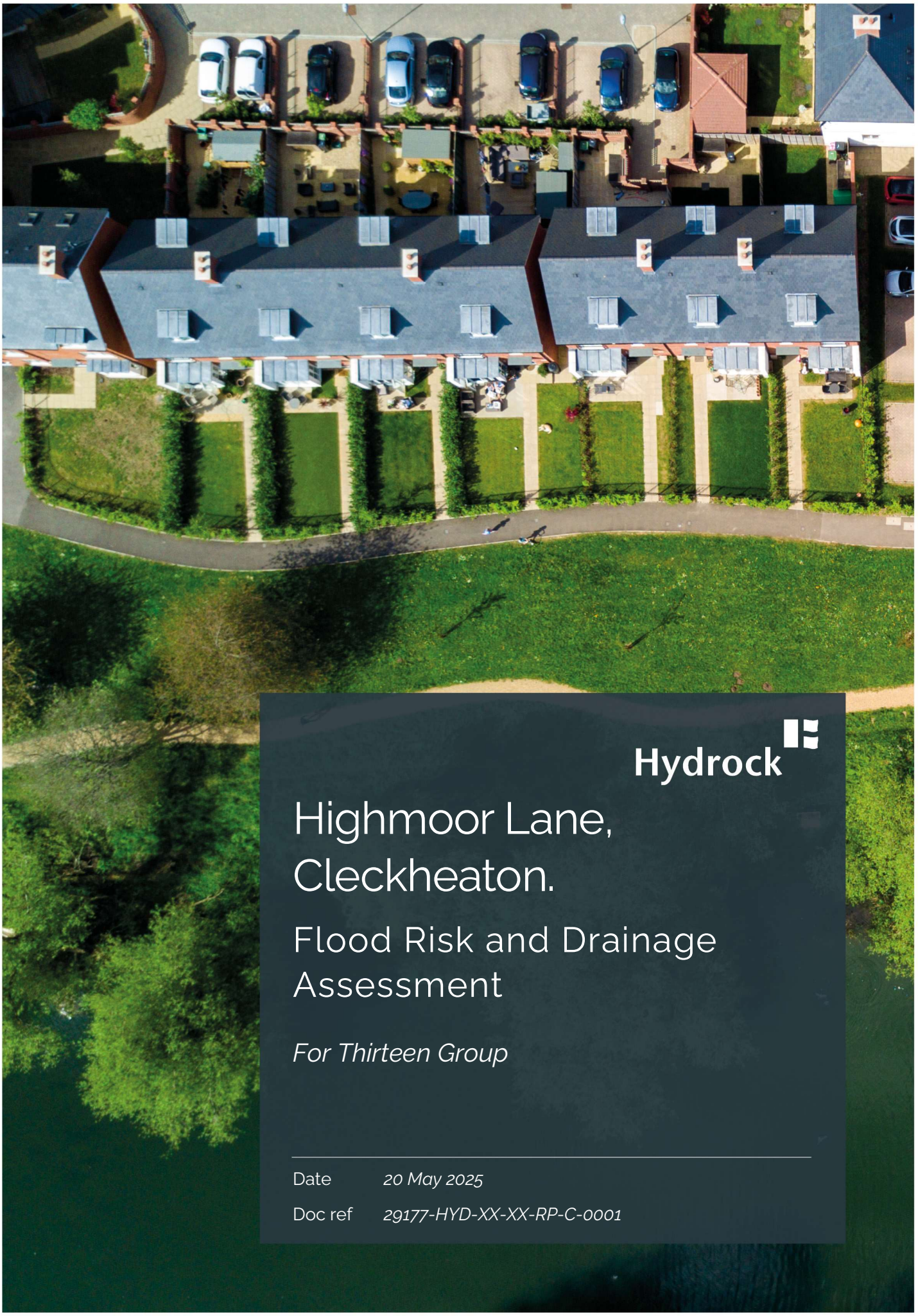

Hydrock

Highmoor Lane, Cleckheaton.

Flood Risk and Drainage Assessment

For Thirteen Group

Date	*20 May 2025*
Doc ref	*29177-HYD-XX-XX-RP-C-0001*

Document control sheet

Issued by	Hydrock Consultants Limited 2 Esh Plaza Sir Bobby Robson Way Great Park Newcastle Upon Tyne NE13 9BA	T +44 (0)191 2302993 E newcastle@hydrock.com hydrock.com
Client	Thirteen Group	
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P03	S2	20/05/25	Drawings Updated

Contents

Figures

Appendices

1. Introduction

Hydrock Consultants Limited (Hydrock) now Stantec have been commissioned by Thirteen Group to undertake a site-specific flood risk and drainage strategy for a proposed residential development at Highmoor Lane, Cleckheaton.

The objective of this preliminary assessment is to identify any potential risk of flooding to the proposed development and any risk to the adjacent properties as a result of development. This will be undertaken in accordance with the requirements of the National Planning Policy Framework (NPPF) and its associated Technical Guidance. It will also provide an initial assessment of the surface and foul water drainage proposals to ensure the development does not increase the risk of flooding elsewhere.

This report is based on the following information

- Environment Agency (EA) online flood maps
- Yorkshire Water Pre-Planning Enquiry Response dated 18th February 2025
- Yorkshire Water Sewer records
- Kirklees Council's online Strategic Flood Risk Assessment.

This report presents the factual information available during the time of the appraisal, interpretation of the data obtained and recommendations relevant to the scope of works. It has been assumed in the production of this report that the site is to be developed for a proposed residential development at Highmoor Lane, Cleckheaton.

