FOUL AND SURFACE WATER DRAINAGE STRATEGY

FOR

SITE AT PLANE STREET, HUDDERSFIELD

ON BEHALF OF

ACCENT HOUSING GROUP

ARP ASSOCIATES
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Foul and Surface Water Drainage Strategy for Site at Plane Street, Huddersfield 1375/02r1			
	Initial Issue **29th June 2020**	**Revision A**	**Revision B**
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Signature			
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C O N T E N T S

APPENDICES

1.0 INTRODUCTION

1.1 Accent Housing Group are proposing a residential development on the site of a former primary school, at Plane Street, Huddersfield. To support the planning application and assist with the appraisal of the site, a Foul and Surface Water Drainage Strategy is required to outline the proposed means of sustainably managing foul effluent and surface water runoff from the development.

1.2 ARP Associates have been appointed to carry out a Foul and Surface Water Drainage Strategy for the development, implement appropriate consultations and prepare a report to satisfy the requirements of the Planning Authority.

1.3 The consultations and site appraisal for this assessment were carried out between April and June 2020.

1.4 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.

1.5 Attention is drawn to the requirements of the Construction Design and Management Regulations 2015, and in particular, the duties and obligations of the Client.

2.0 SITE DESCRIPTION

General

2.1 The site is an irregular shaped piece of land extending to an area of approximately 0.9 hectares (ha). The site is located to the south of Plane Street, Huddersfield, HD4 6DF. The site is centred on Ordnance Survey Grid Reference 414589, 415414 and is considered to be 'brownfield'.

2.2 Site Location Plans are presented in Appendix A.

Current and Previous Use

2.3 The majority of the site (estimated to be approximately 0.5ha) was formerly occupied by a primary school, with the building surrounded by a playground and parking area. The site is currently derelict, with the school buildings having been demolished, but becoming vegetated by self-seeding plants.

2.4 The south-west and dieast of the site (estimated to be approximately 0.4ha) was, and remains, predominantly an area of green space, with heavy vegetation, although there are some existing garages in the far north-east of the site.

Boundaries

2.5 The site is bound on the north-east by a retaining wall, with levels stepping down from the site to the adjacent Plane Street. To the north-west the site bounds the rear gardens of existing residential properties in Malvern Rise. Stile Common, an area of open grassland, lies to the south-east and south-west of the site.

Topography and Vegetation

2.6 A topographical survey of the site was undertaken by Met Geo Environmental in October 2019. A copy is included in Appendix B for reference.

2.7 The survey indicates that the site slopes from south-west to north-east, with an average fall of approximately 12m. The undeveloped south-east and east of the site has an average slope of approximately 1 in 3, whilst the slope across the former school site is approximately 1 in 10.

2.8 Levels along the north-eastern boundary of the previously developed school area are of the order of 114m Above Ordnance Datum (mAOD). The north-east of the site is slightly lower, at around 110mAOD. Levels along Plane Street adjacent to the site are of the order of 111mAOD, but start to fall slightly towards a footpath at the eastern end, and also fall away from the site in the north. Levels along the south-eastern site boundary are of the order of 125mAOD.

Drainage

2.9 Yorkshire Water asset plans (Appendix D) show a 225mm diameter combined public sewer located in Plane Street to the north of the site, running towards the north-west, then turning along Plane Street towards the north-east.

2.10 In the absence of any other potential point of discharge, it is reasonable to assume that the foul and surface water drainage from the site, when in use as a primary school, was discharged to the combined sewer in Plane Street. There is no evidence to suggest that the drainage systems were removed when the buildings were demolished, and from the topographical survey it is evident that some gullies and manholes are present on site. Therefore, it is reasonably assumed that a connection to the combined sewer in Plane Street still exists, with the remaining impermeable areas draining via this means.

2.11 From Environment Agency and Ordnance Survey mapping, the closest Main River to the site is understood to be the River Holme, located approximately 400m west of the site. Ordnance Survey mapping also indicates a small unnamed watercourse located approximately 300m south-east of the site.

2.12 Information provided by the Lead Local Flood Authority (Appendix E) also suggests that there is a culverted watercourse running along Newsome Road, approximately 100m to the east of the site.

3.0 CONSULTATION

Environment Agency

3.1 A consultation and flood data request was submitted to the Environment Agency, and a copy of their response, reference RFI/2020/169751 dated 10th June 2020, is presented in Appendix C for reference. Publicly available Environment Agency data has also been reviewed.

3.2 The Environment Agency Flood Map for Planning shows areas of land that may flood from rivers or the sea to be shaded blue. These areas do not take into account defences, as water can overtop them or the defences can fail in extreme conditions. The Zone classifications are:-

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 Flood Map for Planning confirms that the site is within Flood Zone 1.

3.4 Following the Flood and Water Management Act 2010, Lead Local Flood Authorities are responsible for the management of groundwater and surface water flooding. However, the

EA Risk of Flooding from Surface Water map, which shows areas where surface water only would be expected to flow or pond, is also available online. All land in England and Wales will be within 'one' of a possible 'four' categories. The four categories shown on the map are:-

3.4.1 Very low - This area has a chance of flooding of less than 1 in 1000 (0.1%) in any given year.

3.4.2 Low - This area has a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%) in any given year.

3.4.3 Medium - This area has a chance of flooding between 1 in 100 (1%) and 1 in 30 (3.3%) in any given year.

3.4.4 High - This area has a chance of flooding greater than 1 in 30 in any given year (annual probability of flooding 3.3%).

3.5 The Environment Agency Risk of Flooding from Surface Water map suggests that the whole of the site is at a 'very low' risk of surface water flooding.

3.6 The Environment Agency confirmed that it holds no records of flooding having affected the site.

3.7 Details of local Environment Agency flood defences and structures were provided, but as flood risk to the site is low these are not directly relevant to this assessment.

Water Authority

3.8 Consultation was undertaken with Yorkshire Water, the Water Authority for this area, and a copy of their response, reference W005630 dated 13th May 2020, is presented in Appendix D for reference.

3.9 Yorkshire Water provided a copy of the public sewer records for the site, which show no sewers within the site itself. However, Yorkshire Water note that, due to the change in legislation in October 2011, 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. The local sewers are discussed in Section 2.

3.10 It is noted that development of the site should take place with separate systems for foul and surface water drainage, extending to the points of discharge to be agreed.

3.11 It was confirmed that foul water domestic waste can discharge to the combined sewer "to the north of the site" i.e. that in Plane Street.

3.12 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.

3.13 Yorkshire Water confirmed that, subject to satisfactory evidence of why other methods of surface water disposal have been discounted, surface water from this site may drain to the combined public sewer in Plane Street. The maximum rate of surface water discharge shall be restricted to 5l/s.

Lead Local Flood Authority

3.14 Consultation was undertaken with Kirklees Council, which is the Lead Local Flood Authority (LLFA) for this area, and a copy of their responses, dated 24th April 2020 and 24th June 2020, are presented in Appendix D for reference.

3.15 The LLFA confirmed that it holds no records of flooding having affected the site. There is a record of flooding having affected the garden of a property in Malvern Rise to the west, although the cause of this is not given.

3.16 The LLFA confirmed that there are no known watercourses within the site, but noted a recorded culvert running along Newsome Road approximately 100m east of the site. The LLFA noted that the diameter of the culvert is unknown and would need to be confirmed. A plan of the approximate culvert location was provided.

3.17 It was noted that, should infiltration be unfeasible as a means of draining the site, the LLFA would expect the feasibility of discharging surface water to the above culvert to be investigated (i.e. in preference to a discharge to the combined sewer). Further correspondence with the LLFA confirmed that 5l/s would be considered an acceptable rate of surface water discharge to the culvert, if confirmed to be technically feasible.

4.0 CLIMATE CHANGE

4.1 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. United Kingdom climate change guidance was revised in February 2016 for peak river flows and peak rainfall intensities.

4.2 In accordance with the revised climate change data, the published figures show that for an expected development life of greater than 50 years, the anticipated increase in rainfall could range from 20% to 40%, subject to the location within the country.

4.3 The outline surface water drainage strategy (discussed further below) has therefore been defined with respect to a 30% additional allowance.

5.0 DEVELOPMENT PROPOSALS

5.1 The development proposals for the site comprise 30 new residential dwellings, with associated access. The heavily vegetated south-east of the site is to remain undeveloped. An indicative development masterplan is presented in Appendix F for reference.

6.0 SURFACE WATER DRAINAGE

6.1 It is a requirement of the NPPF to ensure that surface water run-off from any proposed development has negligible consequence on downstream areas, either in terms of impact upon downstream sewer capacity or flood risk impacts due to discharge to a watercourse. The existing and proposed surface water run-off regime is considered below.

6.2 This section should be read in conjunction with the ARP Indicative Foul and Surface Water Drainage Strategy drawing 1375/02/05, which has been prepared to illustrate the proposals.

Existing Surface Water Run-off

6.3 Although a drainage survey has not been undertaken at this stage, it can be reasonably assumed that surface water from the former school site is likely to have been discharged to the combined public sewer in Plane Street. Historical aerial imaging suggests the school site was approximately 80% impermeable when in use. Using the Rational Method, an estimate of the likely runoff from the former school site has been undertaken, assuming a rainfall intensity of 50mm/hr. On this basis it is estimated the previous rate of surface water runoff may have been up to 55.6l/s.

6.4 However, although the buildings have been demolished to slab level, it is likely that the drainage systems remain in place, although their condition may be poor and the significant self-seeding vegetation which has grown on the site is likely to attenuate much of the current surface water runoff. The runoff rate may therefore currently be less than 55.6l/s.

6.5 Surface water from the previously undeveloped areas is likely to have been attenuated within those areas by the dense vegetation, before running off into the site or into the adjacent highway.

Infiltration

6.6 As per the hierarchy set out in Building Regulations Part H (2010), consideration of the proposed means of surface water drainage should firstly be given to infiltration techniques (to ground).

6.7 Review of available British Geological Survey (BGS) online mapping suggests that the site is likely to be devoid of superficial geology, with bedrock geology comprising 'Mudstone, Siltstone and Sandstone' of the 'Pennine Lower Coal Measures Formation'.

