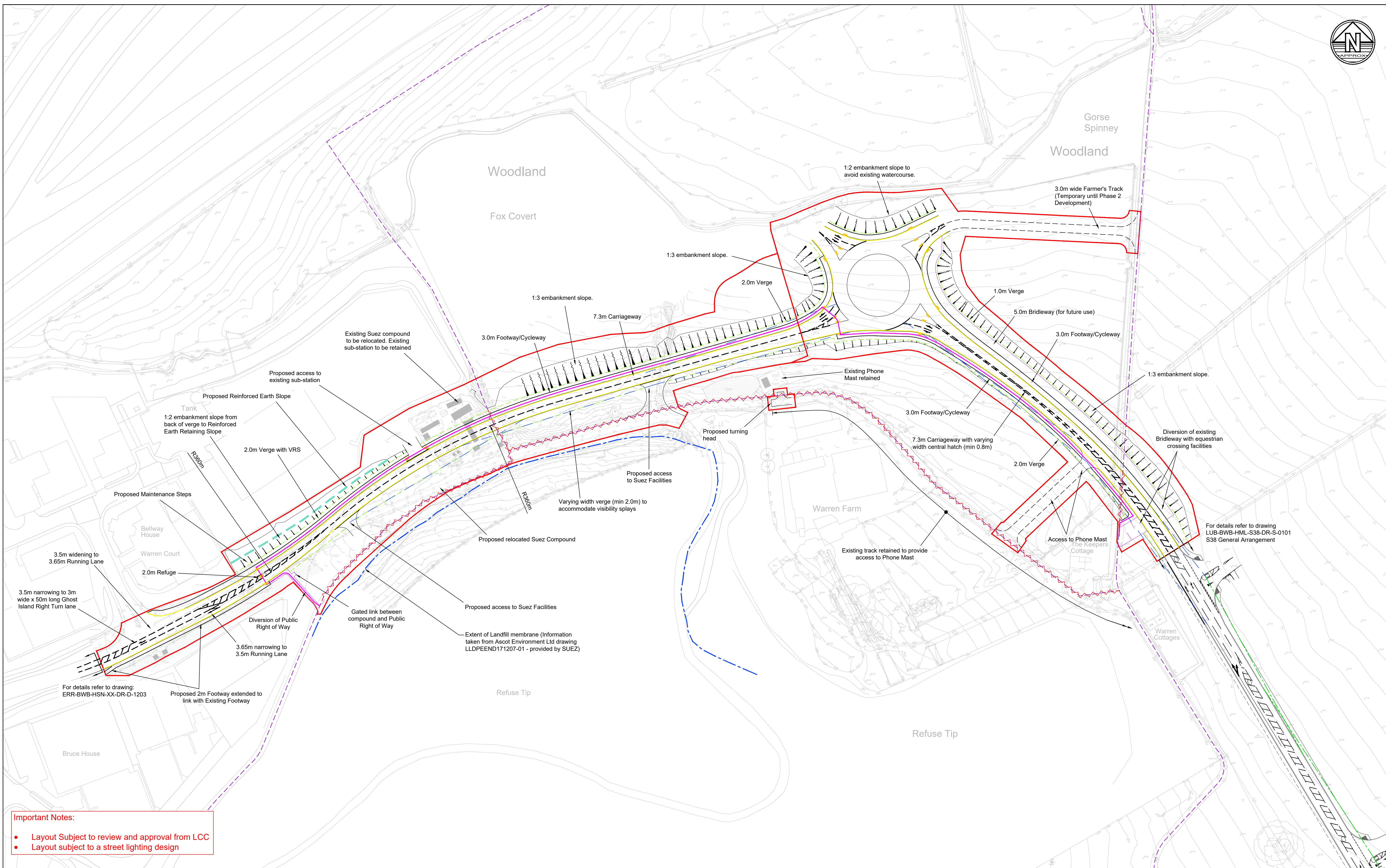
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## **APPENDIX 2**

Development Proposals



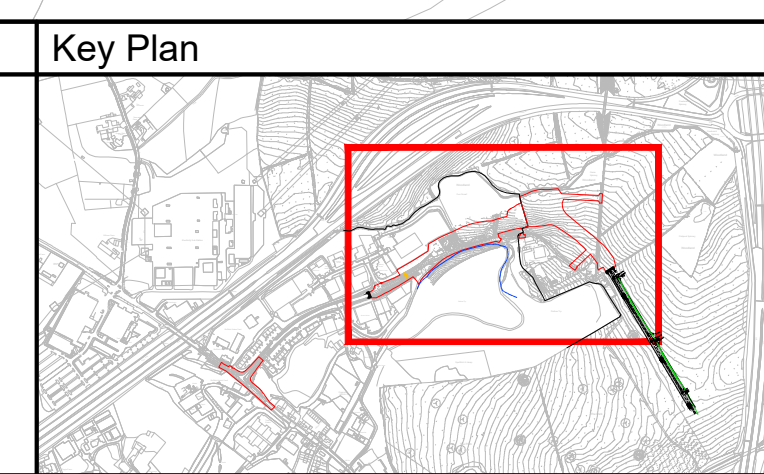


**Important Notes:**

- Layout Subject to review and approval from LCC
- Layout subject to a street lighting design

**Notes**

- Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
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- All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
- Any discrepancies noted on site are to be reported to the engineer immediately.



**Legend**

	Proposed Planning Boundary
	Proposed Retained Earth Slope
	Existing Public Right of Way
	Existing Public Right of Way to be Removed/Diverted
	Junction Visibility Splay (2.4m x 120m)
	Extent of Existing Landfill
	Pedestrian route

**ISSUES & REVISIONS**

Rev	Date	Details of issue / revision	Drw	Rev
P1	30.10.20	Preliminary Issue	MR	DH
P2	06.11.20	Earthworks batters added	MR	DH
P3	20.11.20	Issued for Planning	MR	DH
P4	06.12.20	Planning boundary amended	DH	DH

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Client  
**The Trustees of Drummond Estate**

Drawn: M. Ross  
Reviewed: D. Hodgson  
BWB Ref: NTH 2304  
Date: Sep '20  
Scale@A1: 1:1000

Project Title  
**Enderby Relief Road, Leicestershire**

Drawing Status  
**PLANNING**

Drawing Title  
**Option 8B  
Highway General Arrangement**

Project - Originator - Zone - Level - Type - Role - Number  
**ERR-BWB-DGN-8B-DR-C-100**

Status Rev  
**S8 P4**



# BWB