This report has been prepared for the sole use of Thirteen Group and their appointed design team. No other third party may rely upon or reproduce the contents of this report without the written approval of Hydrock now Stantec. If any unauthorised third party comes into the possession of this report, they rely on it entirely at their own risk and Hydrock now Stantec do not owe them any Duty of Care or Skill.

2. Site Information

2.1 Site Location

The site is located North of Highmoor Lane, Cleckheaton, directly South of the A649 (Halifax Road), and directly East of the M62.

The site is surrounded by residential properties to the south, east and north as well as Hartshead Moor Cricket Club located to the southwest.

The site comprises an area of approximately 1.52 ha. and was previously occupied by a school which has now been demolished. A site location plan is shown in **Figure 1**.

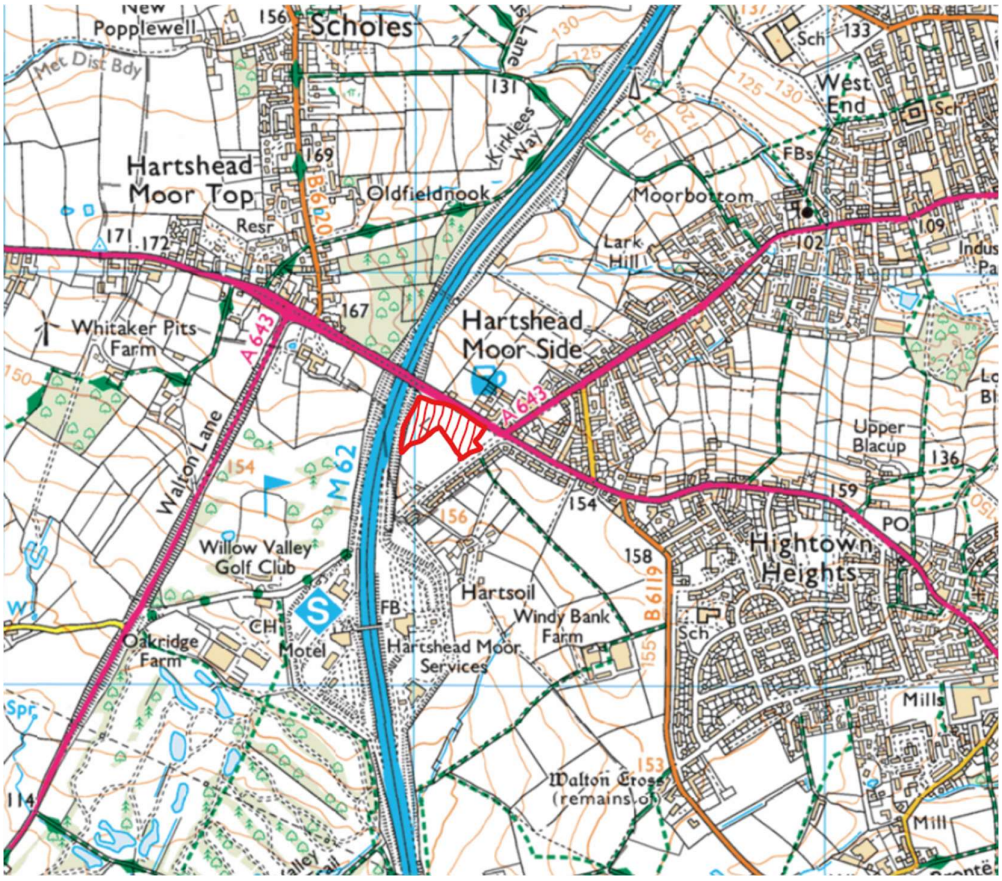


Figure 1 - Site Location

2.2 Watercourses

The closest named watercourse to the site is Oldfield Beck, approximately 525m Northeast of the site, beyond the A649, Halifax Road and crosses under the M62.
Oldfield Beck ultimately discharges into the River Spen which is located approximately 2.2km East of the site beyond several residential streets.

2.3 Topography

A topographic survey has been undertaken by L&M Survey Services dated September 2024.

It shows that the site falls from the Northern, Eastern, and Western boundaries, into the centre of the site, at which point it is relatively flat to the Southern Boundary.

The low point at the centre of the site shows a level of 156.29mAOD.

The Northern point of the boundary shows a level of 160.19mAOD. An average gradient of 1:25 from this to the aforementioned low point.

The Southern point of the boundary shows a level of 156.50mAOD. An average gradient of 1:441 from this to the aforementioned low point.

The Eastern point of the boundary shows a level of 158.00mAOD. An average gradient of 1:54 has been calculated from this to the aforementioned low point.

The Western point of the boundary shows a level of 158.00mAOD. An average gradient of 1:67 has been calculated from this to the aforementioned low point.

A copy of the Topographical Survey is included within **Appendix A**.

2.4 Ground Conditions

A Phase 2 Geo-Environmental report has been undertaken by Rogers Geotechnical Services Ltd.

In general, below the topsoil and asphalt, granular and cohesive made ground was revealed to between 0.3m and 0.7m depth within WS04, WS06 and TP01. Below the made ground and topsoil, firm to stiff slightly gravelly silty clay was encountered to depths of between 0.85m and 2.1m below ground level. Within WS01 and WS02, medium dense silty very gravelly sand was encountered to depths of between 0.45m and 1.6m. Bedrock described as extremely weak thinly laminated mudstone was then revealed to the base of TP01, TP03, TP05 in all boreholes except WS04 and WS08. Bedrock was not encountered in WS08, TP02 or TP04. With respect to the local geology, it is considered that this material is representative of the residual becoming highly weathered Pennine Lower Coal Measures Formation.