6.8 A Phase 2 Site Investigation report for the site, prepared Solmek Ltd (reference S190939/SI dated April 2020), identifies that the general geology of the site comprises made ground over "alternating bands of clay and silt, underlain by a completely weathered mudstone". The mudstone, encountered as "stiff to very stiff consistency very gravelly high to very high strength clay" was recorded in the majority of boreholes and trial pits, at depths of between 0.3m and 3.0m.

6.9 Based on the above ground conditions, the use of infiltration to facilitate drainage of surface water from the site is not considered feasible.

Proposed Surface Water Drainage

6.10 A the use of soakaways is not considered to be feasible, then as per the hierarchy set out in Building Regulations Part H (2010) consideration should be given to discharge of surface water to a watercourse.

6.11 As confirmed by consultation with the LLFA, there is understood to be a culverted watercourse within Newsome Road, approximately 100m east of the site, and the LLFA would expect this to be considered as a point of discharge. On this basis, it is proposed that surface water from the proposed development shall be discharged to the culverted watercourse in Newsome Road, subject to further assessment to confirm technical

feasibility. The likely route of the outfall, along the public footpath to the east of the site, is indicated on the ARP Indicative Foul and Surface Water Drainage Strategy drawing 1375/02/05.

6.12 At this stage, based on general ground levels in the area, it is considered likely that a discharge of surface water to the culverted watercourse will be achievable by gravity. However, further topographical survey and survey of the culvert itself is required to confirm the relatively levels and to confirm details of the exact location and size of the culvert. Details of the point of the proposed connection to the culvert will be agreed with the LLFA at the detailed design stage.

6.13 As the proposals will be developed in a sustainable manner, there is the opportunity to provide betterment through development by implementing a surface water discharge limit which reduces the rate of runoff from the site. As set out above, it is anticipated that the rate of runoff from the previously developed area of the site under its former use could have been up to 55.6l/s, most likely discharging to the combined public sewer in Plane Street. However, it is recognised that the rate may be less than this currently due to vegetation and dilapidation of the drainage system, and the current proposal is to discharge to the culverted watercourse.

6.14 On this basis, noting that Yorkshire Water has confirmed that any discharge from the site to the public sewer would be limited to 5l/s, it has been agreed with the LLFA that any discharge to the culverted watercourse will be at a maximum rate of 5l/s. This is likely to provide a significant reduction in the rate of runoff from the site, thereby benefitting the local combined sewer system capacity, whilst maintaining an appropriately low rate such that flood risk from the culverted watercourse in Newsome Road would not be expected to be increased as a result of the development.

6.15 The proposed development layout has been assessed as having a proposed impermeable area of 0.404ha, based on the indicative masterplan (Appendix F).

6.16 Indicative drainage calculations have been carried out using the Micro Drainage Source Control Computer Program. The proposed surface water system should be designed to accommodate a 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 party land from flooding.

6.17 To accord with the requirements of the LLFA, the drainage system will need to accommodate the 1 in 100 year plus climate change event without causing flooding of property or third-party land. Restricting the discharge rate to no greater than 5l/s requires approximately 207m^3 of on-site storage to be provided for a 1 in 100 year plus 30% climate change event. It is envisaged that this volume can be accommodated on site by means of a below-ground storage tank within the surface water drainage system, as indicated in the ARP Indicative Foul and Surface Water Drainage Strategy drawing 1375/02/05.

6.18 Indicative surface water calculations are presented in Appendix F and the indicative surface water drainage strategy is shown in ARP drawing 1375/02/05. However, detailed calculations and proposals will need to be prepared and submitted to the Planning Authority for approval prior to construction, following further assessment of infiltration potential.

6.19 The strategy above is subject to agreement with the Regulatory Authorities.

Alternative (Fallback) Surface Water Discharge Strategy

6.20 In the event that the further investigations demonstrate that discharge to the culverted watercourse in Newsome Road is technically unfeasible, surface water shall be discharged to the 225mm diameter combined sewer in Plane Street at a maximum rate of 5l/s. This is in accordance with the advice provided by Yorkshire Water in the event that other means of discharge are found to be unfeasible. Proposed on-site drainage, including storage provision, would be expected to remain broadly in line with that set out above.

Exceedance Flow Routes

6.21 For rainfall events in excess of the design standard (i.e. greater than 1 in 100 year plus climate change event) the capacity of the drainage system is likely to be exceeded. There also remains a residual risk of flows leaving the surface water drainage system in the event of a blockage.

6.22 So that exceedance flows do not adversely affect properties on or off site, site levels should be designed to direct flows away from the building entrances where possible, so that any flooding remains in landscaped areas, car parks, or roads, where the consequences of surface water flooding would be less significant.

6.23 Exceedance flow routes will be reviewed as part of the detailed drainage and levels design, with details provided to the LLFA for review.

Sustainable Drainage Systems (SuDS)

6.24 NPPF requires that SuDS are implemented in 'major development', if feasible. It must be recognised that not all types of SuDS are feasible or appropriate for all development sites, with factors such as available space, ground conditions, and site gradient influencing the feasibility of their use.

6.25 As noted above, infiltration drainage systems are considered unsuitable for the site, however, SuDS in the form of attenuation of surface water flows, and the use of below-ground storage are proposed as part of the drainage strategy.

Surface Water Quality

6.26 Appropriate measures will be incorporated in the surface water drainage system to mitigate the risk of contaminated runoff from the site causing adverse impacts on surface water bodies downstream.

6.27 A significant proportion of run-off from the proposed development will be from building roofs and footpaths, which is considered to be 'clean' surface water run-off, and would be expected to have a very low level of potential contamination. On this basis no specific treatment for this run-off is proposed, except for suitable leaf debris traps and silt traps.

6.28 Areas subject to vehicular traffic may contain suspended solids, metals and hydrocarbons. However, the use of trapped gullies in these areas would be expected to adequately mitigate the risk to downstream water quality.

6.29 It is recommended that the requirements for surface water pollution prevention are reviewed at the detailed design stage, with additional treatment components provided if required, including consideration of additional SuDS measures or additional proprietary components, such as oil separators and/or vortex separation devices, if necessary.

6.30 The final strategy for management of surface water quality will be confirmed at the detailed design stage and agreed with Yorkshire Water and the LLFA.

7.0 FOUL DRAINAGE

7.1 This section sets out the proposed means of managing foul discharge from the development. It should be read in conjunction with the Indicative Foul and Surface Water Drainage Strategy plan by ARP (reference 1375/02/05).

7.2 As advised by Yorkshire Water, domestic foul water from the proposed development should be discharged to the 225mm diameter combined sewer in Plane Street.

7.3 Due to the relative levels of the site and the public sewer, in order to achieve a gravity discharge, it is likely to be necessary to connect to the public sewer in Plane Street further downstream rather than a point directly adjacent to the site. The final point of connection shall be agreed at the detailed design stage, and details will be subject to formal agreement with Yorkshire Water.

8.0 MAINTENANCE

8.1 There is a residual risk of flooding from drainage systems in the event of siltation or a blockage occurring. It is therefore essential that drainage systems are subject to periodic inspection and maintenance, so that the design standard is not compromised, and to reduce the risk of blockage.

8.2 It is envisaged that the majority of the proposed drainage systems will be designed to adoptable standards, for adoption by Yorkshire Water, who will become responsible for inspection and maintenance of those systems.

8.3 The inspection and maintenance of any drainage infrastructure serving a single property, and located within the curtilage of that property, will remain the responsibility of the relevant property owner.

8.4 There may be potential for some SuDS components to be adopted by the Lead Local Flood Authority, the Highways Authority, or Yorkshire Water and this should be discussed and agreed at the detailed design stage.

8.5 The ongoing inspection and maintenance of any other drainage systems is expected to remain the responsibility of the site/building owner or to be transferred to an appropriate Management Company. An appropriate inspection and maintenance plan will be developed at the detailed design stage and implemented thereafter by the site/building owner, using suitably qualified professionals.

9.0 SUMMARY

9.1 The principles of a sustainable surface water management strategy for the proposed development are outlined within the report. Infiltration techniques are considered to be unsuitable on this particular site, therefore it is proposed that surface water shall be discharged to the culverted watercourse in Newsome Road to the east of the site, subject to further survey to confirm technical feasibility, and subject to final agreement with the LLFA. In the event that discharge to the culvert is determined to be technically unfeasible, surface water shall be discharged to the combined public sewer in Plane Street.

9.2 The surface water discharge will be attenuated to a maximum rate of 5l/s, which provides a significant reduction over the likely existing rate of discharge. Storage will be provided on site to manage surface water up to the 1 in 100 year plus climate change event before discharge to the watercourse. A 30% increase in rainfall intensity has been incorporated into the proposals to account for the projected impacts of climate change.

9.3 Exceedance flow routes should be reviewed at the detailed design stage to mitigate any potential adverse off-site impacts.

9.4 Foul drainage from the new development will be discharged to the 225mm diameter combined sewer in Plane Street.

9.5 The proposed strategy is illustrated in the Indicative Foul and Surface Water Drainage Strategy plan by ARP (reference 1375/02/05).

