FLOOD RISK ASSESSMENT

AT

RAVENSTHORPE ROAD

ON BEHALF OF

MILLER HOMES (YORKSHIRE) LIMITED

NOVEMBER 2016

Report No: 425/64r5	Name	Signature	Date
Prepared By:	M Stokes BSc (Hons), MSc (ENG)	M Stokes	22/11/16
Checked By:	W Walker BSc (Hons)		22/11/16
Reviewed By:	A Radcliffe BEng CEng MIStructE		22/11/16

ARP ASSOCIATES
CHARTERED CONSULTING ENGINEERS

Northwest House • 5/6 Northwest Business Park • Servia Hill • Leeds LS6 2QH
☎ 0113 2458498 🖷 0113 2443864
✉ leeds@arpassociates.co.uk 🌐 www.arpassociates.co.uk

C O N T E N T S

1.0 INTRODUCTION

1.1 Miller Homes (Yorkshire) Limited is proposing to redevelop a parcel of land, situated off Ravensthorpe Road to the South West of Dewsbury, West Yorkshire. The site is part of the wider South Dewsbury Riverside development, with this parcel of land forming the first phase of development.

1.2 It is within the general development strategy of the country for development in areas where there is a risk of flooding to be assessed to avoid unnecessary increase in the requirement for flood defence. Under the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG), consultation is required with the Environment Agency, Land Drainage Authority and Water Authority and a Flood Risk Assessment Report should be prepared considering the development proposals and make recommendations for any flood mitigation measures.

1.3 ARP Associates have been appointed to carry out an assessment of the site, implement appropriate consultations and prepare a Flood Risk Assessment Report, with reference to the NPPF and initial requirements of the Planning Authority.

1.4 The consultations and walkover survey have been carried out in April 2016.

1.5 The report has been initially prepared for the use and reliance of the Client only. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Associates. For the avoidance of any doubt, where ARP Associates enters into a letter of reliance for the benefit of a third party, that third party will be permitted to rely on the report. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party without ARP Associates consent.

2.0 WALKOVER SURVEY

General

2.1 The proposed development site, which is centred on Ordnance Survey grid reference SE 230 196, is located to the south west of Dewsbury town centre. Total site area is approximately 7.9ha and is an irregular shaped piece of land.

2.2 A site location plan is presented in Appendix A.

Current Use

2.3 The site is presently a mixture of unused grassed fields, and agricultural land.

Site Features and Boundaries

2.4 The site is bound to the North by existing residential development which fronts on Ravensthorpe Road. The southern, western and eastern boundaries of the proposed development site are characterised by open grassland.

Topography and Vegetation

2.5 There is a general fall across the site from south to north towards Ravensthorpe Road/River Calder and from west to east. Site levels along the southern boundary are typically in the range of 67 - 59m AOD (west to east respectively), with levels along the northern boundary in the range of 54 - 44m AOD (west to east respectively). A topographical survey is presented in Appendix B.

2.6 The site is covered by open grassland used for agricultural purposes.

Drainage

2.7 The site has no obvious positive drainage system, although land drainage may be present across the site. Following the natural topography of the site surface water will run-off in a

northerly direction towards Ravensthorpe Lane or be intercepted by open watercourses crossing the site or other adjacent highways.

2.8 The nearest Main River to the proposed development site is the River Calder which is approximately 300m to the north, from the site boundary at its nearest location.

3.0 ENVIRONMENT AGENCY CONSULTATION

3.1 A consultation was requested from the Environment Agency for the wider Dewsbury Riverside site and a copy of their response, reference RFI/2016/35962, dated 2nd March 2016, is presented in Appendix C for reference.

3.2 The Environment Agency has provided a Flood Map, which shows areas of land that could flood from rivers or the sea and are shaded blue. These areas do not take into account defences as water can overtop or can fail in extreme conditions.

3.2.1 Flood Zone 1 - 'Low Probability' is assessed as having a less than 1 in 1,000 annual probability of river or sea flooding in any year (less than 0.1%).

3.2.2 Flood Zone 2 - 'Medium Probability' is assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding in any year (1% - 0.1%) and between a 1 in 200 and 1 in 1,000 annual probability of flooding from the sea (0.5% - 0.1%).

3.2.3 Flood Zone 3 - 'High Probability' is assessed as having a 1 in 100 or greater annual probability of river flooding in any year (greater than 1%) and a 1 in 200 chance or greater annual probability of flooding from the sea (less than 0.5%).

3.3 The Environment Agency Flood Map confirms that the site is wholly within Flood Zone 1.

3.4 It has been confirmed that, to the best of the Environment Agency's knowledge, there is no known flood history for the site.

3.5 There are no flood defences within the vicinity of the site.

3.6 As the site is wholly within Flood Zone 1 the Environment Agency cannot provide any relevant modelled flood levels.

3.7 As of the 15th April 2015, the Environment Agency are no longer a statutory consultee for surface water drainage proposals.

4.0 WATER AUTHORITY CONSULTATION

4.1 A consultation was requested from Yorkshire Water for the wider development site, who is the Water Authority for this area, and a copy of their response, reference R036492 dated 23rd December 2015, is presented in Appendix D for reference.

4.2 Due to the change in legislation on 01/10/11, there may be public sewers within the site boundary which are not recorded on the statutory sewer map, the presence of which should be taken into account in the design of the site.

4.3 Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the point of discharge to be agreed.

4.4 Yorkshire Water infrastructure recorded crossing the site (between 385 and 399 Lees Hall Road) includes:-

- 150mm diameter public surface water sewer,
- 225mm diameter public foul sewer,
- 375mm diameter public surface water sewer.

4.5 A predominately combined sewer system is present in the wider area.

4.6 No buildings, or other obstructions, are to be erected within 3 (three) metres, or trees planted within 5 (five) metres of the public surface water sewers. It may not be acceptable to raise or lower ground levels over the sewer, nor to restrict access to the manholes on the sewer. If you wish to have this sewer diverted under Section 185 of the Water Industry Act 1991 an application should be made in writing.

4.7 The local Waste Water Treatment Works (WWTW) is Dewsbury WWTW. Yorkshire Water have confirmed that this WWTW may only have limited spare capacity (taking the size of the development into account) available.

4.8 It should be noted that the public sewer network currently does not have adequate capacity available to accommodate the anticipated foul water discharge from this proposal site i.e. the suggested total 4000 dwellings.

4.9 In order to investigate potential solutions for foul water disposal from the site a feasibility study carried out under Section 98 of the Water Industry Act 1991 and at the developers expense will be required to determine suitable foul connection points, any available capacity in the public sewer network, together with any likely costs and timescales for any potential upgrading works required.

4.10 Foul water from kitchens and/or food preparation areas of any restaurants and/or canteens etc. must pass through a fat and grease trap of adequate design before any discharge to the public sewer network.

4.11 In respect of surface water, reference is made to Requirement H3 of Building Regulations 2000 and Sustainable Drainage Systems. This establishes a hierarchy of surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration and watercourse, in that priority order, before connection to sewers will be considered. Where appropriate, soakaways, swales and infiltration trenches (SUDS) may be adopted as part of the public sewer network.

4.12 Yorkshire Water recognises that a number of watercourses are located within the site which appears to be the obvious place for surface water disposal.

4.13 The site is within an area that may be affected by river, coastal or estuarine flooding. It is advised to contact the Environment Agency for details.

4.14 Surface water run-off from areas of vehicular parking and/or hardstanding etc. must pass through oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator.

4.15 Additional consultations took place with Yorkshire Water with a response dated 1st April 2016, which are presented in Appendix D, together with representations provided by Yorkshire Water to Kirklees Council regarding site allocations in the emerging Local Plan.

4.16 Yorkshire Water has confirmed that assuming the development is phased over the emerging Local Plan period (approximately the next fifteen years) and beyond, the receiving waste water treatment works will have the capacity to treat foul water arising from the proposed development.

4.17 An investigation is likely to require the creation of a Drainage Area Study (sewer modelling) to assess the potential impact of any proposed solution. Depending on the timescales for the site coming forward, a future developer may be required to undertake the study wholly or partially at their expense. Yorkshire Water have estimated that 500 houses could be built and occupied before work on the network would be required.

4.18 There are a number of large diameter strategic water mains crossing the wider site and it essential that they are effectively protected. Failure to do so could have a serious impact on the public water supply within Kirklees and beyond. Yorkshire Water require stand-off distances of up to 10 metres either side of each pipe's centre-line are likely to be required. It is essential that future developers contact Yorkshire Water at the earliest opportunity and they should note that because of the pipes' locations and size, diversion may not be possible in any/all cases."

5.0 LEAD LOCAL FLOOD AUTHORITY CONSULTATION

5.1 A consultation was requested from Kirklees Council, who are the Lead Local Food Authority, and a copy of their response, dated 9th February 2016, is presented in Appendix E for reference.

- 1st generation surface water flood risk maps show linear patterns that will be associated with both open and culverted watercourses. Flow paths are identified flowing south to north across the site.

- 3rd generation surface water maps assume sewers are present and take some of the volume out of rainfall inputs. Flow paths are still identified across the site; however these are reduced in extent compared to 1st generation mapping. It should be noted however 3rd generation mapping may underrepresent surface water risk in undeveloped areas.

5.2 A SuDS/drainage masterplan which mimics the existing flow regime and routing should be developed as the scheme progresses rather than discrete areas including a SuDS treatment train from source through to area and regional SuDS. Infiltration is unlikely to be suitable based steep sided slopes and localised geology and the risk of re-emergence in groundwater flows due to existing and historical watercourses.

5.3 Any proposed discharge of surface water from the development site should be restricted to Greenfield rates. The overall strategy should show that there is sufficient on site attenuation to accommodate a 1 in 30 year storm. The design should also ensure that storm water resulting from a 1 in 100 year event, plus climate change, and surcharging the drainage system can be stored on the site without risk to people or property.

5.4 A detailed investigation, including CCTV survey will be required of the downstream surface water system to ensure the existing network can accommodate the proposed pass forward flow and volume to ensure no increase to third party land.

6.0 MATERIAL CONSIDERATION IN RELATION TO NPPF AND PPG

Flood Classification

6.1 The Environment Agency confirms that all of the site falls within land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding in any year (less than 0.1%). Therefore, in accordance with Table 1 of the PPG, the site falls within Flood Zone 1 "low probability".

End Use

6.2 The development proposal is for the construction of residential dwellings on the site and a copy of the proposed masterplan is presented in Appendix F for reference purposes.

6.3 When applying Table 2 of the PPG, the flood risk vulnerability classification shows that the proposed end use will fall into a "*More Vulnerable*" classification under the general classification “dwelling houses”. Table 3 of the PPG confirms a “More Vulnerable” development within Flood Zone 1 is deemed appropriate.