It should be appreciated that the Phase 1 Desk study indicated the presence of a historic infilled pond towards the south-western corner of the site. Whilst no evidence of the pond has been noted within any of the boreholes or trial pits, a willow tree was observed on site. Given that willow trees are noted for their preference for moist soils, it is possible that the historic pond was formerly located close to this tree.

2.5 Existing Development

The site comprises a plot of land that was previously occupied by a school. The school premises have since been demolished and the site had been reduced to scrub land and hard standing. The site is currently accessed from the South, via Halifax Road via the northern boundary.

2.6 Proposed Development

Hydrock understands that the proposed development will create 40 new residential dwellings with associated garden areas, access roads, and parking areas.

A proposed site plan is located in **Appendix B.**

3. Flood Zone and Risk to the Proposed Development.

The site has been assessed for flood risk based on information from the online EA Flood Map for Planning and Long term Flood Risk Mapping.

All sources of flooding have been reviewed including fluvial, sea, surface water, groundwater, sewer and artificial sources.

3.1 Fluvial and Sea Flooding

The EA Flood Zones refer to the probability of river and sea flooding. The mapping does not take account of the possible impacts of climate change, or the presence of flood defences. Flood Zone definitions are set out in the National Planning Policy Framework (NPPF) as the following:

- Flood Zone 1: Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
- Flood Zone 2: Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.
- Flood Zone 3: Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

According to the EA Flood Map for Planning (Rivers and Seas), **Figure 2**, the Site is located in Flood Zones 1 (Low Probability).

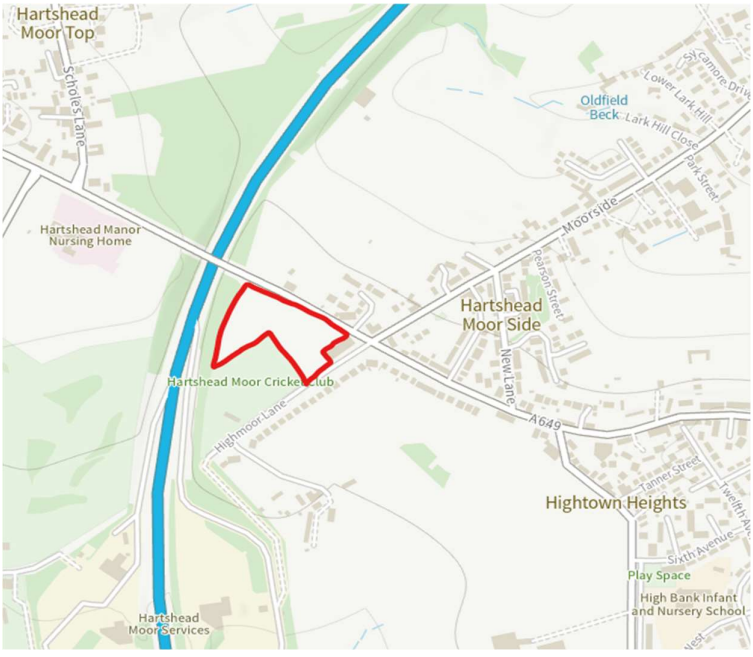


Figure 2 - EA Flood Risk Map, Rivers and the Sea

3.2 Surface Water Flooding

Surface water flooding occurs when the amount of rainfall exceeds the drainage or infiltration capacity of the surface it falls upon. Surface water runoff can coalesce into surface water flow pathways, especially in urban areas where there is a large proportion of impermeable ground surface due to development, as it flows towards a drainage system or watercourse. Surface water can also pond within areas with inadequate drainage.

The Environment Agency has worked together with Lead Local Flood Authorities who deal with surface water flooding to produce Updated Flood Map for Surface Water mapping which places areas at risk of flooding from surface water into the following categories:

- High risk: The area has a chance of flooding of greater than 1 in 30 (3.3%) each year.
- Medium risk: The area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) each year.
- Low risk: The area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%) each year.
- Very low risk: The area has a chance of flooding of less than 1 in 1000 (0.1%) each year.

According to the EA Surface Water Flood Maps. **Figure 3,** the majority of the site is shown to be Very Low risk, other than the centre of the site which is shown to be High risk.

It is considered that this area of high risk is as a result of the low-lying area in this location of the site and will be designed out in the reprofiling of the development.

It should be noted that the EA Mapping does not consider any engineered drainage networks which may be serving the area. It is therefore a worst-case scenario. The topography and engineered drainage networks also will be altered as part of the development mitigation especially in high-risk locations providing an appropriate surface water runoff.

Therefore, the risk of surface water flooding is deemed to be low on site following its redevelopment.