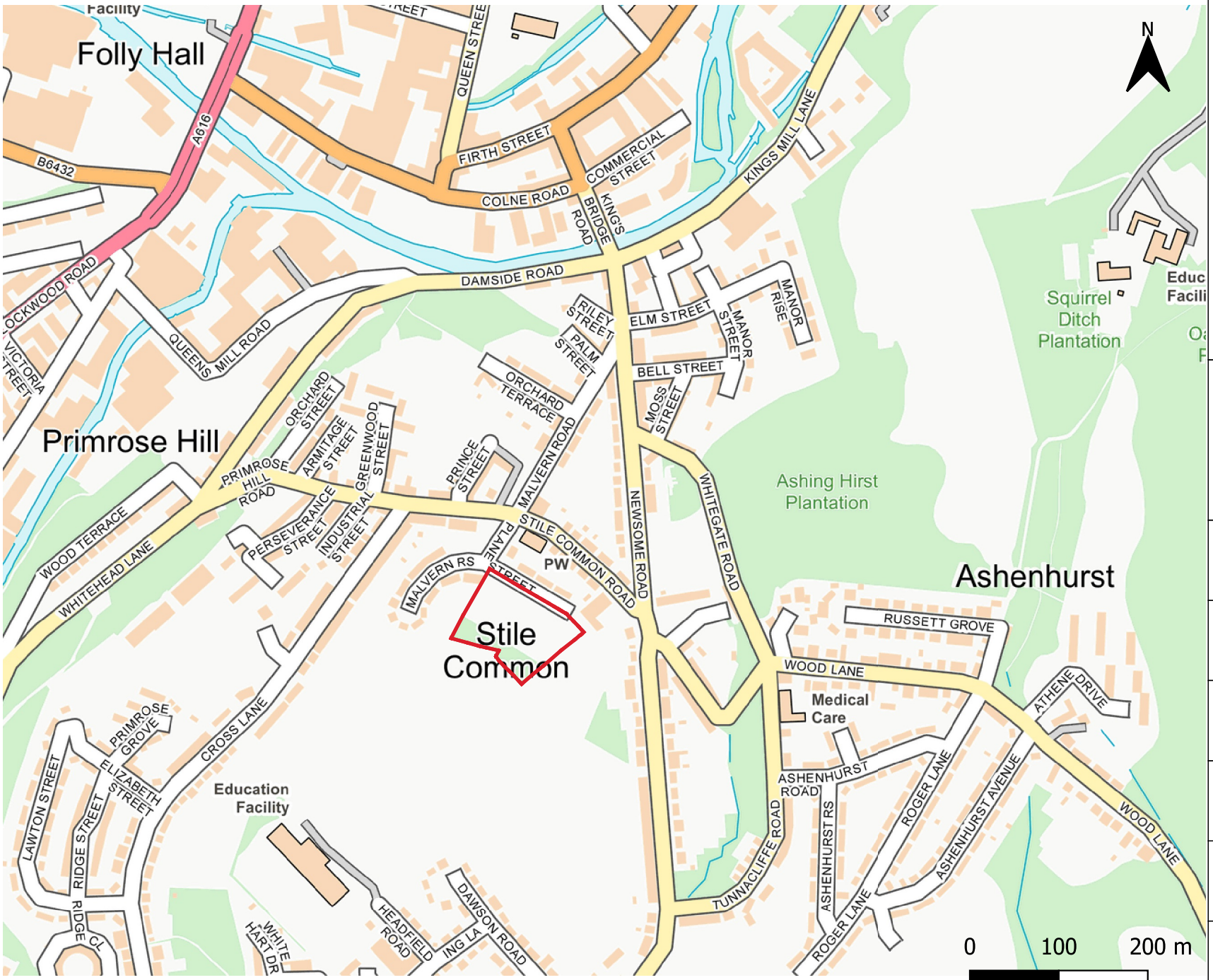
9.6 Suitable maintenance regimes will be required for proposed drainage infrastructure. Details of maintenance plans will be confirmed and agreed at the detailed design stage.

9.7 The findings of this report are subject to the approval of the Regulatory Authorities. The detailed design and calculations shall be submitted to the Planning Authority for approval prior to construction on the development site.

9.8 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 surface water management and foul drainage.

A P P E N D I X A

SITE LOCATION PLANS



Key

Site Boundary

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Project
SITE AT PLANE STREET, HUDDERSFIELD

Client
ACCENT HOUSING GROUP

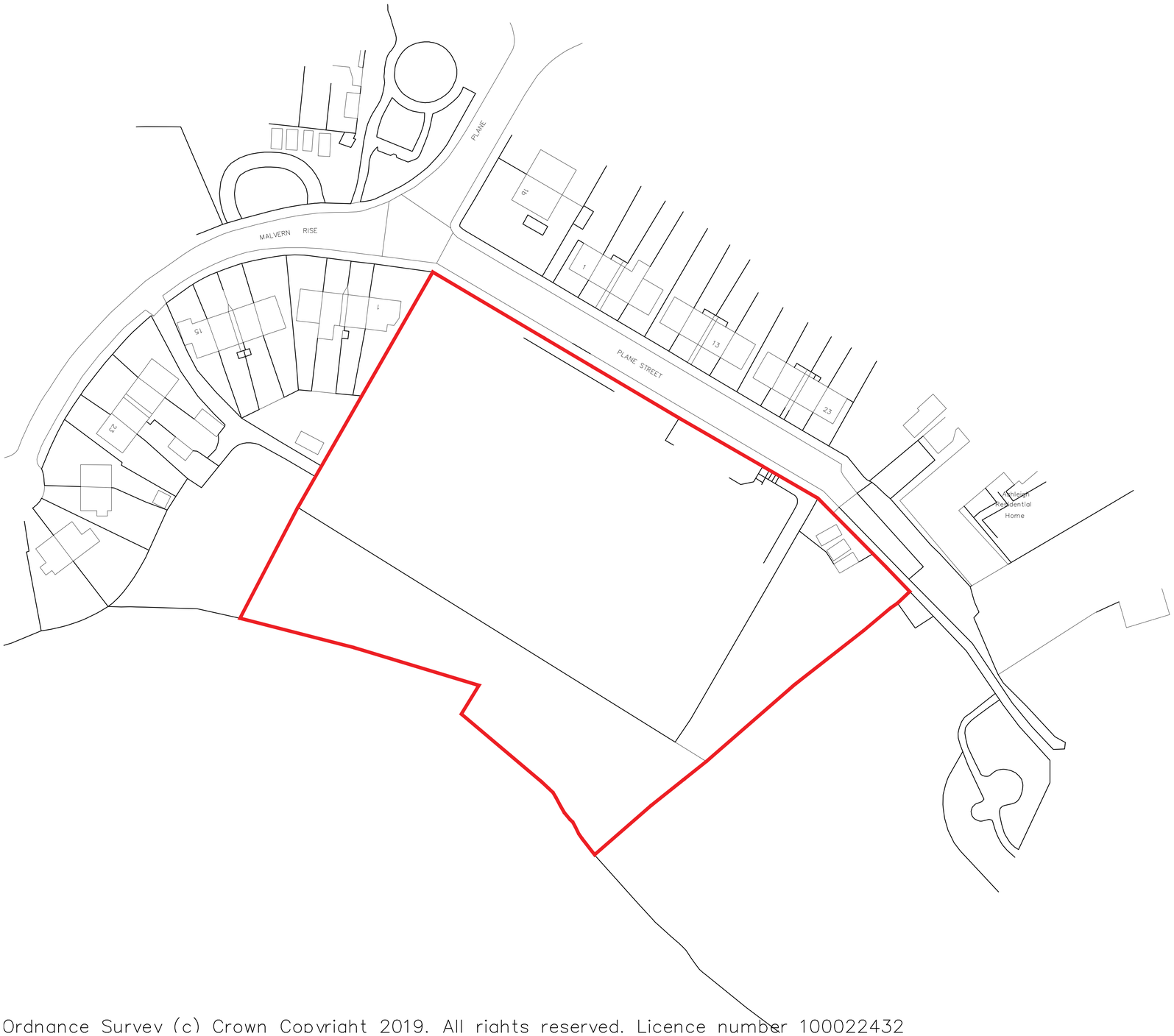
Title
LOCATION PLAN

Date
JUNE 2020

Drawn
MGW

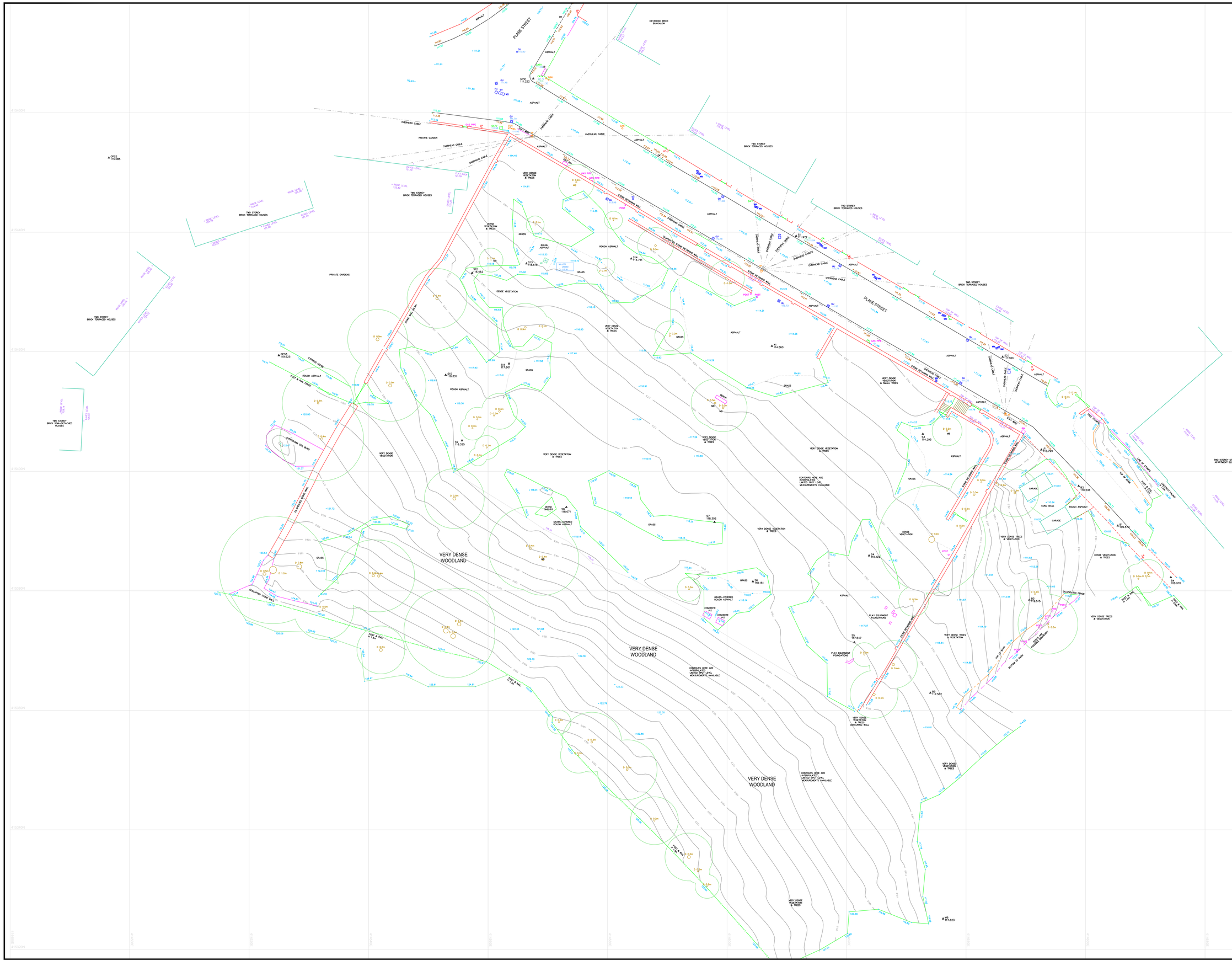
AS SHOWN

Job No.
1375/02



A P P E N D I X B

TOPOGRAPHICAL SURVEY



Notes

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Direction of North

Grid : OS National Grid.
Using the OS GPS Network and applying OSTN15 transformation and then removing the scale factor for true distances with a one-step transformation centred on GPS1

Datum : OS Level Datum.
Using the OS GPS Network and applying OSGM15 National Geoid Model to obtain local area corrections.