Flood Sources

6.4 Flooding from Rivers - As discussed above the proposed development site is located entirely within land assessed as having less than a 1 in 1,000 annual probability of river flooding in any year (less than 0.1%). Therefore, in accordance with Table 1 of the PPG, the site falls within Flood Zone 1 "low probability". This is also confirmed by the Calder Valley Strategic Flood Risk Assessment (2008). Therfore flooding from this source is considered low risk.

6.5 Flooding from Local Watercourses - A number of minor field drains and local watercourses are shown to be present across the proposed development site. These potentially pose a risk to the development; therefore, it is recommended these watercourses are modelled in some form as part of any detailed application for the site to understand the

hydraulic capacity and to identify how these features can be incorporated into the proposed masterplan and drainage layout.

6.6 Flooding from the Sea - The proposed development site is located outside of the tidal influence zone.

6.7 Flooding from Land - The Environment Agency surface water flood map in Appendix C and 1st/3rd generation surface water maps in Appendix E provided by Kirklees Council indicate a number of flow paths flowing north adjacent to the proposed development site towards the River Calder. These flow paths correspond to the natural watercourses and field drains running through the site.

6.8 The majority of the site is shown to have a very low risk of surface water flooding; however, these flow paths will need to be considered as part of the proposed development.

6.9 Flooding from Groundwater - Flooding from ground water can happen when ground water levels are high. This may be due to rainfall in the groundwater source area but can also happen on floodplains if river levels are held above the level of the flood plain by embankments.

6.10 The Geological Survey Map of Great Britain shows the site to be underlain by Pennine Lower Coal Measures Formation of Mudstone, Siltstone and Sandstone, which is deemed unlikely to facilitate the flow of substrata groundwater. During the site visit however, areas of the site were saturated, with below ground flow, however the exact source of the flow could not be determined.

6.11 The Kirklees Local Flood Risk Management Strategy also states "*In Kirklees, it is very unusual to see groundwater breaking through the surface of the ground… but a product of its industrial heritage, means that groundwater flooding to "below ground" rooms is increasingly common*".

6.12 The risk of flooding from groundwater sources is considered to be low risk.

6.13 Flooding from Sewer - Yorkshire Water have provide sewer records, Appendix D which show a series of surface water and foul sewers are present in the local area. Local Yorkshire Water infrastructure includes:-

- 150 mm diameter public surface water sewer.
- 225 mm diameter public foul sewer.
- 375 mm diameter public surface water sewer.

6.14 No specific data is available to collaborate the risk of sewer flooding within the immediate vicinity of the proposed development site, due to the restrictive nature of data within the SFRA and Preliminary Flood Risk Assessment (PFRA). Should existing sewer infrastructure fail in the immediate area, flows are likely to be channelled north. A new drainage system will need to be introduced onto the site and it is possible that any blockage will result in flooding from the lowest cover level of manholes or gullies. This will need to be considered as part of any proposed development.

6.15 Flooding from Reservoirs, Canals or Artificial Sources - The Environment Agency produce maps which show the expected inundation area should a reservoir fail and release its capacity. It should be noted however, that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925.

6.16 The proposed development site is outside the maximum extent of flooding from reservoirs. There are no other canals or artificial sources which will result in flooding on the proposed development site.

Climate Change

6.17 The NPPF and PPG have indicated that the Global sea level will continue to rise, depending on greenhouse gas emissions, and the sensitivity of the climate system and there will be an increase in rainfall across the country.

6.18 United Kingdom climate change guidance was revised in February 2016 for peak river flows and peak rainfall intensities. With regards to peak river flows, a regionalised

approach has now been adopted to climate change impacts based upon the river basin district of the proposed development site, the flood risk vulnerability of the proposed development and the present day Flood Zone classification.

6.19 The proposed development site is situated within the River Humber river basin district, which based on an "upper end" climate change scenario, could see peak river flows increase by 50% by 2115. As the site is situated entirely within Flood Zone 1 an increase of 50% flows is deemed unlikely to affect the proposed development site.

6.20 In accordance with the revised climate change data, the published figures show that, for an expected life of greater than 50 years for any new development, the anticipated increase in rainfall could be around 40%. It will be necessary to design any new positive drainage system with a 40% increase in capacity to accommodate this requirement; however, this will need to be confirmed as part of a detailed drainage strategy. Due to the topography of the land, overland run-off from adjoining land may be an issue.

Flood Mitigation

6.21 The following precautionary mitigation measures are recommended to inform the flood mitigation strategy:-

6.21.1 The finished floor levels to the properties should be raised above external levels by a minimum of 150mm. wherever possible.

6.21.2 The surface water flow paths identified in Section 6.10 should be incorporated into the development masterplan.

6.21.3 Properties shall be designed without any basements and ground floors shall comprise solid concrete slabs or beam and block with screed construction.

6.21.4 Incoming electricity supplies shall be raised above ground floor level and ground floor electric sockets shall be served by loops from the first floor level which creates further flood resilience.

6.21.5 In the unlikely event of flooding on the site from blockages of existing or proposed sewers, it would be appropriate to design external levels with falls to non-critical areas, such as landscaping, where the water can pond without causing flooding to buildings.

6.21.6 It will be necessary to ensure there is a route for overland run-off from third party land through the site without causing flooding to buildings. To achieve this, the proposed road alignment through the site shall be designed to ensure that there is always a route for water through the site without causing ponding.

6.21.7 In the event of flooding of the site from blockage of the existing watercourse, it would be appropriate to design external levels with the falls towards the watercourse to ensure any escaping water can re-enter the watercourse downstream.

Sustainable Drainage

6.22 In order to comply with the requirements of the NPPF, it will be necessary to consider aspects of Sustainable Drainage techniques for the new development. Whilst no intrusive soil investigation report has been carried out at the time of writing the Flood Risk Assessment, a review of the Geological Survey Map of Great Britain shows the site to be underlain by gravel and minor sandstone. This material is likely to be permeable and, therefore, potentially suitable for the disposal of surface water using infiltration techniques. However, due to the topography of the site, any infiltrating water may emerge further downslope causing flooding to properties and therefore, preclude the use of infiltration techniques. This will need to be assessed as part of a Stage 2 ground investigation report.

6.23 For the purpose of this report a positive drainage system to watercourse for surface water drainage will be required.

Drainage

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

Existing Surface Water Run-off

6.25 The site is greenfield and, therefore, in accordance with the current guidelines and regulations, indicative surface water calculations have been undertaken using the IH124 Method of calculating greenfield run-off rates. The greenfield run-off rate for the area is 7.4 l/s.

Proposed Surface Water Drainage

6.26 Consideration of the proposed drainage should firstly be given to infiltration techniques (to ground). However, based on information available and topography of the site, the disposal of surface water using infiltration techniques may not be feasible. It will be necessary to carry out appropriate infiltration tests in accordance with BRE Digest 365 'Soakaway Design' prior to construction on site and the results presented in a report for the approval of the Planning Authority. However, for the purpose of this report a positive drainage system to watercourse will be required for surface water drainage.

6.27 Indicative calculations have been carried out using the WinDES Source Control Computer Program. The proposed surface water system should be designed to accommodate the 1 in 30 year storm event without flooding and the 1 in 100 year storm plus climate change event should be retained within the site in an area which will not affect the new buildings or third parties from flooding. In line with guidance provided by all statutory consultees, the proposed surface water discharge shall be restricted to the pre-development greenfield run-off rate. Therefore, restricting the discharge rate to no greater than 7.4 l/s, on-site storage of 1380m³, will need to be provided for a 1 in 30 year storm. The drainage system will also need to accommodate the 1 in 100 year storm plus 40% climate change event without causing flooding of property of third party land. In the event that levels dictate that the 1 in

100 year plus climate change floodwater would flow off-site, an additional or larger storage facility will be required. In these circumstances, onsite attenuation could increase to 2877m³

6.28 The Ravensthorpe Road site, which this application refers to, is part of the wider Dewsbury Riverside development, which for assessment of surface water has been subdivided into six discrete catchments based on topography and surface water flows, with an outfall and attenuation structure (detention basins) proposed to control surface water flows to an agreed discharge rate within each catchment. This is in line with guidance provided by statutory consultees that a side wide surface water management strategy should be adopted. The detention basins are designed to accommodate the 1 in 100 year storm plus an allowance for climate change (subject to detailed design).

6.29 The wider Dewsbury Riverside site, and in-turn the Ravensthorpe Road site, will restrict surface water run-off to the pre-development greenfield run-off rate.

Foul Water Drainage

6.30 Foul water domestic waste should discharge to a point to be agreed with Yorkshire Water as part of a detailed drainage strategy for the site.

Emergency Egress During Times of Flood

6.31 It is a requirement under the PPG that occupants should be able to egress any building during times of flood, without being trapped by flood conditions. As all residential development and access routes fall within Flood Zone 1, no special mitigation measures are required for emergency egress during times of flood.

7.0 COMMENTS

7.1 A sequential approach to site development has been adopted and all residential development is restricted to Flood Zone 1. However, in order to accommodate the possibilities of flood from a catastrophic storm, overland flow or blockage of the existing or proposed sewers or watercourses, the following precautionary mitigation measures are recommended:-

7.1.1 The finished floor levels to the properties should be raised above external levels by a minimum of 150mm wherever possible.

7.1.2 The surface water flow paths identified in Section 6.10 should be incorporated into the development masterplan.

7.1.3 Properties shall be designed without any basements and ground floors shall comprise solid concrete slabs or beam and block with screed construction.

7.1.4 Incoming electricity supplies shall be raised above ground floor level and ground floor electric sockets shall be served by loops from the first floor level which creates further flood resilience.

7.1.5 In the unlikely event of flooding on the site from blockages of existing or proposed sewers, it would be appropriate to design external levels with falls to non-critical areas, such as landscaping, where the water can pond without causing flooding to buildings.

7.1.6 It will be necessary to ensure there is a route for overland run-off from third party land through the site without causing flooding to buildings. To achieve this, the proposed road alignment through the site shall be designed to ensure that there is always a route for water through the site without causing ponding.

7.1.7 In the event of flooding of the site from blockage of the existing watercourse, it would be appropriate to design external levels with the falls towards the watercourse to ensure any escaping water can re-enter the watercourse downstream.

7.2 An increase in rainfall shall be incorporated into any new positive drainage system to satisfy the requirements of climate change.

7.3 Sustainable Drainage Systems of infiltration techniques have been assumed to be unsuitable on this particular site, for the purpose of the report. It will be necessary to carry out appropriate infiltration tests in accordance with BRE Digest 365 'Soakaway Design' prior to construction on site and assessed as part of a Stage 2 Geo-Environmental Appraisal. The results shall be presented in a report for the approval of the Planning Authority.

7.4 Surface water discharge shall be restricted to no greater than the existing greenfield run-off rate with outfall to watercourse. This will need to be confirmed and agreed as part of the detailed Drainage Strategy for the site.

7.5 The proposed surface water drainage system shall be designed with an allowance for climate change and restricted to the agreed discharge rate with appropriate attenuation incorporated into the design. Detailed design and calculations shall be submitted to the Planning Authority for approval prior to construction on site.