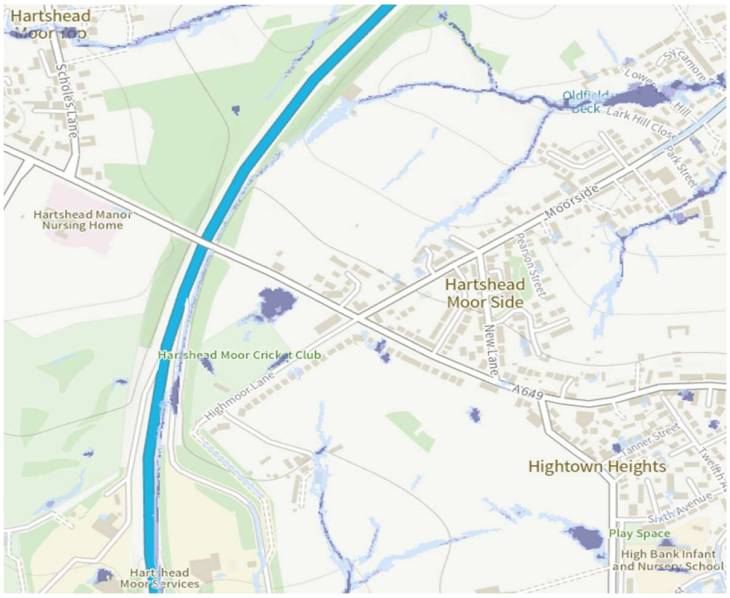


Figure 3 - EA Flood Risk Map, Surface Water

3.4 Flooding from Artificial sources

The Environment Agency Flood Risk summary has been reviewed to determine the risk of flooding from artificial sources such as reservoirs, canals or flood defences. This would indicate any areas which are of potential risk of flooding due to failure of such structures.

This states that that flooding from reservoirs is unlikely in this area.

3.3 Groundwater Flooding

The Environment Agency Flood Risk summary has been reviewed to determine the risk of flooding from artificial sources such as reservoirs, canals or flood defences. This would indicate any areas which are of potential risk of flooding due to failure of such structures.

This states that that flooding from groundwater is unlikely in this area.

A Phase 2 Geo-Environmental report has been undertaken by Rogers Geotechnical Services Ltd. During investigation, no groundwater was encountered.

Therefore, the risk of groundwater flooding is deemed to be low on site.

3.4 Sewer Flooding

A further potential source of flooding to be considered is from the flooding of existing/proposed drainage systems and the public sewers. Sewers may be at risk of flooding during times of heavy rainfall, which can cause sewers to surcharge resulting in flooding at surface.

Yorkshire Waters sewer maps have been obtained. These show an existing 225mm diameter public combined sewer located within Highmoor Lane immediately south of the site flowing in a north easterly direction.

Should any flooding of these sewers occur it is considered that flood water would flow to the Southwest away from the site as a result of the existing topography.

It is also noted that there is an existing 300mm diameter public combined sewer north east of the site, within Halifax Road, A649, flowing in a Southeasterly direction.

Should any flooding of these sewers occur it is considered that flood water would flow to the southwest away from the site as a result of the existing topography.

It is assumed that the old school previously discharged at a brownfield rate. However, it is proposed that surface water flows from the site will be restricted to greenfield runoff rate, and by doing so, provide betterment to the capacity of the existing combined sewer.

As a result, there is no increased risk of flooding as a result of surface water.

A copy of Yorkshire Water Pre-Development Response and Sewer Records are included within **Appendix C**.

4. Existing Drainage

A utility survey has been undertaken which indicates existing private drainage crossing the site, from the former school, which previously occupied the site. This is shown to drain in a northeasterly direction towards Halifax Road but its existing point of connection has not been confirmed. It is considered this would have drained into the existing public combined sewer located in Halifax Road.

Yorkshire Water have been consulted and their records show;

- an existing 225mm diameter public combined sewer located within Highmoor Lane immediately South of the site flowing in a Northeasterly direction.
- an existing 300mm diameter public combined sewer North East of the site, within Halifax Road, A649, flowing in a Southeasterly direction.

5. Surface Water Drainage

5.1 Proposed Surface Water

In line with the NPPF, the aim should be to discharge surface water run-off from the site in line with the order of priority within the surface water drainage hierarchy.

1. Into the ground (infiltration)
2. To a surface water body
3. To a surface water sewer, highway drain or another drainage system
4. A combined water sewer.

The proposed development will require new positive drainage to be provided. The Phase 2 Geo-Environmental Report, undertaken by Rogers Geotechnical Services Ltd in December 2022, undertook 3 soakaway tests, all of which deemed the characteristics as "practically impermeable". As a result, this rules out the possibility of ground infiltration.

Due to the distance from the site to the nearest surface water body being so great, and with the obstacles of major roads and residential build-ups between the two. It is deemed that connection to a surface water body is unfeasible.

A Yorkshire Water pre-development response was received 18th February 2025 and they have stated that surface water from the site should be directed to the existing public surface water sewer located within Moorside to the northeast of the site. This will require approximately 100m of new offsite surface water to connect to this existing sewer. This should just be achievable by gravity subject to the actual depth of the existing surface water manhole being confirmed.

YW have confirmed that the combined sewer network does not have any spare capacity to accept any surface water discharge form the site.

A copy shown on the Preliminary Drainage Layout plan, is located within **Appendix D**.

A copy of Yorkshire Water Pre-Development Response and Sewer Records are included within **Appendix C.**

5.2 Surface Water Discharge Rate

5.2.1 Existing Surface Water Discharge

From existing utility survey information provided it looks like the previous school may have discharged surface water flows to the north into the existing 300mm diameter public combined sewer located in Halifax Road. The existing flows would have been unrestricted.

5.2.2 Proposed Surface Water Discharge

In line with Kirklees Councils LLFA requirements it is proposed to restrict surface water flows to a greenfield flow rate. Calculations have been undertaken based on the proposed impermeable area which is approximately 0.66 ha. Using the online Wallingford tool, this provides a Q_{BAR} flow rate of 3.61 l/s.

A predevelopment enquiry has been received from Yorkshire Water dated 18th February 2025 and this has confirmed that surface water flows should be restricted to a maximum flow rate of 3.5 l/s.

See **Appendix D** for a copy of the YW predevelopment enquiry response.

See **Appendix E** for a copy of the Wallingford calculations.

See Appendix

5.3 Surface Water Attenuation

Based on the flow restriction required for the site, surface water attenuation will be required.