Station Listing

Station	Easting	Northing	Level
B1	414665.397	415390.882	109.573
B2	414658.848	415397.546	110.236
B3	414650.595	415378.488	112.515
B4	414674.282	415382.253	108.976
B5	414634.028	415362.923	117.562
GPS1	414567.564	415465.701	111.222
GPS2	414496.531	415452.470	115.085
GPS3	414524.978	415419.390	119.625
J1	414652.599	415403.601	110.799
M6	414636.156	415325.121	117.623
S1	414611.559	415439.384	111.972
S2	414646.124	415419.149	111.180
S3	414632.772	415406.255	114.295
S4	414623.771	415385.879	116.122
S5	414621.303	415371.356	117.547
S6	414604.323	415381.545	118.151
S7	414597.897	415391.480	118.302
S8	414573.098	415394.009	118.071
S9	414555.637	415405.142	118.325
S10	414552.904	415416.115	118.331
S11	414563.505	415417.999	117.601
S12	414557.338	415433.182	116.462
S13	414566.417	415434.753	115.616
S14	414583.962	415435.581	114.751

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
DROPPED KERB	DK	TELEGRAPH POLE	TP
EARTHING POINT	ER	THRESHOLD LEVEL	THR
ELECTRICITY COVER	ELEC	TRAFFIC LIGHT	TL
ELECTRICITY POLE	EP	TRIAL PIT	PIT
FIRE HYDRANT	FH	WASH OUT	WO
GAS VALVE	GAS	WATER METER	WM
GATE		WATER STOP COCK	WSC
INSPECTION COVER (CIRCULAR)	IC	WATER STOP VALVE	WSV
INSPECTION COVER (RECTANGULAR)	IC		
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
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WATSON BATTY ARCHITECTS LTD

Site
LAND OFF PLANE STREET
HUDDERSFIELD, HD4 6DF

Title
TOPOGRAPHICAL SURVEY

Surveyed	JM, MR, SB	Drawn	JM
Check	DBS	Date	29/10/2019
Scale	1:200	Job No	P19-01316
Sheet Size	A0	Rev	01

DWG Ref

Project Number	Origin	Zone	Level	Desc	Type	Role	Sheet
P19-01316	MET	EXT	XX	TOP	M2	G	001

A P P E N D I X C

ENVIRONMENT AGENCY CONSULTATION

RFI/2020/169751

The Flood Map for Planning

The Flood Map for Planning (Rivers and Sea) can be viewed and downloaded as a PDF file on GOV.UK by following this link: https://flood-map-for-planning.service.gov.uk **or downloaded in GIS format under an open data licence from the following address**: https://data.gov.uk/publisher/environment-agency
Please type Flood Map for Planning in the search box.

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

Flood History – None available

To the best of our knowledge there is no known flood history for this site. The extent of flooding, and/or flood level information is only shown for those watercourses surveyed after the flood. Other flooding may have occurred which is not shown. This is the best information currently available. 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.

Please note that this record doesn't include any flood extents that may have occurred since October 2019. Given the process of recording, verifying and updating our record from major floods is extensive and may take a considerable amount of time.

Assets

Asset Location Map
Please find attached asset map(s) showing location of all (Agency and non Agency maintained) flood defences and channels.

Description of Works
See attached table with description of the defences and structures shown on the above drawing, including condition ratings, upstream and downstream crest levels, where available.

Risk of Flooding – Environment Agency Defences
The risk of flooding in this area is now reduced by the presence of flood defences that we maintain, but there still is a residual risk of flooding if these were to breach or be overtopped by a flood greater than that for which they were designed.

Risk of Flooding – Privately Maintained Defences
You will see that the Environment Agency does not maintain any of those defences. However we undertake regular risk based visual inspections. We do not hold design levels and have no height information on these defences or structures.

Asset Condition Ratings
The performance of a flood defence asset is recorded as the condition of the asset. Our asset inspectors subjectively assess the conditions of assets (during visual inspection site visits) with reference to a national standard template. Each asset is given a rating between one and five with one being very good condition and five being very poor. A condition rating of 3, or 'fair' is the minimal acceptable standard for a critical asset, such as a defence wall that protects properties. We are striving to improve all assets below 'fair' to an acceptable standard.

Asset inspections are done on average every six months, although some critical assets are assessed on a more regular basis. It is possible that adjacent assets are inspected on different dates, which may result in two assets of a similar state of repair having different condition ratings.

Condition ratings of assets may also be affected by the time of year the surveys are conducted, as vegetation may obscure the asset in the summer months, or accessibility may be an issue during winter months. These factors would not usually affect the recorded condition rating of an asset unless the asset is on a borderline between two ratings.

Asset Standard of Protection
Please note that the provided Design Standard of Protection is an estimate and should not be relied on. Please note that where available the defended flood extents provide more reliable information relating to the protection offered by the defence (i.e. at which return period the water levels are likely to overtop the defence). If available and required the defended flood extents can be provided on request.

Modelling

Modelling Information
We do not have any modelling information at this location.

Climate Change

Updated guidance on how climate change could affect flood risk to new development - 'Flood risk assessments: climate change allowances' was published on gov.uk on 19 February 2016. You should confirm the flood risk vulnerability classification and lifetime of your proposed development in line with NPPF and apply the appropriate climate change allowances.

Bespoke Flood Risk Assessment (FRA) advice:

If the pre-application advice is required with regards the preparation of a site-specific Flood Risk Assessment, this can be requested via the Yorkshire Sustainable Places team (email: sp-yorkshire@environment-agency.gov.uk). Charges may apply for any advice that is provided, this currently stands at £100 per hour per person. The.gov.uk pages provide a good starting point on what to include within a site-specific Flood Risk Assessment and can be accessed via https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications. A site-specific Flood Risk Assessment will need to consider flood risks from all sources, including those associated with defence failure (e.g. breach) and accounting for the predicted impacts as a result of climate change. Please contact the Sustainable Places team if you require advice on how to include these within a Flood Risk Assessment.

Other

Surface Water Map

Lead Local Flood Authorities (LLFA) are responsible for managing local flood risk from surface water flooding and groundwater flooding. You should check with the LLFA as they may have more up to date information regarding this type of flooding.

The Risk of Flooding from Surface Water Flood Map can be viewed and downloaded as a PDF file on GOV.UK by following this link: https://flood-warning-information.service.gov.uk/long-term-flood-risk

Surface Water Drainage

The Lead Local Flood Authority is the statutory consultee for planning matters relating to surface water drainage, therefore it is recommended they should be consulted separately regarding this.

Surface water discharge from new development should ideally ‘mimic’ the pre-development situation using a sustainable drainage system so that the flow and volume of water in watercourses is not increased.

A permit may be required, under the Environmental Permitting Regulations 2016 from the Environment Agency for any proposed works or structures in, under, over or within eight metres of a ‘main river’ (e.g. a new outfall). A permit is separate to and in addition

to any planning permission granted. Further details and guidance are available on the GOV.UK website: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits

Risk of Flooding from Reservoirs Map

Outlines and simplified depth and velocity maps can be viewed on our website:

https://flood-warning-information.service.gov.uk/long-term-flood-risk/#x=438988&y=406600&scale=2

Please, zoom into the location of interest, and then click on the inundated location for details. As a result a list of reservoirs will be provided with supporting information and a links to other data, such as estimated depths and speed of flooding, at the bottom of the result page.

A map showing the outlines can also be provided on request.

Flood Warning

The site is not covered by a Flood Warning.

LIDAR Data

Please note that our LiDAR data is now available free of charge (Open Data) from http://environment.data.gov.uk/ds/survey/index.jsp#/survey (once zoomed to the relevant location the available LiDAR products will be listed below the map).

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.

The Rights & Responsibilities of a Riverside Owner

The owner of property adjacent to a watercourse is usually deemed to be the riparian owner and, as such, has both riparian rights and responsibilities with regard to the watercourse within their ownership.