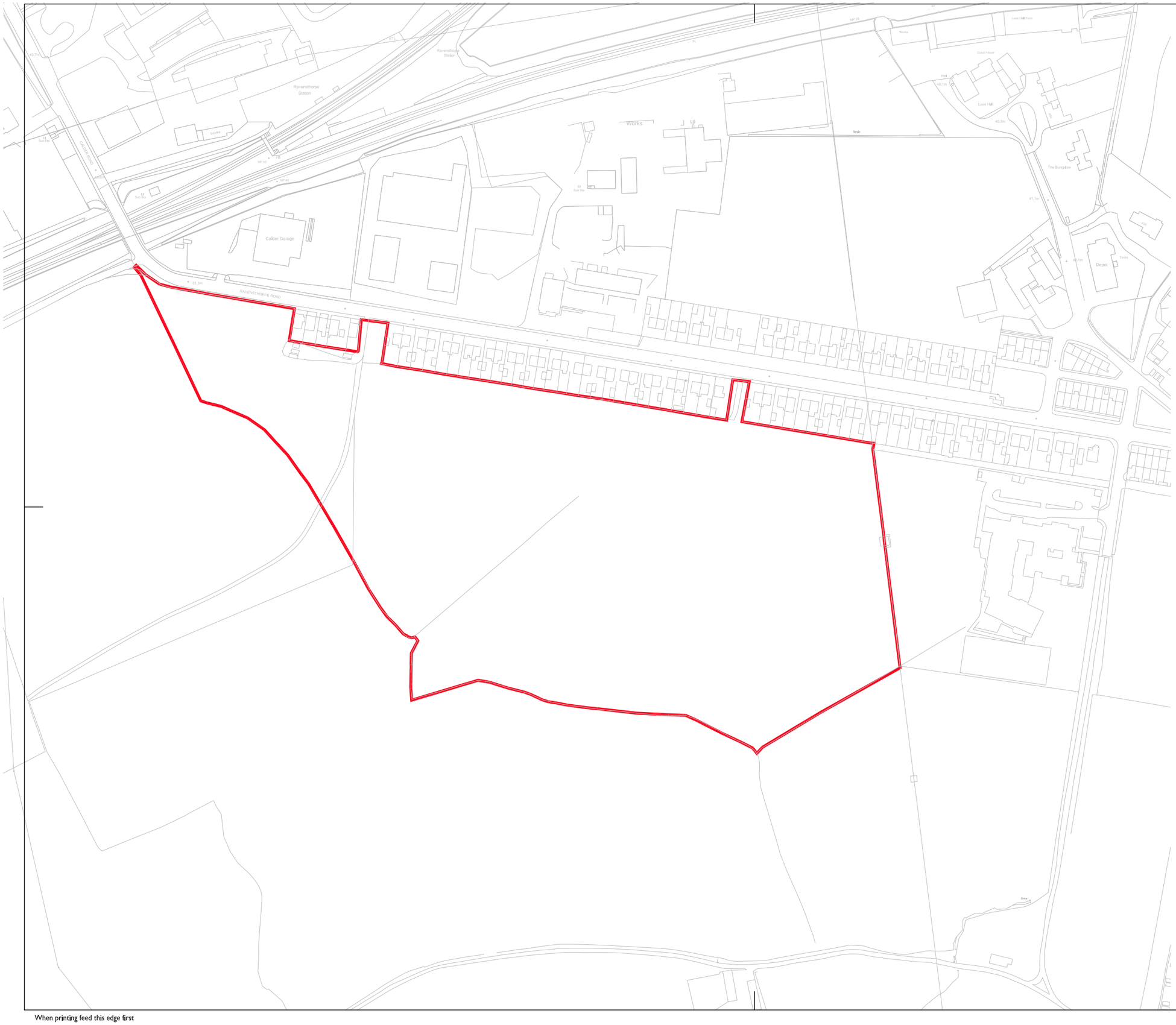
7.6 No special mitigation measures are required for emergency egress during times of flood.

7.7 Subject to compliance with the above, the proposed development can satisfy the requirements of the National Planning Policy Framework and the Planning Practice Guidance in relation to flood risk.

A P P E N D I X A

SITE LOCATION PLAN

Revisions



planners | urbanists | architects

spawforths

Junction 41 Business Court, Thorpe Road, East Ardsley, Leeds, West Yorkshire WF3 2AB
T: 01924 873873 F: 01924 870777 www.spawforths.co.uk mail@spawforths.co.uk

Client Name
Miller Homes

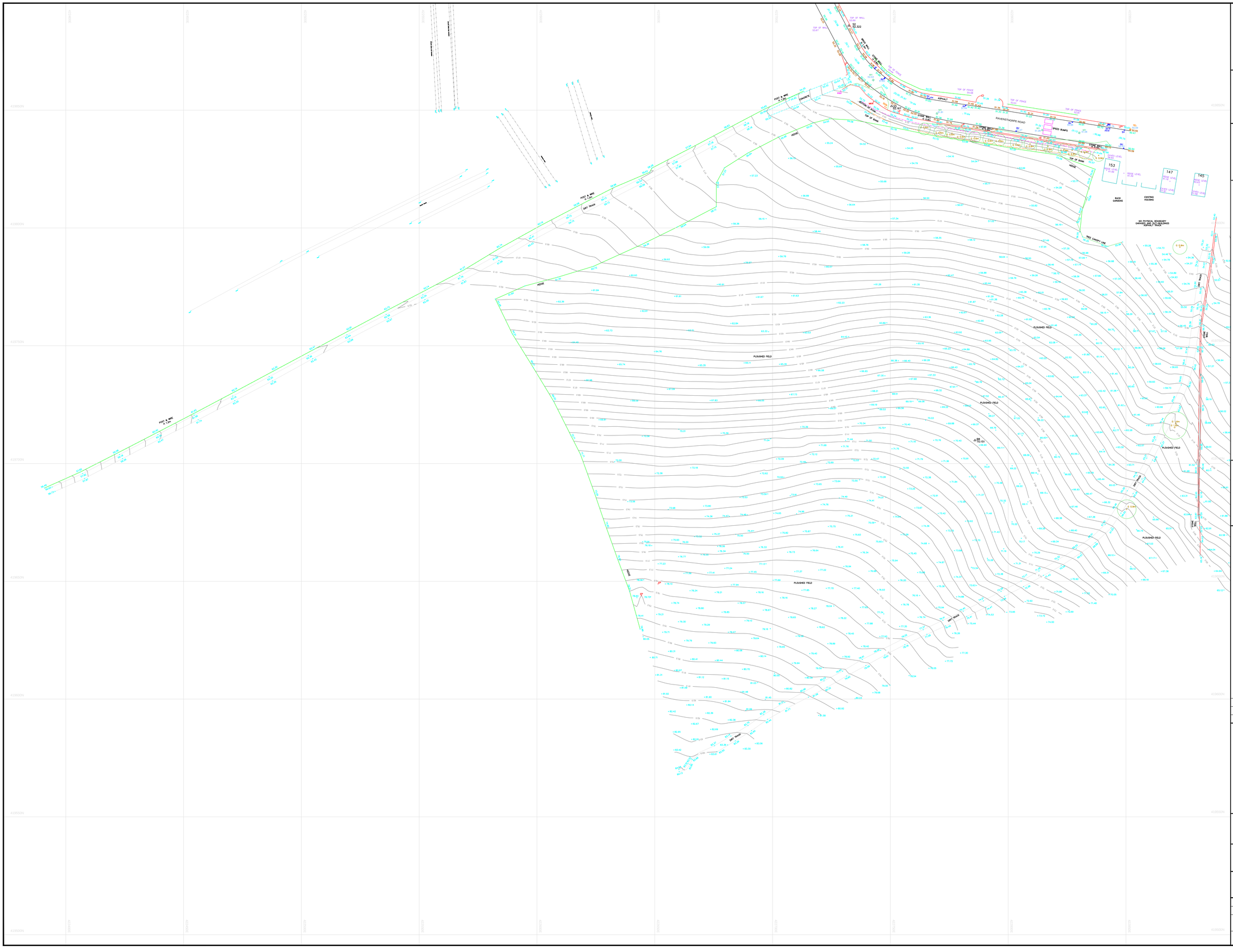
Project No	Project Title			
3565	Dewsbury Riverside			
Drawn By	Reviewed By	Scale	Discipline	Date
CM	AR	2500@A3	Urbanism	Aug 2016
Drawing No.	Drawing Title			Revision
0000-0017	Allocated Land Red Line			B

File Path

When printing feed this edge first

A P P E N D I X B

TOPOGRAPHICAL SURVEY



Notes

This drawing and the information contained therein is issued in confidence and is the copyright of Met Geo Environmental Limited. Disclosure of this information to Third Parties and unauthorised copying or replication of this data without approval is forbidden.

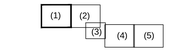
Direction of North

Grid : OS National Grid.
Using the OS GPS Network and applying OSTN02 transformation and then removing the scale factor for true distances with a one-step transformation centred on S1

Datum : OS Level Datum.
Using the OS GPS Network and applying OSGM02 National Geoid Model to obtain local area corrections.

Station Listing

Layout Key



KEY

AIR VALVE	AV		KERB OUTLET	KO	
BENCH MARK	BM		LAMP POST	LP	
BIN	BIN		MANHOLE (CIRCULAR)	MH	
BOLLARD	PO		MANHOLE (RECTANGULAR)	MH	
BORE HOLE	BH		MANHOLE (TRIANGULAR)	MH	
BRITISH TELECOM COVER	BT		MARKER POST	MKP	
BUS STOP	BUS		GULLY	GU	
CABLE TV COVER	CATV		RODDING EYE	RE	
CABLE TV SUPPLY	CA		SIGN POST	SIGN	
COLUMN	COL		TELECOM COVER	TC	
EARTHING POINT	EP		TELEGRAPH POLE	TP	
ELECTRICITY COVER	ELEC		THRESHOLD LEVEL	THL	
ELECTRICITY POLE	EP		TRAFFIC LIGHT	TL	
FIRE HYDRANT	FH		TRIAL PIT	PIT	
GAS VALVE	GAS		WASH OUT	WO	
GATE			WATER METER	WM	
INSPECTION COVER (CIRCULAR)	IC		WATER STOP COCK	WSC	
INSPECTION COVER (RECTANGULAR)	IC		WATER STOP VALVE	WSV	

COVER LEVEL	CL	CHAMBER BASE LEVEL	Ch.L
INVERT LEVEL	IL	WATER SURFACE LEVEL	WL
UNABLE TO RAISE	U7R	UNABLE TO MEASURE	U7M
GIRTH OF TREE TRUNK	G	DIAMETER OF TREE TRUNK	D
HEIGHT TO TOP OF TREE CANOPY	H	MULTI BOLE TREE	MB