A surface water design has been undertaken using Flow software, and for a 1 in 100 year +45% climate change event with a flow restriction of 3.5 l/s, a volume of approximately 437m^3 will be required.

This volume will be provided within a reinforced concrete attenuation tank (Carlow Tank) which will ultimately be adopted by Yorkshire Water.

Attenuation has been intended to be kept above ground in the form of basins and swales as far as reasonably practicable. However, due to the topography of the site, as well as constraints due to location of trees, underground attenuation tanks have had to be implemented.

In accordance with the updated NPPF Technical Guidance and the NE LLFA SuDS Local Standards, a climate change uplift of 45% should be applied to all rainfall estimates and proposed run-off calculations and a 10% allowance for urban creep has been applied.

Preliminary SW calculations are provided in **Appendix F.**

5.4 Surface Water Treatment

Sustainable Urban Drainage Systems (SUDS) should also be used wherever possible to mimic as far as practicable the natural run off regime, improve water quality, reduce run-off volume and attenuate peak flows. These should be designed in accordance with the current guidance, The SUDS Manual (CIRIA C753) and should meet the required treatment indices levels in line with this guidance.

5.4.1 Pollution Hazard Indices

Residential Roofs

Using Table 26.2 of the SuDS Manual (C753), the proposed residential roofs have been rated as having a very low pollution hazard with the following pollution hazard indices.

Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Very Low	0.2	0.2	0.05

Individual property driveways, residential car parks, low traffic roads

Using Table 26.2 of the SuDS Manual (C753), the proposed individual property driveways and low traffic roads have been rated as having a low pollution hazard with the following pollution hazard indices.

Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Low	0.5	0.4	0.4

As the individual property driveways, residential car parks, and low traffic roads are the worst case, they have been used for the comparison with mitigation indices.

5.4.2 Mitigation Indices

It is proposed that all driveways will be of permeable construction. These shall treat the surface water runoff prior to discharge into the proposed drainage system, meeting the mitigation requirements of Ciria (C753) Table 26.3 (Extract below).

Type of SuDS Component	Total Suspended Solids(TSS)	Metals	Hydrocarbons
Permeable pavement	0.7	0.6	0.7

The mitigation indices is greater than that of the corresponding pollution hazard indices and will therefore provide sufficient treatment of the driveways.

5.5 Surface Water Maintenance

Insufficient maintenance of drainage structures can result in increasing the risk of flooding as run off is unable to enter the drainage system. This can result in surcharge due to blockages, or flows being directed elsewhere due to it being unable to enter the system. This also results in insufficient treatment of surface water resulting in an increased risk of pollutants entering the system.

Maintenance of all new adopted drainage will be the responsibility of the developer until such time as these are adopted by Yorkshire Water.

Maintenance of all new private drainage and storage structures will be the responsibility of the residents/management company.

A drainage management and maintenance plan has been included within **Appendix G**.

5.6 Surface Water Exceedance flows

Storage will be provided for the 1 in 100+45%CC storm event within the site with all surface water retained below ground within the new drainage system,

Exceedance flood flow paths as a result of blockage and surcharge will be managed through the development site to ensure these do not impact adjacent properties.

6. Foul Water Drainage

In accordance with the Yorkshire Water Pre-Planning Enquiry response, foul water is proposed to discharge without restriction into the 225mm diameter combined public sewer South of the site via a new manhole built on the line, as shown on the Preliminary Drainage Layout plan, located within **Appendix D**.

A copy of Yorkshire Water Pre-Development Response and Sewer Records are included within **Appendix C.**

7. Conclusions and Recommendations

7.1 Conclusions

The site has been reviewed in relation to all potential sources of flooding. It is considered that the proposed development has a low risk of flooding from all sources and will not exacerbate flooding elsewhere.

It is proposed to discharge surface water flows into the existing Yorkshire Water surface water drainage system Northeast of the site. This will require approximately 100m of offsite surface water sewer.

Surface water flows are to be restricted to 3.5 l/s in accordance with Yorkshire Waters requirements with surface water storage provided in the form of a concrete underground attenuation tank.

It is proposed to discharge foul water flows unrestricted into the existing Yorkshire Water combined sewer system in Highmoor Lane to the south of the site.

Storage will be provided for the 1 in 100+45%CC storm event within the site with all surface water retained "below ground" within the new drainage system. A volume of approximately 437m^3 will be required.

It is proposed that permeable pavement is to be incorporated into the scheme. This will treat the surface water runoff from the proposed new driveways.