For more information on Rights and Responsibilities of a riverside owner, you can visit our website at:

https://www.gov.uk/guidance/owning-a-watercourse

Ordnance Survey Data

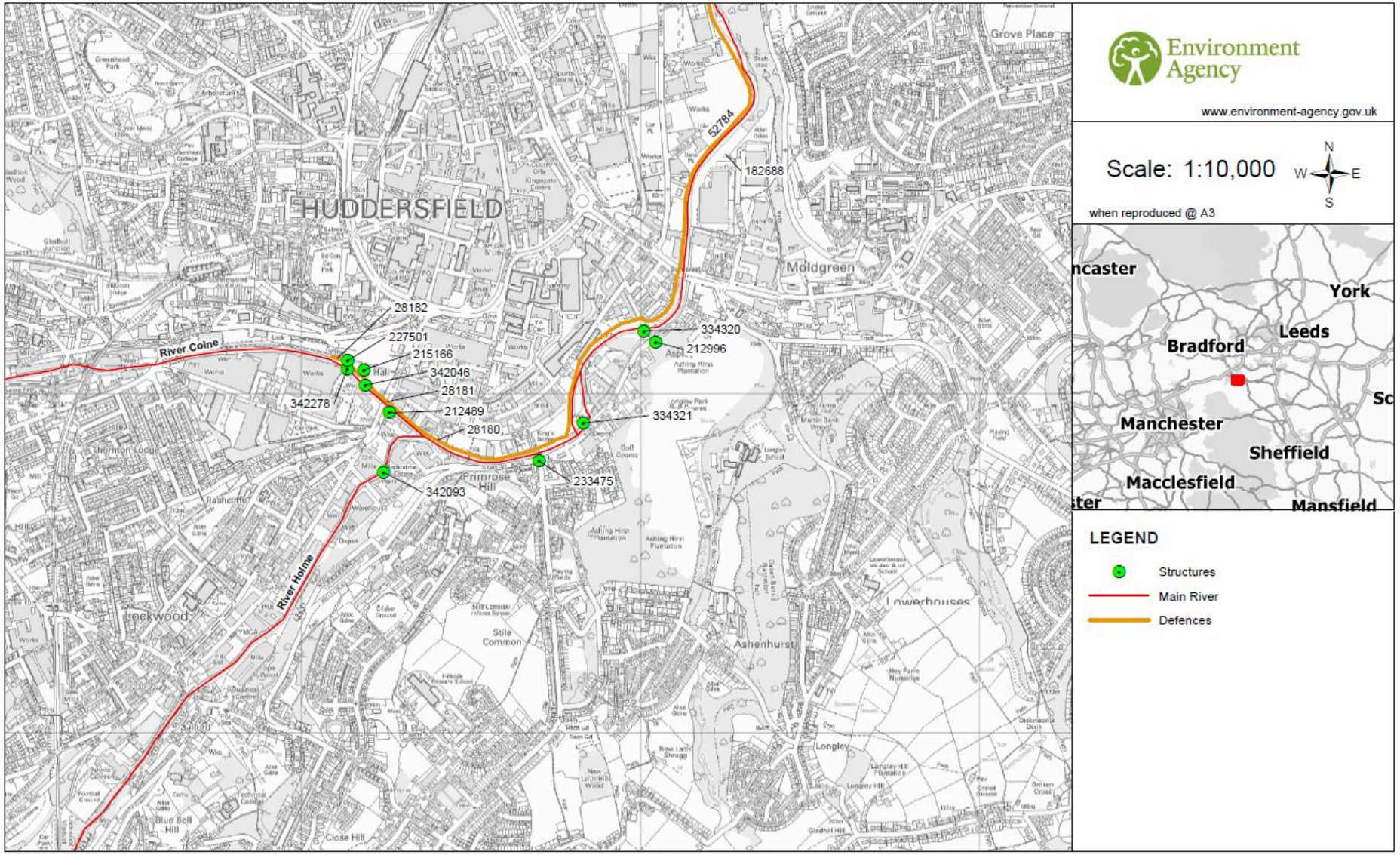
Under the terms of our licence agreement with the Ordnance Survey, we are unable to supply the OS data. Under this agreement we can only supply OS data to consultants/contractors carrying out work on our behalf.

Flood Portal

It's a new 'one-stop shop' web portal providing guidance and information on flood risk management in the UK. Arup have written and designed the site, in conjunction with CIRIA, the Local Government Association, the EA and Defra, primarily as a resource for local authority officers, flood risk management professionals, and others with an interest in flood risk. It's a part of the Capacity Building Strategy.http://www.local.gov.uk/floodportal

ASSET_ID	DESCRIPTIO	ASSET_MAIN	AIMS_SUB_T	LENGTH	ACTUAL_DCL	ACTUAL_UCL	PROTECTION	TARGET_CON	OVERALL_CO	DESIGN_SOP
28181		private	high_ground	32.08			fluvial	3	2	20
28182		private	high_ground	211.62			fluvial	3	2	20
52784		private	high_ground	2274.28			fluvial	3	3	20
28180		private	high_ground	288.91			fluvial	3	3	20

RFI/169751 Flood Defence Asset Location Map



ASSET_ID	AIMS_SUB_T	DESCRIPTION	DESIGN_SOP	ASSET_MAIN	PROTECTION	TARGET_CON	OVERALL_CO
233475	outfall			private	fluvial	9	3
334321	weir			private	fluvial	9	5
334320	weir			private	fluvial	9	3
212996	outfall			private	fluvial	9	2
342093	weir			private	fluvial	9	3
212489	outfall			private	fluvial	9	3
342046	weir			private	fluvial	9	3
215166	outfall			private	fluvial	9	
342278	weir			private	fluvial	9	3
227501	outfall			private	fluvial	9	2

Planning advice for developers – FAQs

Introduction

Local planning authorities (LPAs) across Yorkshire are required to consult us on certain planning applications which affect flood risk, groundwater, waste, or water quality.

If your development falls into one of these categories, we'll be invited to comment on your planning application. Your LPA, when considering your application, will take our comments into account.

We've produced this guidance to summarise the environmental issues we're responsible for. The guidance forms part of our free advice service; if you require site-specific or face-to-face advice, we'll need to recover our costs through our charged advice service. Engaging with us early can help you identify the big issues, reduce the chances of subsequent delays and help you design a more sustainable and attractive development.

Development and flood risk

Is my development proposal at risk of flooding?

The flood map for planning shows where flooding from rivers and the sea may occur. Whilst this map isn't suitable for a detailed flood risk assessment, it'll show which flood zone your development is located within and therefore will indicate whether further assessment is needed. You should also refer to your LPA's strategic flood risk assessment which will provide additional local information on flood risk, including the location of functional floodplain and areas which are susceptible to other sources of flooding such as from surface water or reservoirs.

Will my application need to pass the sequential and exception tests?

Local planning authorities apply the sequential test to steer development towards areas at the lowest risk of flooding. If your proposal is located within flood zones 2 or 3, you should contact your LPA to discuss the sequential test **before** submitting your application. The LPA may require you to submit information with your application in support of the sequential test.

If the LPA confirm that the sequential test has ruled out steering the development to lower risk sites, the development may also need to pass the exception test by demonstrating that its sustainability benefits outweigh flood risk and that it can be made safe for its lifetime, through the production of a site-specific flood risk assessment. Planning practice guidance advises when an exception test will be required, which will depend on the vulnerability of the development and the flood zone it lies within.

Do I need to submit a flood risk assessment with my planning application?

You'll need to submit a flood risk assessment if your application lies within flood zones 2 or 3 or is over 1 hectare within flood zone 1. You'll also need to submit an assessment if your proposal could be affected by sources of flooding other than from rivers or the sea. For certain lower risk applications, we've provided 'flood risk standing advice' which enables local planning authorities to assess flood risk assessments without the need to consult us.

What information should I include in my flood risk assessment?

We recommend that you refer to the checklist for a site-specific flood risk assessment for detailed advice on what to include in your flood risk assessment. Alongside referring to your LPA's strategic flood risk assessment, you should contact your LPA to find out whether there are any development guidelines which are specific to your locality.

Can I undertake my own flood risk assessment?

Your FRA must be appropriate to the scale, nature and location of the development whilst being credible and fit-for-purpose. Whilst it's possible to undertake your own assessment, most applicants employ suitably experienced professionals. We're not able to recommend specific consultants, but a simple web search should help you source a competent individual or company.

Do I need to consider how climate change will affect my proposal's flood risk?

Yes, you should demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account. Please refer to the following guidance when undertaking your flood risk assessment. In some cases we'll hold the climate change flood data you need. In others you'll need to undertake your own analysis to understand the impacts.

Where can I get modelled or historic flood levels from?

Email our Customers and Engagement team (neyorkshire@environment-agency.gov.uk) to find out whether we have any modelled or historic flood levels available for your development site. A list of the packages of information we're able to provide can be found under the 'get information to complete an assessment' section of the planning practice guidance. They'll aim to provide this information within 20 days. We no longer charge for providing this information.

The risk portrayed by your flood map doesn't seem to reflect the site's actual risk. How do I 'challenge' your flood map?

If you have evidence suggesting that our flood map is inaccurate, please contact our Customers and Engagement team (neyorkshire@environment-agency.gov.uk) who will provide you with any existing data we hold. To formally contest our flood zones, you'll need to submit supporting evidence, such as digital copies of a topographic survey or modelling for quality assurance purposes. Digital files of the proposed new flood zones in ArcMap or MapInfo format should also be supplied. Any new outline data you submit must conform to our flood zones policy, copies of which are available on request.

Whilst we'll usually be happy to review any topographical survey or model prior to the application being submitted, we would have to recover our costs for this work. In some cases where work to review and update our existing models is already underway, we may decline to consider a challenge.

As we have to be certain that the data which informs our flood map is fit-for-purpose, any revisions will need to meet stringent quality checks.

SURFACE WATER AND DRAINAGE

Who's responsible for managing surface water?

Lead local flood authorities are responsible for providing advice on the management of surface water resulting from new major development. Internal drainage boards, where established, have permissive powers to manage water levels within their drainage districts, so also play a key role in managing surface water.

Will I need to provide surface water storage and limit the discharge rate?

You should contact your lead local flood authority to discuss surface water discharge rates and storage requirements. Typically, they'll ask that your development does not increase run-off and limits the discharge to the existing greenfield run-off rate (usually 1.4l/s/ha if not calculated).

Do I need to install sustainable drainage systems?

Sustainable Drainage Systems (SuDS) should always be carefully considered in discussion with your lead local flood authority. A SuDS scheme can reduce flood risk, improve water quality, create better habitats for wildlife, and produce pleasant, more amenable places for people.

Infiltration drainage must not, however, pose a risk to groundwater quality. All infiltration SuDS must:

- Meet the groundwater protection criteria set out on GOV.UK
- Not be constructed in ground affected by contamination

Who should I contact about connecting my development to the mains sewer?

Talk to your water company about connecting to their sewerage system. Here are some contact details for water companies operating in the Yorkshire Environment Agency area:

Yorkshire Water	planningconsultation@yorkshirewater.co.uk
Northumbrian Water	developmentenquiries@nwl.co.uk
Severn Trent Water	new.connections@severntrent.co.uk

My development is a long way from the mains sewer. Can I install a 'non-mains' drainage system, such as a package treatment plant?

New development should connect to the public mains sewer wherever possible. Individual treatment plants can deteriorate local water quality and are more challenging to monitor and regulate. If you can't connect to the mains sewer, your planning submission should outline how you will deal with foul drainage discharge. You should include evidence as to why it is not possible to connect to the mains system, including details of any prohibitive costs. Please note that some 'non-mains' foul water drainage systems will require an environmental permit, irrespective of any planning approval.

OTHER ENVIRONMENTAL CONSIDERATIONS

What other environmental issues will you consider with my planning application?