Rev	Date	Drawn	Description	Check
-	--/--/----	--	--	--

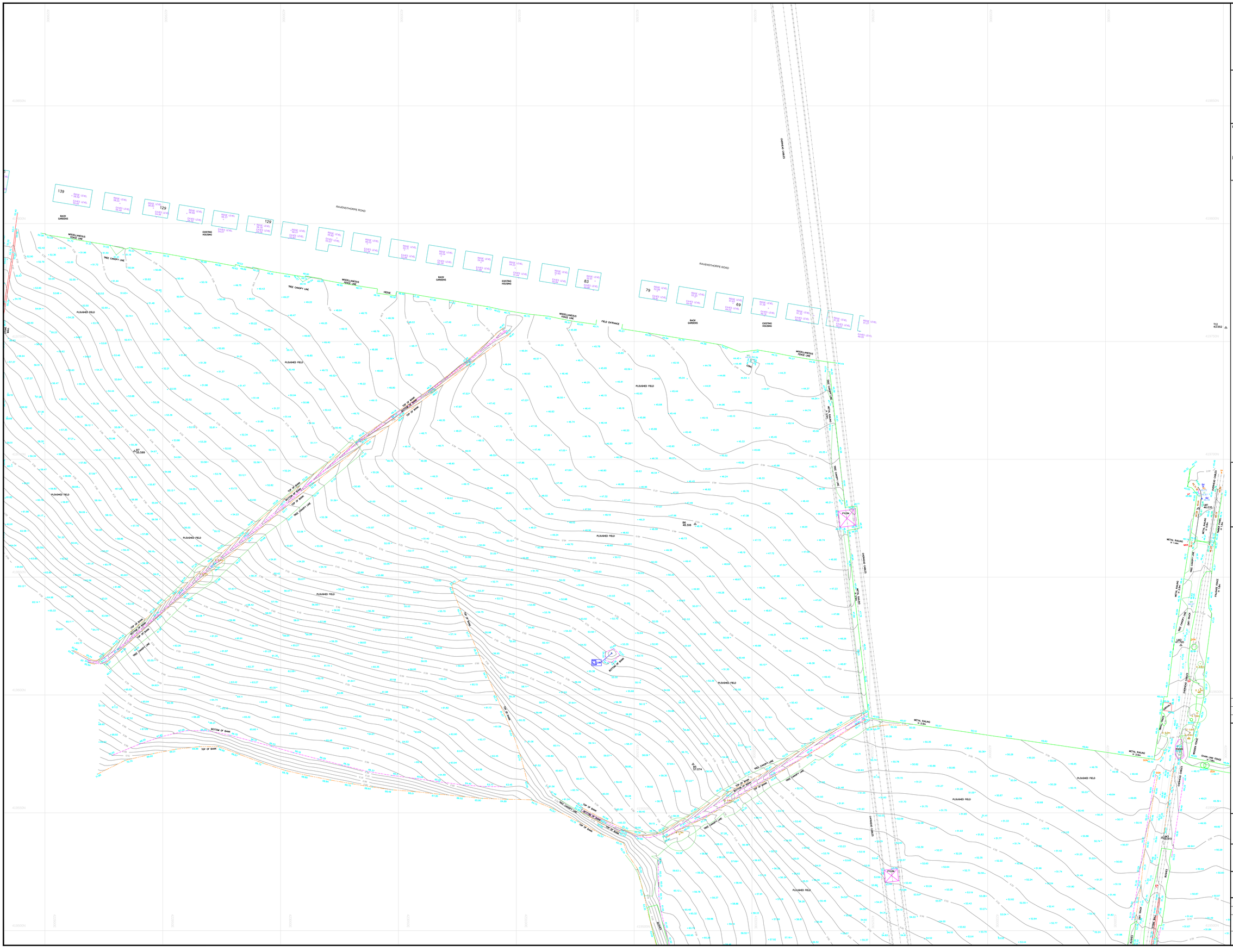
Met GEO ENVIRONMENTAL
Southgate House
Pontefract Road
Stourton
Leeds
West Yorkshire
LS10 1SW
T: +44 [0] 1132 008 900
F: +44 [0] 1132 008 901
E: admin@metgeoenvironmental.com
W: www.metgeoenvironmental.com

Client
SPAWFORTHS

Site
LOCK WAY, RAVENSTHORPE
DEWSBURY, WF13 3SX

Title
TOPOGRAPHICAL SURVEY
3D

Surveyed	PM LM RD PF BH SJ	Drawn	BH RD
Chk.	DA	Date	29/01/2016
Scale	1/500	DWG Ref (Layout No)	11991-330-2_3DT (1)
Status	FINAL		
Job No	11991-330-2	Rev	T



Notes

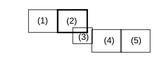
Direction of North

Grid : OS National Grid.
Using the OS GPS Network and applying OSTN02 transformation and then removing the scale factor for true distances with a one-step transformation centred on S1

Datum : OS Level Datum.
Using the OS GPS Network and applying OSGM02 National Geoid Model to obtain local area corrections.

Station Listing

Layout Key



KEY

AIR VALVE	AV	KERB OUTLET	KO
BENCH MARK	BM	LAMP POST	LP
BIN	BIN	MANHOLE (CIRCULAR)	MH
BOLLARD	BOL	MANHOLE (RECTANGULAR)	MH
BORE HOLE	BH	MANHOLE (TRIANGULAR)	MH
BRITISH TELECOM COVER	BT	MARKER POST	MKR
BUS STOP	BUS	GULLY	GY
CABLE TV COVER	CATV	RODDING EYE	RE
CABLE TV SUPPLY	CA	SIGN POST	SIGN
COLUMN	COL	TELECOM COVER	TC
EARTHING POINT	EP	TELEGRAPH POLE	TP
ELECTRICITY COVER	ELEC	THRESHOLD LEVEL	TH
ELECTRICITY POLE	EP	TRAFFIC LIGHT	TL
FIRE HYDRANT	FH	TRIAL PIT	TP
GAS VALVE	GAS	WASH OUT	WO
GATE		WATER METER	WM
INSPECTION COVER (CIRCULAR)	IC	WATER STOP COCK	SC
INSPECTION COVER (RECTANGULAR)	IC	WATER STOP VALVE	SV
COVER LEVEL	CL	CHAMBER BASE LEVEL	Ch.L
INVERT LEVEL	IL	WATER SURFACE LEVEL	WL
UNABLE TO RAISE	UTR	UNABLE TO MEASURE	UTM
GIRTH OF TREE TRUNK	G	DIAMETER OF TREE TRUNK	D
HEIGHT TO TOP OF TREE CANOPY	H	MULTI BOLE TREE	MB

Rev	Date	Drawn	Description	Check
-	--/--/----	--	--	--

Met GEO ENVIRONMENTAL
Southgate House
Pontefract Road
Stourton
Leeds
West Yorkshire
LS10 1SW
T: +44 [0] 1132 008 900
F: +44 [0] 1132 008 901
E: admin@metgeoenvironmental.com
W: www.metgeoenvironmental.com

Client
SPAWFORTHS

Site
LOCK WAY, RAVENSTHORPE
DEWSBURY, WF13 3SX

Title
TOPOGRAPHICAL SURVEY
3D

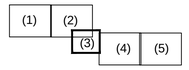
Surveyed	PM LM RD PF BH SJ	Drawn	BH RD
Chk.	DA	Date	29/01/2016
Scale [A0 Sheet]	1/500	DWG Ref (Layout No)	11991-330-2_3DT (2)
Status	FINAL		
Job No	11991-330-2	Rev	i

Station Listing

Notes

This drawing and the information contained therein is issued in confidence and is the copyright of Met Geo Environmental Ltd. Disclosure of this information to Third Parties and unauthorised copying or replication of this data without approval is forbidden.

Layout Key



Grid : OS National Grid.
Using the OS GPS Network and applying OSTN02 transformation and then removing the scale factor for true distances with a one-step transformation centred on S1

Datum : OS Level Datum.
Using the OS GPS Network and applying OSGM02 National Geoid Model to obtain local area corrections.

Direction of North

KEY

AIR VALVE	AV	KERB OUTLET	KO
BENCH MARK	BM	LAMP POST	LP
BIN	BIN	MANHOLE (CIRCULAR)	MH
BOLLARD	BOL	MANHOLE (RECTANGULAR)	MH
BORE HOLE	BH	MANHOLE (TRIANGULAR)	MH
BRITISH TELECOM COVER	BT	MARKER POST	MKR
BUS STOP	BUS	GULLY	GU
CABLE TV COVER	CATV	RODDING EYE	RE
CABLE TV SUPPLY	CA	SIGN POST	SIGN
COLUMN	COL	TELECOM COVER	TEL
EARTHING POINT	ER	TELEGRAPH POLE	TP
ELECTRICITY COVER	ELEC	THRESHOLD LEVEL	THL
ELECTRICITY POLE	EP	TRAFFIC LIGHT	TL
FIRE HYDRANT	FH	TRIAL PIT	PIT
GAS VALVE	GAS	WASH OUT	WO
GATE		WATER METER	WM
INSPECTION COVER (CIRCULAR)	IC	WATER STOP COCK	SC
INSPECTION COVER (RECTANGULAR)	IC	WATER STOP VALVE	SV

COVER LEVEL	CL	CHAMBER BASE LEVEL	Ch.L
INVERT LEVEL	IL	WATER SURFACE LEVEL	WL
UNABLE TO RAISE	UTR	UNABLE TO MEASURE	UTM
GIRTH OF TREE TRUNK	G	DIAMETER OF TREE TRUNK	D
HEIGHT TO TOP OF TREE CANOPY	H	MULTI BOLE TREE	MB