Appendix A Landform Surveys Topographical Survey

LEGEND

- Contour
- Prominent Contour
- Kerb
- Low Kerb
- Road Verge
- Back of Footpath
- Crash Barrier
- Wall
- Wall (To scale)
- Wall Overhang
- Concrete Base
- Steps
- Fence
- Gate
- Building
- Building Minor
- Building Overhang
- Soffit Line
- Top of bank
- Bottom of bank
- Change of Surface
- Tactile Paving
- Track (To scale)
- Ditch
- Water Line
- Rock Outcrop
- Hedge (To scale)
- Foliage
- Tree Area
- Tree
- Bush
- Pipeline
- Channel (To scale)
- Overhead Line
- Seat
- Junction / Location Box
- Road Sign
- Railway
- Beaver
- Buffer
- Cable Housing
- Check Rail
- Coping Edge
- Ground Cable
- Ground Signal
- Hollow Sleeper
- Magnet
- Mast
- Orange Pipe Crossing
- Red Bond
- Signal
- Signal Wire
- Sleeper Edge
- Switch
- Switch Equipment
- Track Warning System
- Twist Location
- Clip
- Missing Clip
- Air Valve
- Bed Level
- Borehole
- Rubbish Bin
- Bollard
- Bus Stop
- British Telecom
- Cable T.V.
- Cable Riser
- Camera
- Culvert
- Down Pipe
- Drain
- Electricity Pole
- Earth Rod
- Fire Hydrant
- Flow Level
- Gully
- Gas Pipe
- Gas Riser
- Gas Valve
- Inspection Cover Small
- Inspection Cover Large
- Invert Level
- Illuminated Road Sign
- Kerb Outlet
- Lamp Post
- Lifebelt
- Meter
- Circular Manhole
- Manhole
- Triangular Manhole
- Monitor
- Mooring Post
- Marker Post
- Post
- Post Box
- Pipe
- Trial Pit
- Rodding Eye
- Road Sign
- Spot Level
- Stop Cock
- Stay
- Telephone
- Tree Stump
- Threshold Level
- Telegraph Pole
- Traffic Signal
- Water Level
- Axle Counter
- Cert Marker
- Crossing Nose
- Expansion Joint
- Flash Butt Weld
- Insulated Joint
- Mileage Marker
- Non Insulated Joint
- Thermic Weld
- Eaves Level
- Ridge Level

CONTROL STATION COORDINATES

STN	EASTING	NORTHING	LEVEL
LM1	417148.245	424645.214	157.609
LM2	417215.727	424619.720	156.672
LM3	417165.883	424568.756	157.988
LM4	417116.983	424543.942	156.156
LM5	417127.272	424591.506	157.698
LM6	417151.800	424618.860	157.904
LM7	417049.228	424644.657	156.814
LM8	417013.637	424614.715	157.298
LM9	416998.362	424593.068	157.394
LM10	417005.926	424631.677	157.639
LM11	417032.167	424671.992	158.557
ST3	417114.001	424649.909	156.500
ST01	417044.156	424700.873	158.611
ST02	416996.349	424725.696	159.444
ST31	417064.876	424691.423	158.246
ST101	417095.208	424678.078	157.957
ST102	417133.111	424654.044	157.637
ST3A	417071.697	424665.937	156.520

N

INDICATIVE OF NORTH

Notes:
All levels shown are relative to the O.S. active GPS network (OSGM15).

The co-ordinates shown on this plan are relative to the O.S. active GPS network (OSTN15).
The survey is orientated approximately to grid north.

L&M Survey Services
LAND + RAIL + UTILITY

Kilmarnock
Netherton House, West Netherton Street, Kilmarnock, KA1 4BU
Tel: 01563 533368 Fax: 01563 533309
Email: info@lmsurveys.co.uk

Livingston
Unit 3 Alderstone Park, Houston Road Livingston, EH54 6FD
Tel: 01506 896231 Fax: 01563 533309
Email: info@lmsurveys.co.uk

Doncaster
7 Bulcarb Grove, Doncaster DN4 9DE
Tel: 01302 570741 Fax: 01563 533309
Email: info@lmsurveys.co.uk

Client :

MORRIS & SPOTTISWOOD

54 HELEN STREET

GLASGOW

G51 3HQ

Project Title :