Your planning application will need to demonstrate that any environmental risks can be managed, through design and construction, for the development's lifetime. Alongside flood risk, the key environmental risks we'll consider are:

- **Land Contamination**
  We're mainly interested in those sites where there is a risk of pollution to controlled waters. You should investigate any contamination to see whether the environmental risk or cost of clean-up (remediation) would hinder your proposal. If contamination is known or suspected, a desktop study, investigation, remediation and other works may be required to enable safe development. Our model procedures for the management of land contamination provide further information.

- **Pollution prevention**
  Your application should demonstrate how you'll minimise the risk of pollution from all aspects of your development, including construction and

operation phases. Groundwater can be vulnerable to pollution, as well as rivers and streams. Some areas (source protection zones and aquifers) are especially sensitive to pollutants as they typically supply public drinking water. To find out whether your development is located in an area sensitive to groundwater pollution, visit our interactive maps. Advice on groundwater protection can be found on GOV.UK

- **Fisheries, biodiversity, geomorphology and protected species**
  If your proposal is likely to affect the ecology of a main river, you'll need to carry out a risk assessment. This assessment should show that your development can proceed without demonstrable harm, and should propose mitigation, compensation or enhancements where required. A survey should be carried out if any protected species are thought to be nearby. If this survey confirms the presence of protected species or their habitat, measures should be taken to manage the development's risks. Natural England are the statutory consultee for other biodiversity-related matters. Further information on their remit can be found on GOV.UK

- **Water framework directive**
  If your proposal affects ground or surface waterbodies, you'll need to consider the Water Framework Directive (WFD) and the actions set out in the Humber River Basin Management Plan. You'll also need to submit a WFD Assessment demonstrating how the development will prevent deterioration and improve the waterbody's ecological status.

- **River buffer zone**
  Your development should ensure that an 8m strip of land (planted with locally appropriate, native species) is left undisturbed next to the bank of any main river. This 'river corridor' will improve habitat connectivity and will ensure we're able to access the bank for any future flood defence construction and maintenance.

- **Culverting**
  We're opposed to culverting. Culverts degrade watercourses' ecology and prevent the movement of wildlife and fish. As culverts can easily become blocked, they increase flood risk. They're also difficult to inspect and maintain. We may object to any planning applications involving culverting on a main river and may refuse to grant an environmental permit. Existing culverts should be removed and the river channel and bankside habitat reinstated to restore the ecological continuity of the river channel and its corridor.

Will I need any other Environment Agency permits for my development?

You might need an environmental permit if your development manages or produces waste or emissions that pollute the air, water or land or is work that affects a main river or a sea defence. The lead local flood authority is responsible for any consents relating to ordinary watercourses.

The Environmental Permitting Regulations (England and Wales) 2015 cover water discharges, groundwater activities, flood risk activities, radioactive substances, waste, mining waste and installations. They also include provision for a number of directives including batteries. Further information, including contact details for further permitting related enquiries, can be found here.

As planning and permitting decisions are often closely linked, we have issued detailed guidance for developments requiring planning permission and environmental permits. This guidance explains how, when responding to planning consultations that require environmental permits, we will advise of three possible positions:

- No major permitting concerns
- More detailed consideration is required and parallel tracking is recommended
- Don't proceed – unlikely to grant a permit.

PRE-APPLICATION ADVICE

Can you provide site-specific advice, review a submission document, or attend a site meeting before I submit my planning application?

We encourage you to seek pre-application advice as it can help you solve key environmental issues early, reduce the chance of an objection and help you design a more sustainable development. If you'd like to take advantage of this service, please email our Sustainable Places team so that we can provide further details and estimated costs.

Please note that any pre-application guidance we provide doesn't represent our final view in relation to any future planning application. We recommend that you seek your own expert advice prior to submitting your application.

Who should I contact for further information?

Yorkshire planning enquiries: sp-yorkshire@environment-agency.gov.uk

General enquiries: 03708 506 506

Environment Agency, Lateral, 8 City Walk, Leeds LS11 9AT
https://www.gov.uk/government/organisations/environment-agency

A P P E N D I X D

YORKSHIRE WATER CONSULTATION

YorkshireWater

Mr M Wilson
Arp Associates
Unit 5/6 Northwest Business Pk
1ST FLR Servia Hill
Woodhouse
Leeds
LS6 2QH

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:
Chris Roberts on 0345 120 8482

Your Ref: ARP013
Our Ref: W005630

13th May 2020

Dear Mr Wilson,

Land to South of Plane Street, Huddersfield, HD4 6DF - Pre-Planning Sewerage-Enquiry-Residential T815008

Thank you for your recent enquiry. Our charge of £157.00 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.

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.

Foul Water

Foul water domestic waste can discharge to the public combined sewer recorded to the north of the site.

Surface Water

The developer's attention is 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 soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

As a last resort and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the public combined sewer recorded in Plane Street, at a point to the north of the site.

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 surface water discharge from the site to be restricted to not greater than 5 (five) litres/second. This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

Other Observations

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

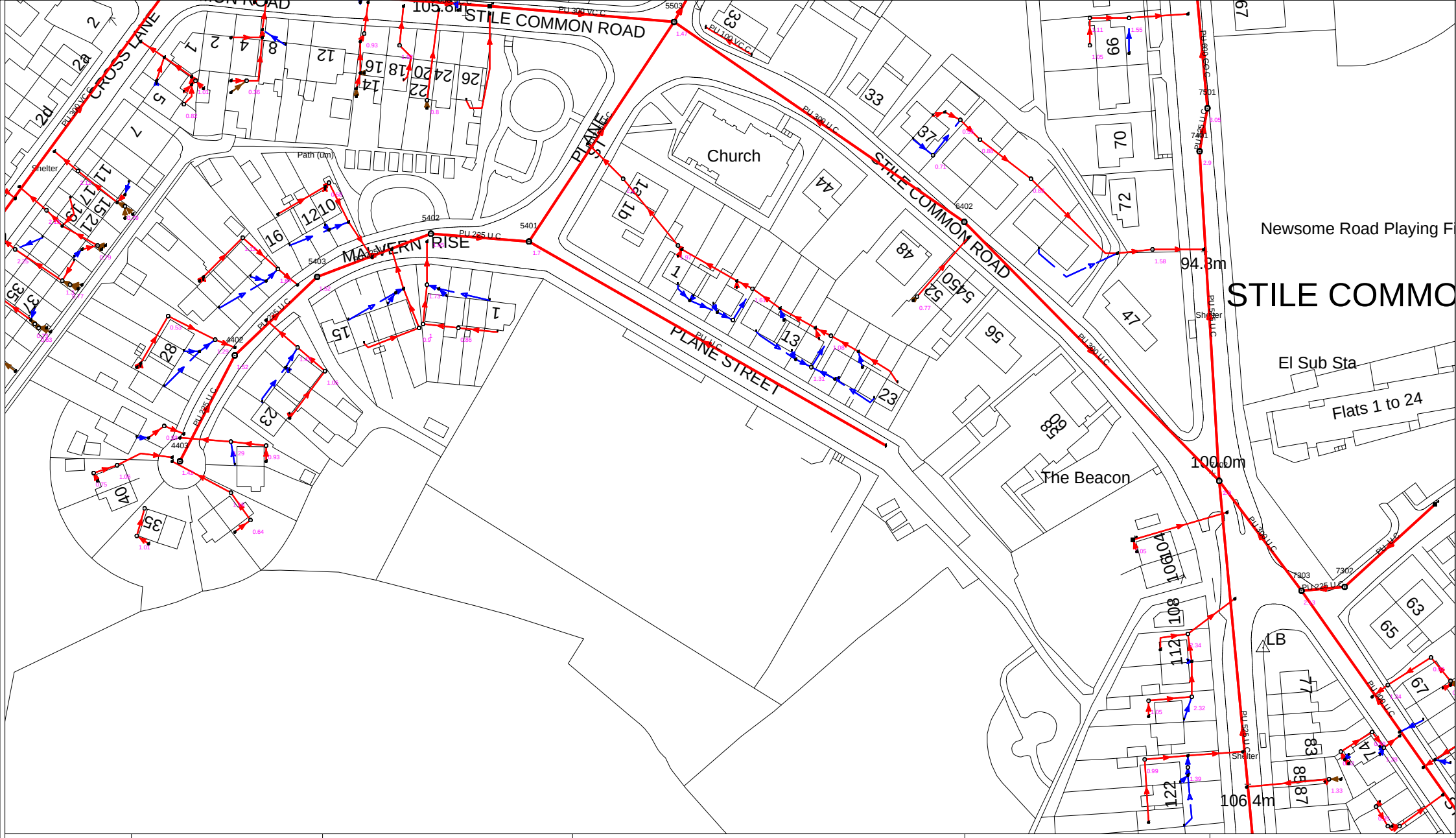
An off-site foul and surface water sewer may be required which may be provided by the developer and considered for adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able 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.

Prospectively adoptable sewers and pumping stations 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 to any works commencing on site. Please contact our Developer Services Team (telephone 0345 120 84 82) for further information.

All the above comments are based upon the information and records available at the present time and is subject to formal planning approval agreement. 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 sincerely

Chris Roberts
Pre-Development Technician
Developer Services
Yorkshire Water Services Limited



414441 : 415323	Map Name : SE1415SW	Title	Partial Key	This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.
	Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : YorMap Advisor C ROBERTS Contact Tel : 87 2582	Notes	Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS	
			Date Req : 13/05/2020, 09:17:36	Date Gen : 13/05/2020, 09:18:00
			Source : Sewer Network Enquiry	

UPN: Undefined Originator: C ROBERTS, YorMap, 87 2582

APPENDIX E

LEAD LOCAL FLOOD AUTHORITY CONSULTATION

Matthew Wilson

To: Leon Murgatroyd
Subject: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: Friday 24 April, 2020 11:10am
To: Matthew Wilson <MatthewWilson@arpnorthwest.co.uk>
Subject: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Hello Mathew,

There are no known flood incidents recorded on this site. It is worth mentioning however that as the site is currently undeveloped a surface water flood may not have been reported. There is recorded incident that effected the garden of a property on Malvern Rise to west. This may have been the result of surface water run-off from the hills behind the site however the cause is unclear.