Rev	Date	Drawn	Description	Check
-	--/--/----	--	--	--

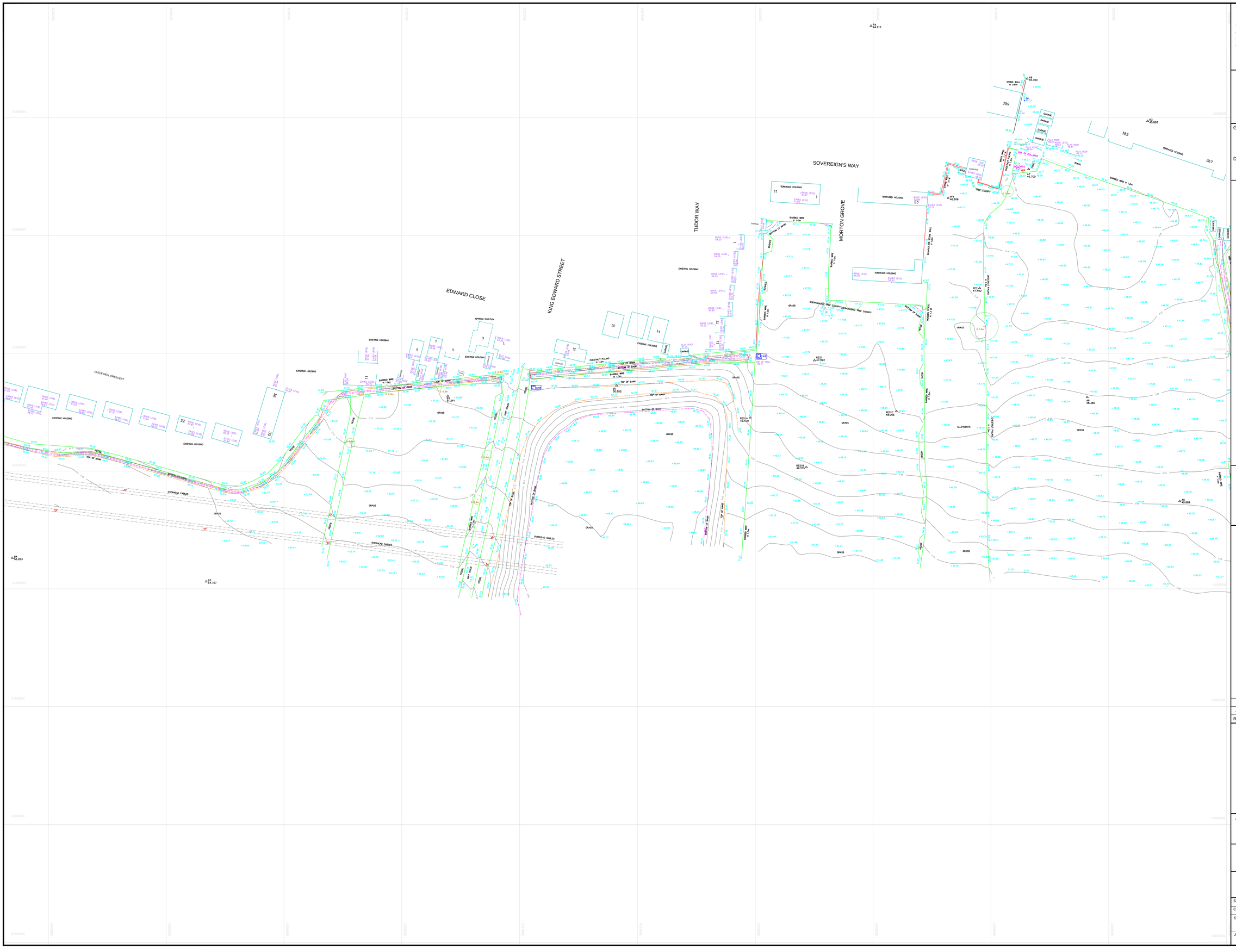
Met GEO ENVIRONMENTAL
Southgate House
Pontefract Road
Stourton
Leeds
West Yorkshire
LS10 1SW
T: +44 [0] 1132 008 900
F: +44 [0] 1132 008 901
E: admin@metgeoenvironmental.com
W: www.metgeoenvironmental.com

Client
SPAWFORTHS

Site
LOCK WAY, RAVENSTHORPE
DEWSBURY, WF13 3SX

Title
TOPOGRAPHICAL SURVEY
3D

Surveyed	PM LM RD PF BH SJ	Drawn	BH RD
Chk.	DA	Date	29/01/2016
Scale [A1 Sheet]	1/500	DWG Ref (Layout No)	11991-330-2_3DT (3)
Status	FINAL		
Job No	11991-330-2	Rev	ï



Notes

This drawing and the information contained therein is issued in confidence and is the copyright of Met Geo Environmental Limited. Disclosure of this information to Third Parties and unauthorised copying or replication of this data without approval is forbidden.

Direction of North

Grid : OS National Grid.
Using the OS GPS Network and applying OSTN02 transformation and then removing the scale factor for true distances with a one-step transformation centred on S1

Datum : OS Level Datum.
Using the OS GPS Network and applying OSGM02 National Geoid Model to obtain local area corrections.

Station Listing

Layout Key

(1) (2) (3) (4) (5)

KEY

AIR VALVE	AV	KERB OUTLET	KO
BENCH MARK	BM	LAMP POST	LP
BIN	BIN	MANHOLE (CIRCULAR)	MH
BOLLARD	BOL	MANHOLE (RECTANGULAR)	MAN
BORE HOLE	BH	MANHOLE (TRIANGULAR)	MAN
BRITISH TELECOM COVER	BT	MARKER POST	MKR
BUS STOP	BUS	GULLY	GU
CABLE TV COVER	CATV	RODDING EYE	RE
CABLE TV SUPPLY	CATV	SIGN POST	SIGN
COLUMN	COL	TELECOM COVER	TEL
EARTHING POINT	EP	TELEGRAPH POLE	TP
ELECTRICITY COVER	ELEC	THRESHOLD LEVEL	TH
ELECTRICITY POLE	EP	TRAFFIC LIGHT	TL
FIRE HYDRANT	FH	TRIAL PIT	TP
GAS VALVE	GAS	WASH OUT	WO
GATE		WATER METER	WM
INSPECTION COVER (CIRCULAR)	IC	WATER STOP COCK	SC
INSPECTION COVER (RECTANGULAR)	IC	WATER STOP VALVE	SV
COVER LEVEL	CL	CHAMBER BASE LEVEL	ChLL
INVERT LEVEL	IL	WATER SURFACE LEVEL	WL
UNABLE TO RAISE	U/R	UNABLE TO MEASURE	U/M
GIRTH OF TREE TRUNK	G	DIAMETER OF TREE TRUNK	D
HEIGHT TO TOP OF TREE CANOPY	H	MULTI BOLE TREE	MB

Rev	Date	Drawn	Description	Check
-	--/--/----	--	--	--

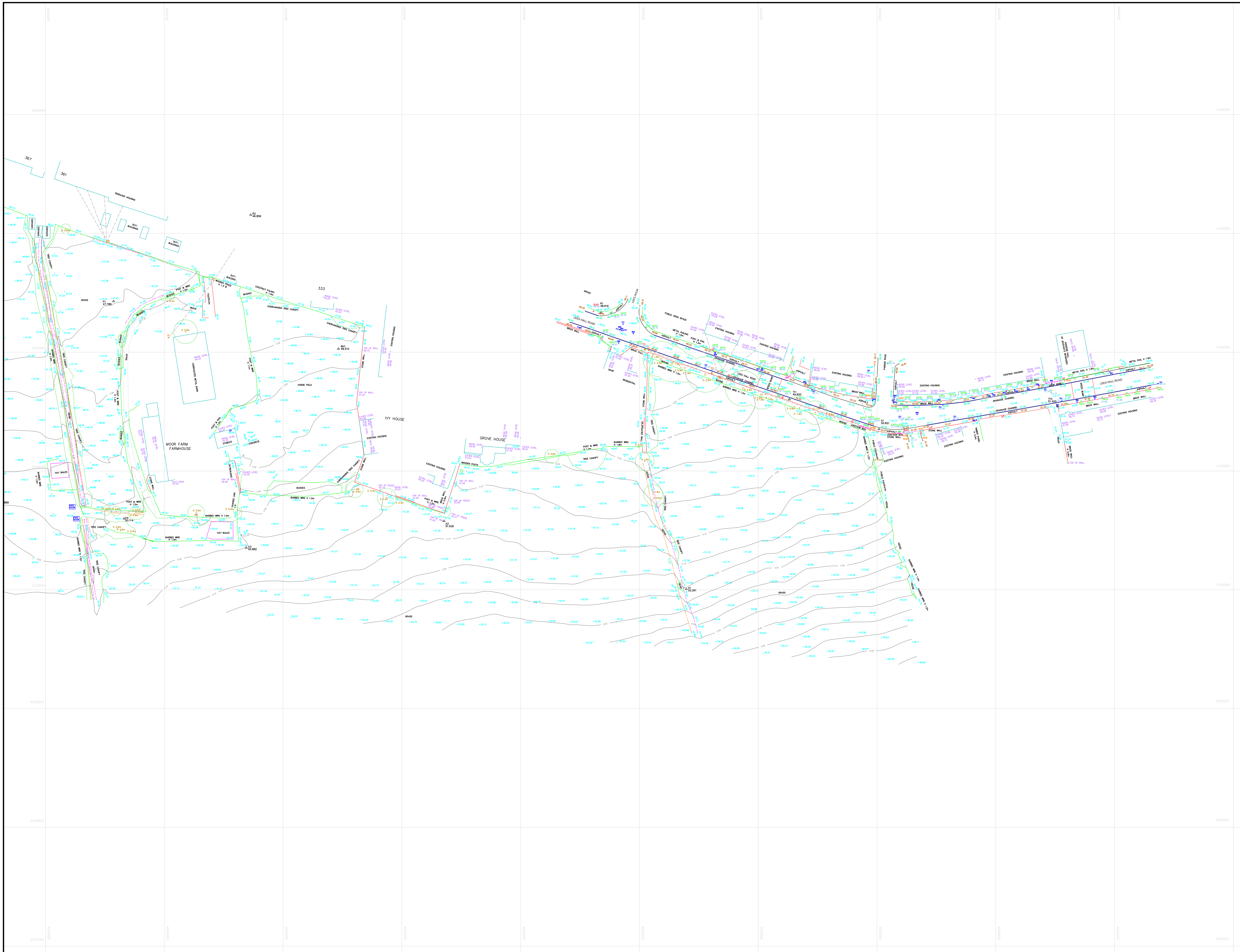
Met® GEO ENVIRONMENTAL
Southgate House
Pontefract Road
Stourton
Leeds
West Yorkshire
LS10 1SW
T: +44 [0] 1132 008 900
F: +44 [0] 1132 008 901
E: admin@metgeoenvironmental.com
W: www.metgeoenvironmental.com

Client
SPAWFORTHS

Site
LOCK WAY, RAVENSTHORPE
DEWSBURY, WF13 3SX

Title
TOPOGRAPHICAL SURVEY
3D

Surveyed	PM LM RD PF BH SJ	Drawn	BH RD
Chk.	DA	Date	29/01/2016
Scale [A0 Sheet]	1/500	DWG Ref (Layout No)	11991-330-2_3DT (4)
Status	FINAL		
Job No	11991-330-2	Rev	I



Notes
This drawing and the information contained therein is issued in confidence and is the copyright of Met Geo Environmental Limited. Disclosure of this information to Third Parties and unauthorised copying or replication of this data without approval is forbidden.

N
Direction of North

Grid : OS National Grid. Using the OS GPS Network and applying OSTN02 transformation and then removing the scale factor for true distances with a one-step transformation centred on S1

Datum : OS Level Datum. Using the OS GPS Network and applying OSGM02 National Geoid Model to obtain local area corrections.