TOPOGRAPHICAL SURVEY

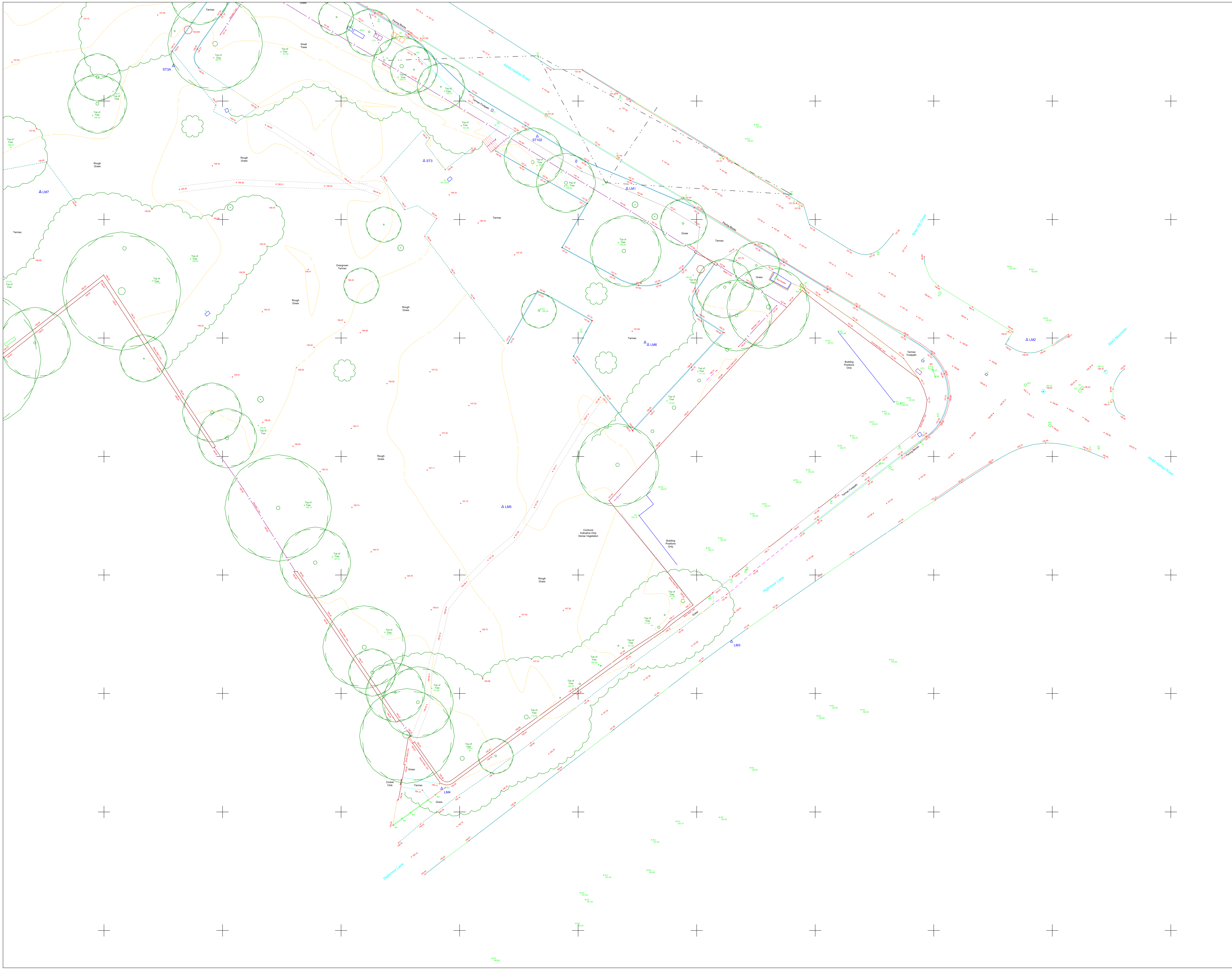
HIGHMOOR LANE

CLECKHEATON

WEST YORKSHIRE

Sheet Title :		Scale :	
SHEET 1 OF 2		1:200	
Surveyed date :	Issued date :	Enquiry No :	Project No :
30/08/24	03/09/24	29781	16753
Surveyed by :	Processed by :	Checked by :	Approved by :
AM	AM	SMcM	KRJA

A0 Sheet



LEGEND

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- Tree
- Bush
- Pipeline
- Channel (To scale)
- Overhead Line
- Seat
- Junction / Location Box
- Road Sign
- Railway
- Bearer
- Buffer
- Cable Housing
- Check Rail
- Coping Edge
- Ground Cable
- Ground Signal
- Hollow Sleeper
- Magnet
- Mast
- Orange Pipe Crossing
- Red Bond
- Signal
- Signal Wire
- Sleeper Edge
- Switch
- Switch Equipment
- Track Warning System
- Twist — Twist Location
- Clip
- Missing Clip

- AV — Air Valve
- Bed Level — Bed Level
- BH — Borehole
- Bin — Rubbish Bin
- Bol — Bollard
- BS — Bus Stop
- BT — British Telecom
- CTV — Cable T.V.
- CR — Cable Riser
- CCTV — Camera
- CULV IL — Culvert
- DP — Down Pipe
- Dr — Drain
- EP — Electricity Pole
- ER — Earth Rod
- FH — Fire Hydrant
- FL — Floor Level
- G — Gully
- Gas — Gas Pipe
- GR — Gas Riser
- GV — Gas Valve
- IC — Inspection Cover Small
- IC — Inspection Cover Large
- IL — Invert Level
- IRS — Illuminated Road Sign
- KO — Kerb Outlet
- LP — Lamp Post
- L/B — Lifebelt
- Met — Meter
- MH — Circular Manhole
- MH — Manhole
- MH — Triangular Manhole
- Mon — Monitor
- Moor — Mooring Post
- MP — Marker Post
- P — Post
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- Stay — Stay
- Phone — Telephone
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- TS — Traffic Signal
- WLev — Water Level
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- Cant — Cant Marker
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- IJ/4 — Insulated Joint
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- R/L — Ridge Level

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LM6	417151.800	424618.860	157.904
LM7	417049.228	424644.657	156.814
LM8	417013.637	424614.715	157.298
LM9	416998.362	424593.068	157.394
LM10	417005.926	424631.677	157.639
LM11	417032.167	424671.992	158.557
ST3	417114.001	424649.909	156.500
ST01	417044.156	424700.873	158.611
ST02	416996.349	424725.696	159.444
ST31	417064.876	424691.423	158.246
ST101	417095.208	424678.078	157.957
ST102	417133.111	424654.044	157.637
ST3A	417071.697	424665.937	156.520

N

INDICATIVE OF NORTH

Notes:

All levels shown are relative to the O.S. active GPS network (OSGM15).

The co-ordinates shown on this plan are relative to the O.S. active GPS network (OSTN15).
The survey is orientated approximately to grid north.

L&M Survey Services
LAND • RAIL • UTILITY

Kilmarnock
Netherton House, West Netherton Street, Kilmarnock, KA1 4BU
Tel: 01563 533368 Fax: 01563 533309
Email: info@lmsurveys.co.uk

Livingston
Shairps Business Park, Houston Road
Livingston, EH54 5FD
Tel: 01506 896231 Fax: 01563 533309
Email: info@lmsurveys.co.uk

Doncaster
7 Bullrush Grove, Doncaster
DN4 8SL
Tel: 01302 570741 Fax: 01563 533309
Email: info@lmsurveys.co.uk

Client :

MORRIS & SPOTTISWOOD
54 HELEN STREET
GLASGOW
G51 3HQ

Project Title :

TOPOGRAPHICAL SURVEY
HIGHMOOR LANE
CLECKHEATON
WEST YORKSHIRE

Sheet Title : SHEET 2 OF 2		Scale : 1:200	
Surveyed date : 30/08/24	Issued date : 03/09/24	Enquiry No : 29781	Project No : 16753
Surveyed by : AM	Processed by : AM	Checked by : SMcM	Approved by : KRJA