The site is within flood zone 1 with no surface water flood risk predicted.

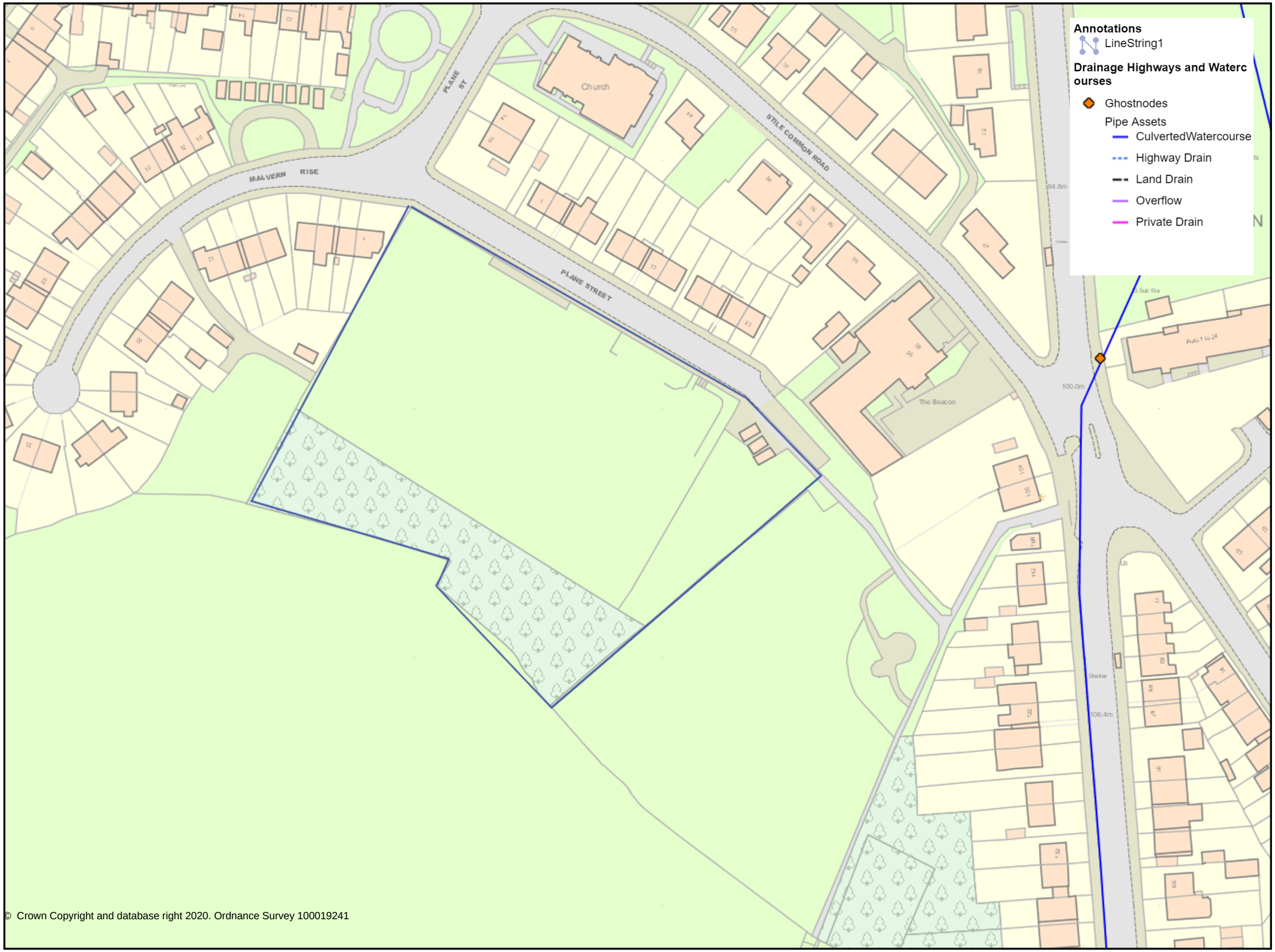
There are no recorded watercourses running through or under the site. There is however a recorded culvert running along Newsome Road to the east. The culvert's diameter is unknown and would need to be investigated. Providing infiltration based drainage is proven to be infeasible, Kirklees would expect the feasibility of using this culvert to drain the site be investigated. Please find attached a plan of the culvert for reference.

There is a Yorkshire Water Combined Sewer recorded on Plane Street with a diameter of 225mm.

If you require any further information feel free to ask.

Kind Regards,

Leon Murgatroyd



Kirklees COUNCIL

Kompass
Kirklees Mapping Service

Scale = 476.28

maps@kirklees.gov.uk

N

Matthew Wilson

From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: Wednesday 24 June, 2020 1:45 pm
To: Matthew Wilson
Subject: RE: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF (1375/02)

Hello Mathew,

Apologies for the late response.

We've reviewed the proposed run-off rate and 5l/s would result in a sufficient reduction and is therefore suitable for this development.

Many Thanks,

Leon

From: Matthew Wilson [mailto:MatthewWilson@arpnorthwest.co.uk]
Sent: 11 June 2020 12:12
To: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Subject: RE: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF (1375/02)

Good morning Leon,

Further to the information you provided below regarding the site above site, as requested we are reviewing the potential to discharge surface water to the culvert in Newsome Road. We initially plan to undertake a survey of the culvert to confirm the size and depth of the reach to the east of the site. In anticipation of this survey indicating that a connection is technically feasible, we would like to agree in principle on an acceptable rate of discharge with yourselves.

As set out in my original email, from Google Earth aerial imagery from 2009 when the school was still standing, we estimate the impermeable area of the site was approximately 0.5ha. Making an estimate of runoff rate using the Rational Method with a rainfall intensity of 50mm/hr, we estimate the runoff from the site to have been up to 69.5l/s, and we believe it is most likely the surface water from the site was/is discharged to the combined public sewer in Plane Street. Although we recognise that the rate of runoff may currently be less than this, due to self-seeding vegetation and dilapidation of the drainage systems, you will appreciate that the development of the site still offers a potential to significantly reduce the runoff into the combined sewer system by directing flows elsewhere.

With this in mind, could you please confirm the maximum rate of surface water discharge which you would allow into the culvert in Newsome Road from the proposed development? Please note that Yorkshire Water has recently confirmed that a surface water discharge rate of up to 5l/s into the combined public sewer in Plane Street would be acceptable from the proposed development, should an existing connection not be proven and should there be no alternative means of discharge. We would consider 5l/s to be the lowest reasonably practicable rate of discharge, and would request that the agreed rate be no lower than this.

Can you also please confirm if there is any further information you would require in order to assess the acceptability of a connection to the culvert, such that there would be no objection to a planning application submitted on that basis?

Kind regards,

Matthew Wilson
Principal Engineer

07307 849 396
matthewwilson@arpnorthwest.co.uk

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2nd Floor, 3 Hardman Square, Spinningfields, Manchester, M3 3EB
5 & 6 Northwest Business Park, Servia Hill, Leeds LS6 2QH

Pre-planning Geotechnical Civil Engineering Structural Engineering Building Services Engineering

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From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: Friday 24 April, 2020 11:10am
To: Matthew Wilson <MatthewWilson@arpnorthwest.co.uk>
Subject: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Hello Mathew,

There are no known flood incidents recorded on this site. It is worth mentioning however that as the site is currently undeveloped a surface water flood may not have been reported. There is recorded incident that effected the garden of a property on Malvern Rise to west. This may have been the result of surface water run-off from the hills behind the site however the cause is unclear.

The site is within flood zone 1 with no surface water flood risk predicted.

There are no recorded watercourses running through or under the site. There is however a recorded culvert running along Newsome Road to the east. The culvert's diameter is unknown and would need to be investigated. Providing infiltration based drainage is proven to be infeasible, Kirklees would expect the feasibility of using this culvert to drain the site be investigated. Please find attached a plan of the culvert for reference.

There is a Yorkshire Water Combined Sewer recorded on Plane Street with a diameter of 225mm.

If you require any further information feel free to ask.

Kind Regards,

Leon Murgatroyd

From: Jason Hanks
Sent: 24 April 2020 10:39
To: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Subject: RE: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Morning Leon,

We try and put as much onus on the developer to do their own calculations. At this stage I wouldn't look at fact checking their calculations. We can confirm with them that we require a minimum reduction of 30% to the sites surface water discharge rate in the 1:1 year event. This sounds applicable to this site as they have confirmed its brownfield.

You can go down a few routes when looking into calculations that drainage consultants provide.

Tom's method – Basically if the developer has gone through the trouble to produce detailed hydraulic calculations then we should not waste our time picking it apart. It would be the developers responsibility if anything goes wrong.

Paul's Method – Which is to scrutinize everything. While it is the developers responsibility to get it right, we don't want flooding to Kirklees residents. If flooding occurred to a new development we would be asked why we approved it.

My current rule of thumb – As you've probably worked out by now drainage can be a dark art. If you are sensible around flood risk but also reasonable with developers you can strike a good balance between both methods. Being new to it I have tended to err on the side of caution and lean over to Paul's way of thinking. When looking at calculations I usually make sure all the parameters put into their calculations are ball park. Then with most micro-drainage calculations we look for surcharging/flood risk/flooding in their outputs. If you start completing responses on a more regular basis you'll find your own way of doing things.

Once we have go a few new full applications in, I'll set some aside for us to work through. Paul is the man for planning but his way of teaching for me has been at arm's length and let me make mistakes. It doesn't always fill you with confidence early on.

I still think we're a few weeks off getting a steady stream of new applications.

Thanks,

Jason

From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: 23 April 2020 15:26
To: Jason Hanks <Jason.Hanks@kirklees.gov.uk>
Subject: RE: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Hi Jason,

I've gathered the standard pre-app information about this site. I'm unsure if to comment on the developers calculations for the sites surface water run-off. I've used the rational method for the site and their results seem accurate providing their data is correct. Don't know if Kirklees usually comments on this.

Thanks,

Leon

From: Jason Hanks
Sent: 23 April 2020 08:41

To: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Subject: FW: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Morning Leon,

We have had a pre-app style request from a drainage consultant working for a developer. Could you have a look at his queries and see what we can offer?

I wouldn't bother going all out and using the pre-app template. This should be a paid service really, but having developers and consultants who involve us from an early stage is really beneficial. Yu can run it by me if you want before sending it off.