Station Listing

Layout Key

(1) (2) (3) (4) (5)

KEY

AIR VALVE	AV	KERB OUTLET	KO
BENCH MARK	BM	LAMP POST	LP
BIN	BIN	MANHOLE (CIRCULAR)	MH
BOLLARD	BOL	MANHOLE (RECTANGULAR)	MH
BORE HOLE	BH	MANHOLE (TRIANGULAR)	MH
BRITISH TELECOM COVER	BT	MARKER POST	MKR
BUS STOP	BUS	GULLY	GU
CABLE TV COVER	CATV	RODDING EYE	RE
CABLE TV SUPPLY	CA	SIGN POST	SIGN
COLUMN	COL	TELECOM COVER	TEL
EARTHING POINT	ER	TELEGRAPH POLE	TP
ELECTRICITY COVER	ELEC	THRESHOLD LEVEL	THL
ELECTRICITY POLE	EP	TRAFFIC LIGHT	TL
FIRE HYDRANT	FH	TRIAL PIT	PIT
GAS VALVE	GAS	WASH OUT	WO
GATE		WATER METER	WM
INSPECTION COVER (CIRCULAR)	IC	WATER STOP COCK	SC
INSPECTION COVER (RECTANGULAR)	IC	WATER STOP VALVE	SV
COVER LEVEL	CL	CHAMBER BASE LEVEL	Ch.L
INVERT LEVEL	IL	WATER SURFACE LEVEL	WL
UNABLE TO RAISE	UTR	UNABLE TO MEASURE	UTM
GIRTH OF TREE TRUNK	G	DIAMETER OF TREE TRUNK	D
HEIGHT TO TOP OF TREE CANOPY	H	MULTI BOLE TREE	MB

Rev	Date	Drawn	Description	Check
-	--/--/----	--	--	--

Met GEO ENVIRONMENTAL

Southgate House
Pontefract Road
Stourton
Leeds
West Yorkshire
LS10 1SW

T: +44 [0] 1132 008 900
F: +44 [0] 1132 008 901
E: admin@metgeoenvironmental.com
W: www.metgeoenvironmental.com

Client: SPAWFORTHS

Site: LOCK WAY, RAVENSTHORPE DEWSBURY, WF13 3SX

Title: TOPOGRAPHICAL SURVEY 3D

Surveyed	PM LM RD PF BH SJ	Drawn	BH RD
Chk.	DA	Date	29/01/2016
Scale [A0 Sheet]	1/500	DWG Ref (Layout No)	11991-330-2_3DT (5)
Status	FINAL		
Job No	11991-330-2	Rev	Ï

A P P E N D I X C

ENVIRONMENT AGENCY CONSULTATION

Dave Griffiths

From: Milner, Debbie A <debbie.milner@environment-agency.gov.uk>
Sent: Wednesday 2 March, 2016 2:23 pm
To: Dave Griffiths
Subject: Your Enquiry: RFI/2016/35962
Attachments: Standard_Notice sept 2012.pdf; Flood Map for Planning.pdf; Risk of Flooding From Surface Water Map.pdf

Our Ref: RFI/2016/35962

Your Ref:

Dear Dave

RE: 425-64 Dewsbury Riverside, Dewsbury
Request for information under the Freedom of Information Act 2000 (FOIA) / Environmental Information Regulations 2004 (EIR)

Thank you for your enquiry which was received on 11 December 2016. I am sorry for the delay in responding to your request.

The Flood Map for Planning

The Environment Agency provides the Flood Map (see enclosed extract).

What is the Flood Map for Planning?

The Flood Map for Planning provides information on flooding from rivers and the sea for England and Wales. The Flood Map also has information on flood defences and the areas benefiting from those flood defences.

The Flood Map for Planning shows the following:

1. Flood Zone 3 (dark blue area on the enclosed map): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences
   - For flooding from rivers the map indicates the extent of a flood with a 1% (1 in 100) chance of happening each year;
   - For flooding from the sea the map shows the extent of a flood with a 0.5% (1 in 200) chance of happening each year.

2. Flood Zone 2 (light blue area): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences. Flood Zone 2:
   - indicates the extent of a flood with a 0.1% (1 in 1000) chance of happening each year.
   - and/or indicates the greatest recorded historic flood, whichever is greater.

3. Flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, together with some natural or constructed entities which retain, store or channel water and which may protect against smaller floods.

4. Areas benefiting from flood defences - areas that benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would flood.

Flood History

To the best of our knowledge there is no known flood history for this site. For local drainage information please contact your water utility company and your local council.

Water causing flooding can come from different places, for example from rivers or the sea; surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system); overflowing or backing up of sewers or drainage systems which have been overwhelmed or from groundwater rising up from underground aquifers.

Currently the Environment Agency can only supply flood risk data relating to the risk of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed. Local Authorities and/or Water Companies may be able to provide some knowledge on the risk of flooding from sources other than rivers and the sea and we are working with these organisations to improve knowledge and understanding of surface water flooding.

Assets

There are no flood defences helping to reduce flood risk in your area of interest.

Modelling

We can confirm that the site falls within Flood Zone 1. We can therefore not provide any relevant modelled flood levels.

Surface Water Map

Enclosed is a map of showing the risk of flooding from surface water for this area, produced in partnership with Local Authorities.

Discharge of Surface Water

As of the 15th April 2015, the Environment Agency no longer a statutory consultee for surface water drainage proposals. The lead Local Flood Authority should be consulted in relation to the suitability and acceptability of any surface water management scheme.

LIDAR Data

Please note that our LiDAR data is now available free of charge (Open Data) from http://environment.data.gov.uk/ds/survey.

Two LIDAR products are available:

1. Tiled LIDAR data - The full tiled dataset consists of historic LIDAR data which has been gathered since 1998. For some areas we have carried out repeat surveys and data is available in a range of resolutions.
2. Composite LIDAR data - The composite dataset is derived from a combination of our full tiled dataset which has been merged and re-sampled to give the best possible spatial coverage.

Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. This technique results in the production of an accurate, cost-effective terrain model suitable for assessing flood risk and other environmental applications.

The Environment Agency owns two LIDAR systems, which are installed in a survey aircraft along with its other operational remote sensing instruments.

The aircraft is positioned and navigated using Global Positioning System (GPS) corrected to known ground reference points. The aircraft typically flies at a height of about 800 metres above ground level and a scanning mirror allows a swath width of about 600 metres to be surveyed during a flight.

I hope that we have correctly interpreted your request. Please see the attached Standard Notice or licence for details of permitted use.

We respond to requests for recorded information that we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

If you are not satisfied with our response to your request for information you can contact us within 2 calendar months to ask for our decision to be reviewed.

We would be really grateful if you could spare five minutes to help us improve our service. Please click on the link below and fill in our survey – we use every piece of feedback we receive:

http://www.smartsurvey.co.uk/s/EnvironmentAgencyCustomerSurvey/?a=Y

If you require any further help, please do not hesitate to contact me.

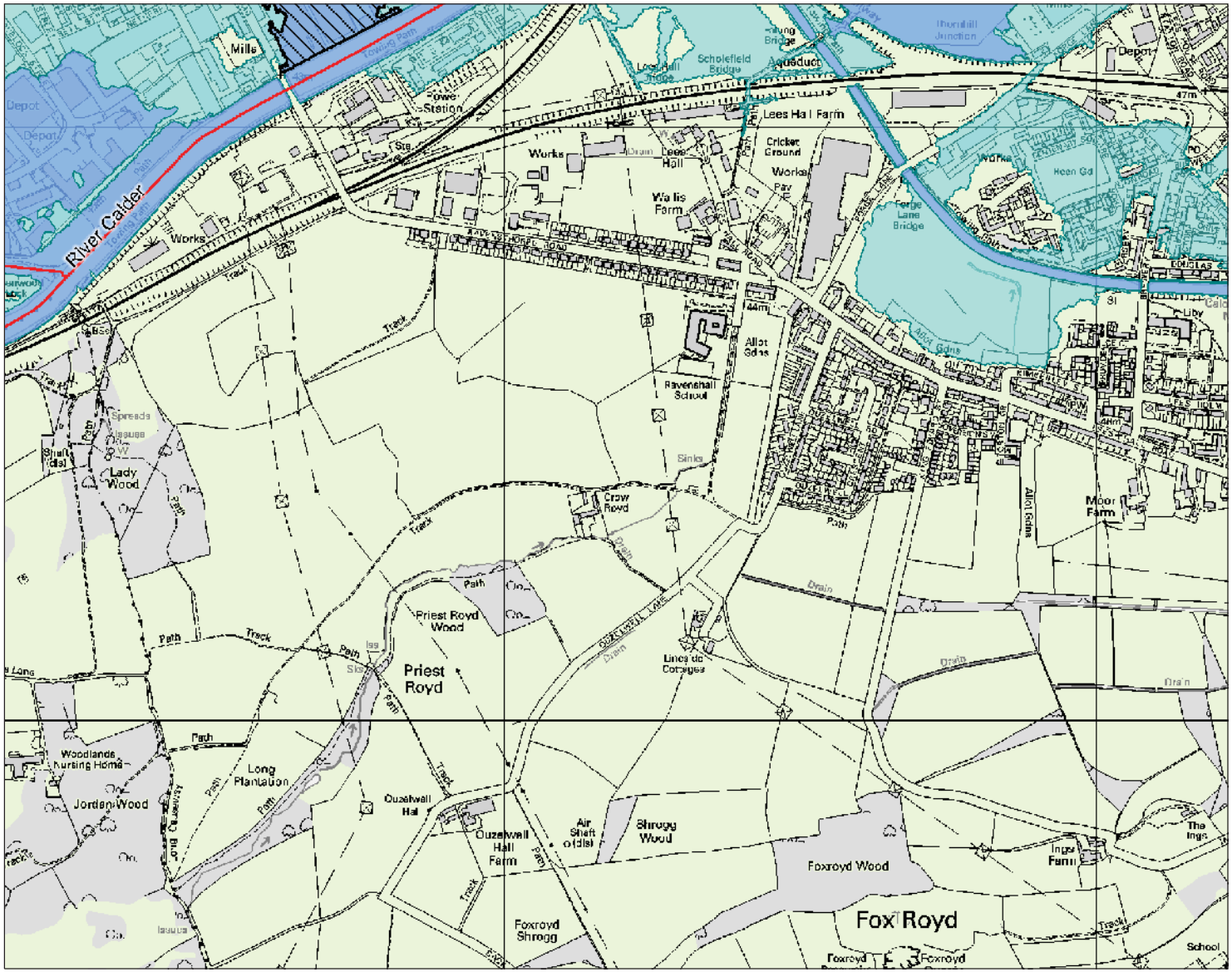
Yours sincerely

Debbie Milner
Customers and Engagement Team

Environment Agency
Lateral
8 City Walk
Leeds
LS11 9AT

Email: neyorkshire@environment-agency.gov.uk
External Number: 02030256448
Internal Number: 56448

Flood Map for Planning - Dewsbury Riverside - RFI39562



Environment Agency

Scale 1:10,000

N W E S

Flood Map for Planning (Rivers and Sea)

- Sealed Main Rivers
- Flood Map - Defences
- Areas Benefiting from Flood Defences
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2