Thanks,

Jason

From: Matthew Wilson <MatthewWilson@arpnorthwest.co.uk>
Sent: 22 April 2020 18:02
To: Paul Farndale <Paul.Farndale@kirklees.gov.uk>; Jason Hanks <Jason.Hanks@kirklees.gov.uk>
Subject: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Good Afternoon Paul/Jason,

We have been instructed to prepare a Flood Risk Assessment and Drainage Strategy to support a planning application for a proposed residential development at Plane Street, Huddersfield, HD4 6DF. We would appreciate your advice on flood risk and drainage matters as set out below.

The proposed development site is centred on Ordnance Survey grid reference 414589,415414, and the site is approximately 0.9ha in area. I have attached a location plan and topographical survey for reference.

The site was formerly a primary school which has since been demolished.

The closest Main River to the Site is the River Holme, located approximately 400m west of the site. Ordnance Survey mapping also indicates a small unnamed watercourse located approximately 300m south-east of the site. Having reviewed the Environment Agency Flood Map for Planning we anticipate that the site falls within Flood Zone 1. The Environment Agency Flood Map for Surface Water does not suggest any specific surface water flooding issue affecting the site.

The proposed development consists of 33 units, with a mix of walk up flats and 2 & 3 bed houses. I have attached a plan showing the indicative proposals for reference, but please note that these are subject to change.

As the site has previously been development it is considered to be 'brownfield'. We propose to follow the normal surface water drainage hierarchy, in that infiltration is being considered as the first option. If ground conditions support infiltration, this option will be taken forward, however this may not be plausible. Therefore, we would like your thoughts on the suitability of any nearby watercourses as a surface water outfall option, to discharge to at an agreed rate (see below)?

We are also in consultation with Yorkshire Water to ascertain their acceptance to discharge to a surface water sewer, in the event that both of the above options are unfeasible.

From Google Earth aerial imagery from 2009, when the school was still standing (see attached), we estimate the impermeable area of the site was approximately 0.5ha. Making an estimate of runoff rate using the Rational Method with a rainfall intensity of 50mm/hr, we estimate the runoff from the site to have been 69.5l/s. Allowing for a 30% reduction in runoff rates, we anticipate a proposed surface water discharge limit for the new development of the order of 48.7l/s (to be refined through further assessment).

Please confirm any further specific requirements with respect to surface water drainage principles.

To inform the Flood Risk Assessment, we would also appreciate your consultation on any known flooding within or near to the site, the location of any culverted or open watercourses, the location and any further information on flood defences or assets relevant to the site, or any other issues which may be pertinent to our work.

We trust that this is satisfactory and look forward to hearing from you, however, should you require any additional information at this time please do not hesitate to contact us.

Kind regards,

Matthew Wilson
Principal Engineer

07307 849 396
matthewwilson@arpnorthwest.co.uk

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APPENDIX F

DEVELOPMENT PROPOSALS

Schedule of Accommodation

2B4P HOUSE_79sq.m		09no.
3B5P HOUSE_93sq.m		6no.
3B5P UP-SPLITTER HOUSE_99sq.m		15no.
TOTAL		30no.

LEVELS SHOWN ON PLAN ARE SUBJECT TO FURTHER DETAILED DESIGN

Site Key

- EXISTING TREES
- REMOVED TREES (TO BE CONFIRMED)
- PROPOSED LOW LEVEL/MAINTENANCE HEDGE
- RETAINING WALL LOCATIONS (TO BE CONFIRMED)
- BANKING / PLANTING AREA
- PLOT ENTRANCES
- FENCES AND GATES
- LOW LEVEL RETAINING WALL (TO BE CONFIRMED)
- GARDEN SHED
- BINS
- ATTENUATION TANK LOCATION + EASEMENT

Rev:	Date:	Drawn:	Checked:	Description:
P1	05.06.20	MAI	RPM	Layout revised to incorporate attenuation tank. 1no. plot lost.

Suitability: PL Planning

PLANE STREET

SITE PLAN

Location:
PLANE STREET
HUDDERSFIELD

Client:
ACCENT HOUSING GROUP

UPRN Originator Zone Level Type Role Series/Number
PLNST-WBA-XX-ZZ-DR-A-PL02

Revision: P1

Date:	Drawn:	Checked:	Scale: @A2	Int Job No:
10/22/19	MAI	RPM	1 : 500	4039_06

WATSON BATTY ARCHITECTS

Shires House, Shires Road
Guiseley, Leeds LS20 8EU
Leeds | Loughborough

T: 01943 876 665
E: enquiries@watsonbatty.com
W: www.watsonbatty.com

FUTURE BUILT

Note: Do not Scale from this drawing. All dimensions to be checked on site

A P P E N D I X G

INDICATIVE SURFACE WATER DRAINAGE CALCULATIONS

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	108.967	0.767	4.1	80.5	O K
30 min Summer	109.239	1.039	4.1	109.1	O K
60 min Summer	109.517	1.317	4.1	138.2	O K
120 min Summer	109.763	1.563	4.5	164.1	O K
180 min Summer	109.862	1.662	4.6	174.5	O K
240 min Summer	109.894	1.694	4.6	177.9	O K
360 min Summer	109.900	1.700	4.6	178.5	O K
480 min Summer	109.884	1.684	4.6	176.8	O K
600 min Summer	109.859	1.659	4.6	174.2	O K
720 min Summer	109.831	1.631	4.5	171.3	O K
960 min Summer	109.770	1.570	4.5	164.8	O K
1440 min Summer	109.642	1.442	4.3	151.4	O K
2160 min Summer	109.455	1.255	4.1	131.8	O K
2880 min Summer	109.277	1.077	4.1	113.1	O K
4320 min Summer	108.873	0.673	4.1	70.6	O K
5760 min Summer	108.607	0.407	4.1	42.7	O K
7200 min Summer	108.466	0.266	4.0	27.9	O K
8640 min Summer	108.389	0.189	3.8	19.8	O K
10080 min Summer	108.345	0.145	3.5	15.2	O K
15 min Winter	109.064	0.864	4.1	90.7	O K
30 min Winter	109.370	1.170	4.1	122.8	O K
60 min Winter	109.687	1.487	4.4	156.1	O K
120 min Winter	109.978	1.778	4.7	186.6	O K
180 min Winter	110.102	1.902	4.9	199.7	O K
240 min Winter	110.152	1.952	4.9	204.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	112.032	0.0	84.6	26
30 min Summer	76.515	0.0	115.6	40
60 min Summer	49.937	0.0	151.2	68
120 min Summer	31.438	0.0	190.4	126
180 min Summer	23.589	0.0	214.3	184
240 min Summer	19.078	0.0	231.1	242
360 min Summer	14.159	0.0	257.2	318
480 min Summer	11.440	0.0	277.1	382
600 min Summer	9.687	0.0	293.3	446
720 min Summer	8.450	0.0	307.0	514
960 min Summer	6.805	0.0	329.7	654
1440 min Summer	5.004	0.0	363.6	930
2160 min Summer	3.670	0.0	400.3	1344
2880 min Summer	2.941	0.0	427.6	1756
4320 min Summer	2.148	0.0	468.3	2472
5760 min Summer	1.718	0.0	499.6	3120
7200 min Summer	1.446	0.0	525.7	3760
8640 min Summer	1.256	0.0	548.1	4488
10080 min Summer	1.116	0.0	567.7	5144
15 min Winter	112.032	0.0	94.7	26
30 min Winter	76.515	0.0	129.5	40
60 min Winter	49.937	0.0	169.3	68
120 min Winter	31.438	0.0	213.2	124
180 min Winter	23.589	0.0	240.0	180
240 min Winter	19.078	0.0	258.8	236

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
360 min Winter	110.176	1.976	5.0	207.4	O K
480 min Winter	110.149	1.949	4.9	204.7	O K
600 min Winter	110.120	1.920	4.9	201.6	O K
720 min Winter	110.082	1.882	4.9	197.6	O K
960 min Winter	109.991	1.791	4.7	188.0	O K
1440 min Winter	109.795	1.595	4.5	167.4	O K
2160 min Winter	109.508	1.308	4.1	137.4	O K
2880 min Winter	109.236	1.036	4.1	108.7	O K
4320 min Winter	108.631	0.431	4.1	45.3	O K
5760 min Winter	108.409	0.209	3.9	21.9	O K
7200 min Winter	108.328	0.128	3.4	13.4	O K
8640 min Winter	108.304	0.104	3.0	10.9	O K
10080 min Winter	108.292	0.092	2.7	9.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
360 min Winter	14.159	0.0	288.1	344
480 min Winter	11.440	0.0	310.4	400
600 min Winter	9.687	0.0	328.5	472
720 min Winter	8.450	0.0	343.9	550
960 min Winter	6.805	0.0	369.2	704
1440 min Winter	5.004	0.0	407.2	1008
2160 min Winter	3.670	0.0	448.3	1448
2880 min Winter	2.941	0.0	478.9	1880
4320 min Winter	2.148	0.0	524.5	2508
5760 min Winter	1.718	0.0	559.6	3112
7200 min Winter	1.446	0.0	588.8	3744
8640 min Winter	1.256	0.0	613.9	4408
10080 min Winter	1.116	0.0	635.8	5096

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.319	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.404

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.135	4	8	0.135	8	12	0.135

Model Details

Storage is Online Cover Level (m) 110.800

Tank or Pond Structure

Invert Level (m) 108.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	105.0	2.000	105.0	2.001	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0092-5000-2000-5000
Design Head (m)	2.000
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	92
Invert Level (m)	108.200
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	5.0	Kick-Flo®	0.816	3.3
Flush-Flo™	0.398	4.1	Mean Flow over Head Range	-	3.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.9	0.800	3.4	2.000	5.0	4.000	6.9	7.000	9.0
0.200	3.8	1.000	3.6	2.200	5.2	4.500	7.3	7.500	9.3
0.300	4.1	1.200	3.9	2.400	5.4	5.000	7.7	8.000	9.6
0.400	4.1	1.400	4.2	2.600	5.6	5.500	8.0	8.500	9.9
0.500	4.1	1.600	4.5	3.000	6.0	6.000	8.4	9.000	10.2
0.600	4.0	1.800	4.8	3.500	6.5	6.500	8.7	9.500	10.4