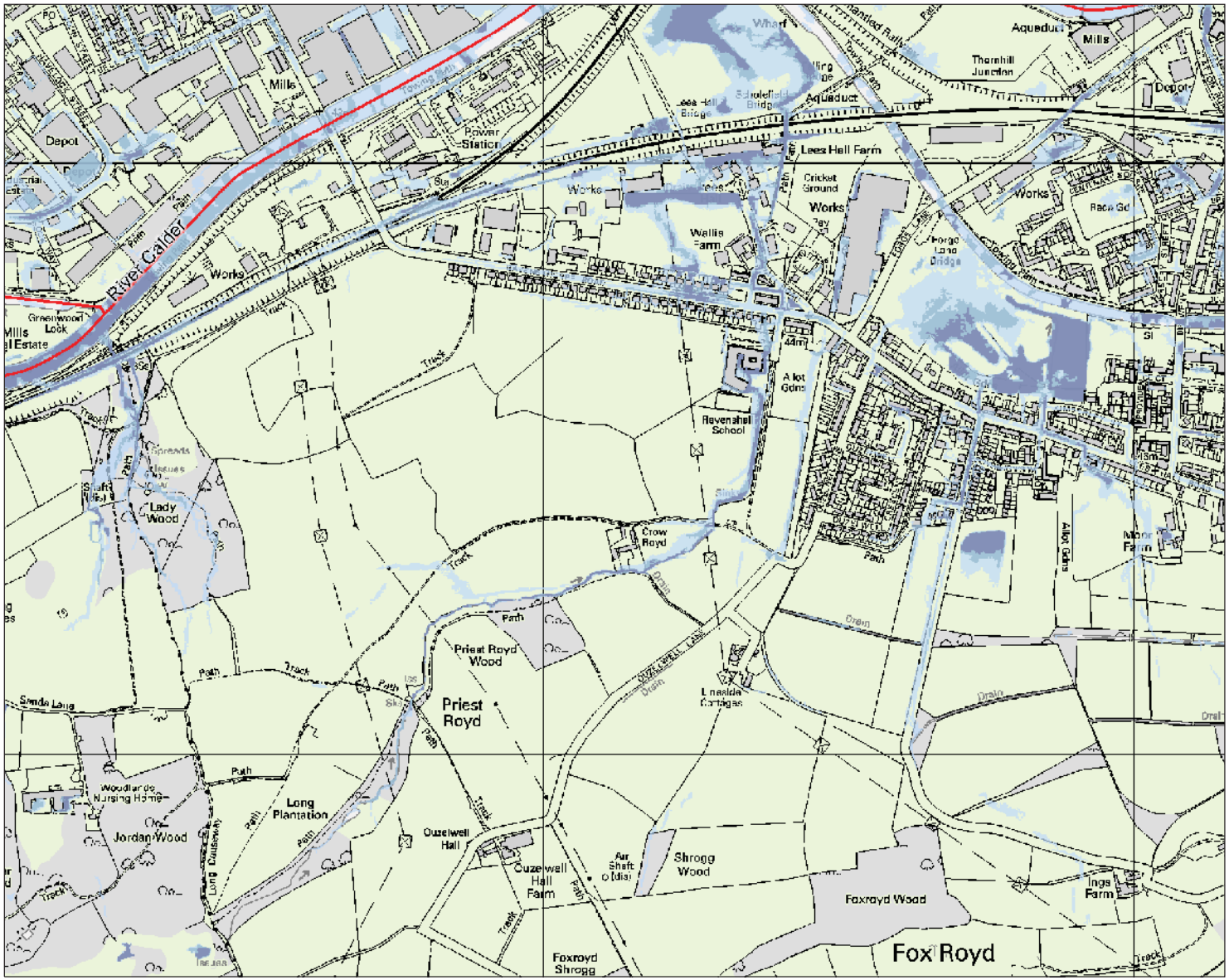
Flood Map for Planning (Rivers and Sea)
(assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Risk of flooding from Surface Water



Environment Agency

Scale 1:10,000

N W E S

Likelihood of flooding from Surface Water

- High
- Medium
- Low
- Very Low

Likelihood of flooding from Surface Water

High:	Greater than or equal to 1 in 30 (3.3%) chance in any given year
Medium:	Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year
Low:	Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year
Very Low:	Less than 1 in 1,000 (0.1%) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on our website.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

A P P E N D I X D

WATER AUTHORITY CONSULTATION

YorkshireWater

Yorkshire Water Services
Developer Services
Sewerage Technical Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax: (01274) 372 834

Email:
Technical.Sewerage@yorkshirewater.co.uk
For telephone enquiries ring:
Robert Illingworth on 0345 120 8482

Arp Associates
Unit 5/6 Northwest Business Park
1ST FLR Servia Hill
Woodhouse
Leeds
LS6 2QH

For the attention of Dave Griffiths

Your Ref: 425/64
Our Ref: R019500

Date: 23/12/2015

Dear Sirs,

Dewsbury Riverside, Dewsbury - Pre-Planning Sewerage Enquiry on R036492

Thank you for your recent enquiry. Our charge of £150.00 (plus VAT) will be added to your account with us, reference ARP013.You will receive an invoice for your account in due course.

Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records. The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months:

Treatment

The local Waste Water Treatment Works (WWTW) is Dewsbury WWTW . It is understood that this WWTW may only have limited spare capacity (taking the size of the development into account) available. We have contacted the respective treatment team for more information regarding the impact of proposed development and will contact you when an assessment has been made.

Existing Infrastructure

There are a 150 mm diameter public surface water sewer, a 225 mm diameter public foul sewer and a 375 mm diameter public surface water sewer recorded crossing the site between 385 and 399 Lees Hall Road. No buildings, or other obstructions, are to be erected within 3 (three) metres, nor trees planted within 5 (five) metres of the 375 mm public surface water. It may not be acceptable to raise or lower ground levels over the sewer, nor to restrict access to the manholes on the sewer. If you wish to have this sewer diverted under Section 185 of the Water Industry Act 1991 an application should be made in writing. To discuss this matter, please telephone 0345 120 84 82.

Please note also that as a result of the Water Industry (Scheme for Adoption of Private Sewers) Regulations 2011, there are public sewers not shown on our mapping records. It may be the case that there are unmapped sewers within the site which require protection.

Foul Water

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

The public sewer network does not have adequate capacity available to accommodate the anticipated foul water discharge from this proposal site.

In order to investigate potential solutions for foul water disposal from the site a feasibility study, carried out under section 98 of the Water Industry Act 1991 and at the developers expense, will be required to determine suitable foul connection points, any available capacity in the public sewer network, together with any likely costs and timescales for any potential upgrading woks required. It is understood that the investigation will require the creation of a Drainage Area Study (sewer modelling) to assess the potential impact of any proposed solution. The investigation may highlight solutions not discussed above. For further information please enquire at the above address.

An off-site foul sewer may be required which may be provided by the developer and considered for adoption under Section 104 of the Water Industry Act 1991. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Foul water from kitchens and/or food preparation areas of any restaurants and/or canteens etc. must pass through a fat and grease trap of adequate design before any discharge to the public sewer network.

Surface Water

The public sewer network does not have any capacity available to accept any discharge of surface water from the proposal.

SUDS contribute to managing the flooding and pollution aspects of drainage and help ensure that community and wildlife are considered in SUDS design. Recent changes have been made to planning policy to make sustainable drainage systems a material consideration in planning for major development.

The developer's attention is also drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to (where applicable) soakaway, infiltration system and watercourse in that priority order.

It is understood that a number of watercourses are located within the site. These appear to be the obvious place for surface water disposal.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

The site is within an area that may be affected by river, coastal or estuarine flooding. We would advise you to contact the Environment Agency for details.

Other Observations

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0345 120 84 82.

Prospectively adoptable sewers, pumping stations (and certain SUDS features as detailed in the attached guidance) must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior

YorkshireWater

to any works commencing on site. Please contact our Developer Services Team (telephone 0345 120 84 82) for further information.

Under the provisions of section 111 of the Water Industry Act 1991 it is unlawful to pass into any public sewer (or into any drain or private sewer communicating with the public sewer network) any items likely to cause damage to the public sewer network interfere with the free flow of its contents or affect the treatment and disposal of its contents. Amongst other things this includes fat, oil, nappies, bandages, syringes, medicines, sanitary towels and incontinence pants. Contravention of the provisions of section 111 is a criminal offence.

Surface water run-off from areas of vehicular parking and/or hardstanding etc. must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator.

It is imperative, however that surface water run-off from the forecourt of petrol stations, areas used for the delivery of fuel, areas used for and immediately adjacent to vehicle washing facilities and/or other similar areas where detergent is likely to be used is not discharged to any public surface water sewer network. Surface water from such areas must pass through an oil, petrol and grit interceptor/separator of adequate design before discharge to the public foul or combined sewer network. A trade effluent consent - that may be conditional and, amongst other things, place a restriction on the rate of discharge to public sewer - may be required for such discharges. The developer is advised to contact Yorkshire Water's Industrial Waste Section (telephone 0845 1242424) about any such proposal.

It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

Yorkshire Water's Trade Effluent team must be consulted in respect of any proposed trade effluent discharge to the public sewer.

The public sewer network is for domestic sewage purposes. This generally means foul water for domestic purposes and, where a suitable surface water or combined sewer is available, surface water from the roofs of buildings together with surface water from paved areas of land appurtenant to those buildings. Land and highway drainage have no right of connection to the public sewer network. No land drainage to be connected/discharged to public sewer.

All the above comments are based upon the information and records available at the present time. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours faithfully

Robert Illingworth
Senior Engineer
Developer Services

YorkshireWater

Head of Planning Services
Kirklees Metropolitan District Council
P.O. Box B93
Civic Centre
Huddersfield
HD1 2JR

LAND USE PLANNING
YORKSHIRE WATER SERVICES LTD
MIDWAY
WESTERN HOUSE, WESTERN WAY
HALIFAX ROAD
BRADFORD BD6 2LZ

12th February 2016

Tel: 01274 692349
Email:
stephanie.walden@yorkshirewater.co.uk

Dear Ms Orme,

Kirklees Draft Local Plan - Yorkshire Water comments on the Strategy & Policies Document and Accepted Site Options.

Thank you for consulting Yorkshire Water regarding the Kirklees Local Plan. We have the following comments on the draft Strategy and Policies Document and the Accepted Site Options.

A) DRAFT STRATEGY & POLICIES DOCUMENT

Chapter 4 Delivering growth and sustainable development

Policy DLP4 Master-planning sites. Yorkshire Water fully supports **Policy DLP21(a)** that will ensure master plans include development layout and importantly, implementation and phasing of development. The approach will assist in ensuring the timely provision of the water and waste water infrastructure necessary to serve the development. **Part (i)** of this policy that seeks to ensure "timely delivery of physical infrastructure, including sewage connections", is similarly welcomed. **Part (m)** should ensure both that developers consider surface water management at the earliest possible stage of the development and the strategy is both relevant to the whole development and is implemented in accordance with the phasing of the site.

We therefore consider the policy to be compliant with both the National Planning Policy Framework (NPPF) and national Planning Practice Guidance.

Chapter 7 Homes

Para.7.27 Yorkshire Water notes that Kirklees Council will "Following adoption of the Local Plan, the council will continue to monitor the potential phasing of sites through the Strategic Housing Land Availability Assessment (SHLAA)". It is essential that, if the phasing of large sites is altered during the Plan period, Yorkshire Water is consulted at the earliest possible opportunity to ensure that adequate water and waste water infrastructure is provided to serve the development.

Chapter 9 Transport

Yorkshire Water supports **Policy DLP21(g)** which will ensure that new highways associated with new development "take into account surface water flooding and SuDS". We would suggest that "take into account" is better defined in this context, for example should highway drainage also follow the surface water hierarchy in some way (although note that highway drainage has no right of connection into the public sewer)?

Chapter 11- Climate change

Policy DLP 29 Drainage- Yorkshire Water welcomes and fully supports proposed **Policy DLP29** and supporting paragraphs 11.30 – 11.37 regarding drainage, flood risk and surface water management. The policy states:-

"The presumption is that Sustainable Drainage Systems (SuDS) will be used to assist in achieving the following on each site:
a. for proposals on greenfield sites, typical greenfield run-off rates should not be exceeded;

b. for proposals on brownfield sites there should be a minimum 30% reduction in surface water run-off where previous positive surface water connections from the site can be proven. New connections will be subject to at least greenfield restrictions;

c. improvements in water quality;

d. ensure proposed open spaces within sites contribute towards sustainable drainage schemes.

Local conditions including the existence of critical drainage areas may require a lower run-off rate to be agreed to reflect volume control, local surface water risks, water course capacity and flood risk further downstream.

There will be a general presumption against pumping surface water. It must also be demonstrated that the surface water management solution is designed to meet requirements over the lifetime of the development including evidence that management and maintenance arrangements have been secured to cover that period. This includes ensuring proposals to store water meet national standards and latest best practise.

Flow paths accommodating water from outside the site or due to an exceedance event should be designed to avoid buildings and curtilages.

Development will only be permitted if it can be demonstrated that the water supply and waste water infrastructure required is available or can be co-ordinated to meet the demand generated by the new development."

The policy promotes sustainable surface water management practice and also allows Yorkshire Water and developers to align the provision of additional waste water infrastructure with new development, particularly the proposed large housing sites.

Yorkshire Water similarly supports and promotes the surface water disposal hierarchy. Developers will be asked to provide evidence to demonstrate that surface water disposal via infiltration or watercourse are not reasonably practical on a site before considering disposal to public sewer.

Chapter 9 Transport

Yorkshire Water supports **Policy DLP21(g)** which will ensure that new highways associated with new development "take into account surface water flooding and SuDS". We would suggest that "take into account" is better defined in this context, for example should highway drainage also follow the surface water hierarchy in some way (although note that highway drainage has no right of connection into the public sewer)?

Chapter 11- Climate change

Policy DLP 29 Drainage- Yorkshire Water welcomes and fully supports proposed **Policy DLP29** and supporting paragraphs 11.30 – 11.37 regarding drainage, flood risk and surface water management. The policy states:-

"The presumption is that Sustainable Drainage Systems (SuDS) will be used to assist in achieving the following on each site:
a. for proposals on greenfield sites, typical greenfield run-off rates should not be exceeded;

b. for proposals on brownfield sites there should be a minimum 30% reduction in surface water run-off where previous positive surface water connections from the site can be proven. New connections will be subject to at least greenfield restrictions;

c. improvements in water quality;

d. ensure proposed open spaces within sites contribute towards sustainable drainage schemes.

Local conditions including the existence of critical drainage areas may require a lower run-off rate to be agreed to reflect volume control, local surface water risks, water course capacity and flood risk further downstream.

There will be a general presumption against pumping surface water. It must also be demonstrated that the surface water management solution is designed to meet requirements over the lifetime of the development including evidence that management and maintenance arrangements have been secured to cover that period. This includes ensuring proposals to store water meet national standards and latest best practise.

Flow paths accommodating water from outside the site or due to an exceedance event should be designed to avoid buildings and curtilages.

Development will only be permitted if it can be demonstrated that the water supply and waste water infrastructure required is available or can be co-ordinated to meet the demand generated by the new development."

The policy promotes sustainable surface water management practice and also allows Yorkshire Water and developers to align the provision of additional waste water infrastructure with new development, particularly the proposed large housing sites.

Yorkshire Water similarly supports and promotes the surface water disposal hierarchy. Developers will be asked to provide evidence to demonstrate that surface water disposal via infiltration or watercourse are not reasonably practical on a site before considering disposal to public sewer.

We therefore consider the policy to be compliant with both the National Planning Policy Framework (NPPF) and national Planning Practice Guidance as well as the Water Framework Directive.

Policy DLP 30 Management of water bodies- the policy rightly excludes reservoirs over 25,000 cubic metres because public safety is controlled under the Reservoirs Act 1995. Public water supply reservoirs within Kirklees are controlled under that Act.

The policy justification appears to be primarily concerned with retention of former mill ponds but also suggests that balancing ponds between 500-25,000m^3 would fall under the policy's remit. Consideration should be given as to whether the policy could conflict with effective surface water management, particularly if smaller water bodies eventually do fall under the Reservoirs Act. The Lead Local Flood Authority should perhaps be re-consulted with regard to whether any clarification of the policy wording is required.

Chapter 12 Natural Environment

DLP 33 Landscape- Yorkshire Water welcomes and fully supports proposed **Policy DLP33.** We will continue to work with stakeholders to conserve and enhance our land-holdings within Kirklees and adjacent land within the Peak District National Park

Policy DLP35- Conserving and enhancing the water environment. Yorkshire Water welcomes and fully supports proposed **Policy DLP35**. It states:-

Proposals will be supported which:
1. Do not result in the deterioration of water courses or water bodies and conserve and enhance:

a. the natural geomorphology of watercourses, including reinstating watercourses to their natural state through removal of modifications resulting from past industrial uses;

b. water quality; and

c. the ecological value of the water environment, including the functionality of habitat networks.

2. Make positive progress towards achieving 'good status or potential' under the Water Framework Directive in surface and groundwater bodies.

3. Ensure Source Protection Zones are protected from contamination as a result of the proposal in line with national guidance.

4. Manage water demand and improve water efficiency through appropriate water conservation
techniques including rainwater harvesting and grey-water recycling.

5. Improve water quality through the incorporation of appropriately constructed and maintained Sustainable Drainage Systems and surface water management techniques.

6. Dispose of surface water appropriately (in accordance with the Local Plan drainage policy) adhering to the following networks in order of preference:

a. to an infiltration based system wherever possible (such as soakaways);

b. discharge into a watercourse with the prior approval of the landowner, navigation authority or Environment Agency, where applicable. To comply with Part a. this must be following treatment where necessary or where no treatment is required to prevent pollution of the receiving watercourse;

c. discharge to a public sewer.

The policy promotes sustainable water management practice and reinforces other policies, notably DLP29. We therefore consider it to be compliant with both the National Planning Policy Framework (NPPF) and national Planning Practice Guidance as well as the Water Framework Directive.

Chapter 15- Waste

Para. 15.5 Yorkshire Water notes and welcomes the fact that the Local Plan will make provision for the management of "Wastes derived from sewage treatment works and sludge treatment plants".

B. ACCEPTED SITE OPTIONS

Yorkshire Water's response to this document have been made within the context of our support for the proposed policies referenced above.

Our comments reflect matters relating to water and waste water infrastructure and relevant legislation at the time of our response to the consultation i.e. January/February 2016. It is essential that future developers contact Yorkshire Water well in advance of any sites coming forward to assess any changes there may have been in the intervening period.

Yorkshire Water's comments are mostly not on an individual site basis. Observations have only been made where there are particular issues regarding water and sewerage infrastructure which will need to be taken into consideration by potential developers prior to development.

It should be noted that:-
a) local mains reinforcement of water/waste water networks could be required on any allocated sites (although most be likely to apply on the larger sites) but this would generally be dealt with via the Water Industry Act;

b) we have tried to identify sites with substantial existing waste water/water infrastructure laid within them with the potential to impact on future site layout. The list should not be considered definitive and it essential that future developers of any allocated (or windfall) sites contact Yorkshire Water at the earliest opportunity to ensure that the public sewer network and water supply is protected; and

b) there may be smaller diameter infrastructure within site boundaries which would, in most cases, fall under the control of Building Regulations.

We would be happy to further discuss any matters raised in our comments below.

Site References: H1772, H198, H222, H734,H224, H811, H1656, H1836

Please note that Yorkshire Water understands that all the above sites will be "brownfield" development)

Protection of sewerage infrastructure

There is existing sewerage infrastructure crossing all the above sites. Stand-off distances of between a minimum 3 and 6 metres (from the centre-lines of each pipe) will be required for each sewer thus affecting the layout of any future development and as such may be a material consideration in the determination of any future planning applications. The required width of any stand-off distance or other protective measure such as diversion, will have to be determined on an individual site/sewer basis. Also, it may not be acceptable to raise or lower ground levels over the sewerage, nor to restrict access to manholes.

A future developer may, where it is reasonable to do so, require a sewerage undertaker to alter or remove a pipe where it is necessary to enable that person to carry out a proposed improvement of land. This provision is contained in section 185 of the Water Industry Act 1991 (that also requires the developer to pay the full cost of carrying out the necessary works).

Please note that as a result of the Water Industry (Scheme for Adoption of Private Sewers) Regulations 2011, there may be unmapped sewers within the site requiring protection.

Surface water management

Given the brownfield status of these sites, if surface water will discharge to public sewer, it must have appropriate attenuation to allow for climate change. Currently, Yorkshire Water requests a minimum 30% reduction based on the existing peak discharge rate during a 1 in 1 year storm event, which we believe mirrors the requirement of draft Policy DLP29(b).

All future developers will be required to provide evidence of existing positive drainage to a public sewer from the site to the satisfaction of YWS/the LPA by means of physical investigation.

Site Reference H2089

Protection of sewerage infrastructure

Please note that as a result of the Water Industry (Scheme for Adoption of Private Sewers) Regulations 2011, there may be unmapped sewers within this site requiring protection. We believe there is a private sewer (watercourse) running parallel to the track to the west of Ravenshall School and which may be relevant to any future surface water management strategy.

Foul water drainage

The public sewer network currently does not have adequate capacity available to accommodate the anticipated foul water discharge from this proposal site i.e. the suggested total 4000 dwellings (with 2,300 within the Plan period). In order to investigate potential solutions for foul water disposal from the site a feasibility study, carried out under section 98 of the Water Industry Act 1991, may be required to determine suitable foul connection points, any available capacity in the public sewer network, together with any likely costs and