A0 Sheet

Appendix B Proposed Site Plan

N

DO NOT SCALE

All dimensions to be checked on site and Architect to be notified of any discrepancies prior to commencement

DESIGNERS RISK ASSESMENT

Construction (Design and Management) Regulations 2015

RESIDUAL RISKS

REF	DATE	DESCRIPTION

Kirklees - Highmoor Lane

(GIA)

Thirteen Group/Henry Boot

idp PARTNERSHIP NORTHERN

	ha	acres
GROSS SITE AREA	1.53	3.78
NET SITE AREA	1.17	2.90

HOUSE TYPE	BEDROOM	APPROVED DOCUMENT M COMPLIANCE	CONFIG	STOREYS	NO	MIX %	SQFT	SQM	TOTAL SQFT	TOTAL SQM
HT6	2B3P	CAT M4(2)	HOUSE	2	7	18	784.69	72.9	5493	510.30
HT9	3B5P	CAT M4(1)	HOUSE	2	6	15	1020.42	94.80	6123	568.80
HT10	3B5P	CAT M4(2)	HOUSE	2	1	3	1020.42	94.80	1020	94.80
HT11	3B5P	CAT M4(2)	HOUSE	2	8	20	1020.42	94.80	8163	758.40
HT12	3B5P	CAT M4(2)	HOUSE	2	4	10	1032.26	95.90	4129	383.60
HT24	4B6P	CAT M4(1)	HOUSE	2.5	8	20	1357.33	126.10	10859	1008.80
APT (G)	2B3P	CAT M4(2)	APARTMENT	1	3	8	659.83	61.30	1979	183.90
APT (1)	2B3P	CAT M4(1)	APARTMENT	1	3	8	731.95	68.00	2196	204.00
			OVERALL TOTALS		40	100			39962	3713

OVERALL DENSITY	
UNITS / ha	34.19
UNITS / ACRE	13.79
SQ M / ha	3173
SQ FT / ACRE	13780

OVERALL MIX	TOTAL	%
2 BED	13	33
3 BED	19	48
4 BED	8	20
	40	100

OVERALL MIX APPROVED DOCUMENT M	TOTAL	%
CAT M4(1)	17	43
CAT M4(2)	23	58
CAT M4(3)	0	0
	40	100

TOTAL NO	40

NOTE: Nett area excludes all public open space and associated structural landscaping / buffer planting / half road

KEY:

Cricket Netting Within Development Site

0 2 5 10 25 metres

Scale 1:500 @ A2

REV	DATE	INITIAL	DESCRIPTION
P2	12.05.25	GP	Patio sizes altered following client instruction.

PROJECT / CLIENT: Highmoor Lane, Thirteen	PROJECT NO.: N81:3165
DRAWING TITLE: Proposed Site Layout	DRAWING STATUS: PLANNING
	DRAWING NO.: 1002
PROJECT LEADER: GP / DRAWN BY: SQ / CHECKED BY: IDP	DRAWING REVISION: P2
SCALE: 1:500 @ A2	DATE: 27/03/24

idp Architecture Masterplanning Urban Design

IDPartnership Northern, St. Jude's, BarkerStreet, Shieldfield, Newcastle Upon Tyne, NE2 1AS T: 0191 2 614442
E: info@idpartnership.com I W: idpartnership.com

Appendix C Yorkshire Water Pre-Development Response and Sewer Records

YorkshireWater

Mr J Foster
Hydrock
2 Esh Plaza
Sir Bobby Robson Way
Great Park
Newcastle upon Tyne
NE13 9BA

Yorkshire Water Services
Developer Services
Pre-Development Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482

Email: technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

Your Ref:
Our Ref: A006644

18th February 2025

Dear Mr Foster,

Highmoor Lane, Cleckheaton, Kirklees, BD19 6LW - Pre-Planning Sewerage Enquiry V768977

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. 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

The closest practicable point of discharge for foul will be the proposed 225 mm combined public sewer in Highmoor Lane to the southeast of the site, but at present it does not have adequate capacity available to accommodate the anticipated foul water discharge from the proposed site. Subject to the submission of a Formal Planning Application and robust build plan and start date and confirmation the site is allocated and adopted within the local plan, Yorkshire Water will carry out a network reinforcement investigation to determine suitable foul connection points, any available capacity in the public sewer network, together with timescales for any potential upgrading works required.

The cost for any Yorkshire Water network reinforcement investigation or upgrade works will be at Yorkshire Waters cost up-front and recouped via the site's eventual infrastructure charges.

What are infrastructure charges?

We levy infrastructure charges for all newly connected properties that have not been connected to our water or sewer network before. The charges are calculated to recover the cost of reinforcing our existing water and sewer networks needed to serve new developments. The charges are set to recover the costs over the whole of the Yorkshire Water area to increase capacity.

For more information

https://www.yorkshirewater.com/media/hhbhwosi/42412-new-connection-charges-report-2022_digi_aw_final.pdf

Please review page 65 for explanation of Infrastructure charges

This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

Surface Water

The proposed drainage plan drawing number P22-271-HYD-XX-XX-DR-C-1000 Rev P04 is not acceptable as part H3 of the Building Regulations 2010 has not been fully explored and there is a Public Surface Water Sewer close to the site.

The developer's attention is drawn to Requirement H3 of the Building Regulations 2010. 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 225 mm diameter public surface water sewer recorded in Moorside, at a point to the northeast of the site.

The surface water discharge from the site to be restricted to not greater than 3.5 (three point 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 - https://www.yorkshirewater.com/developers/sewerage/sewerage-connections/

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for Code 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.

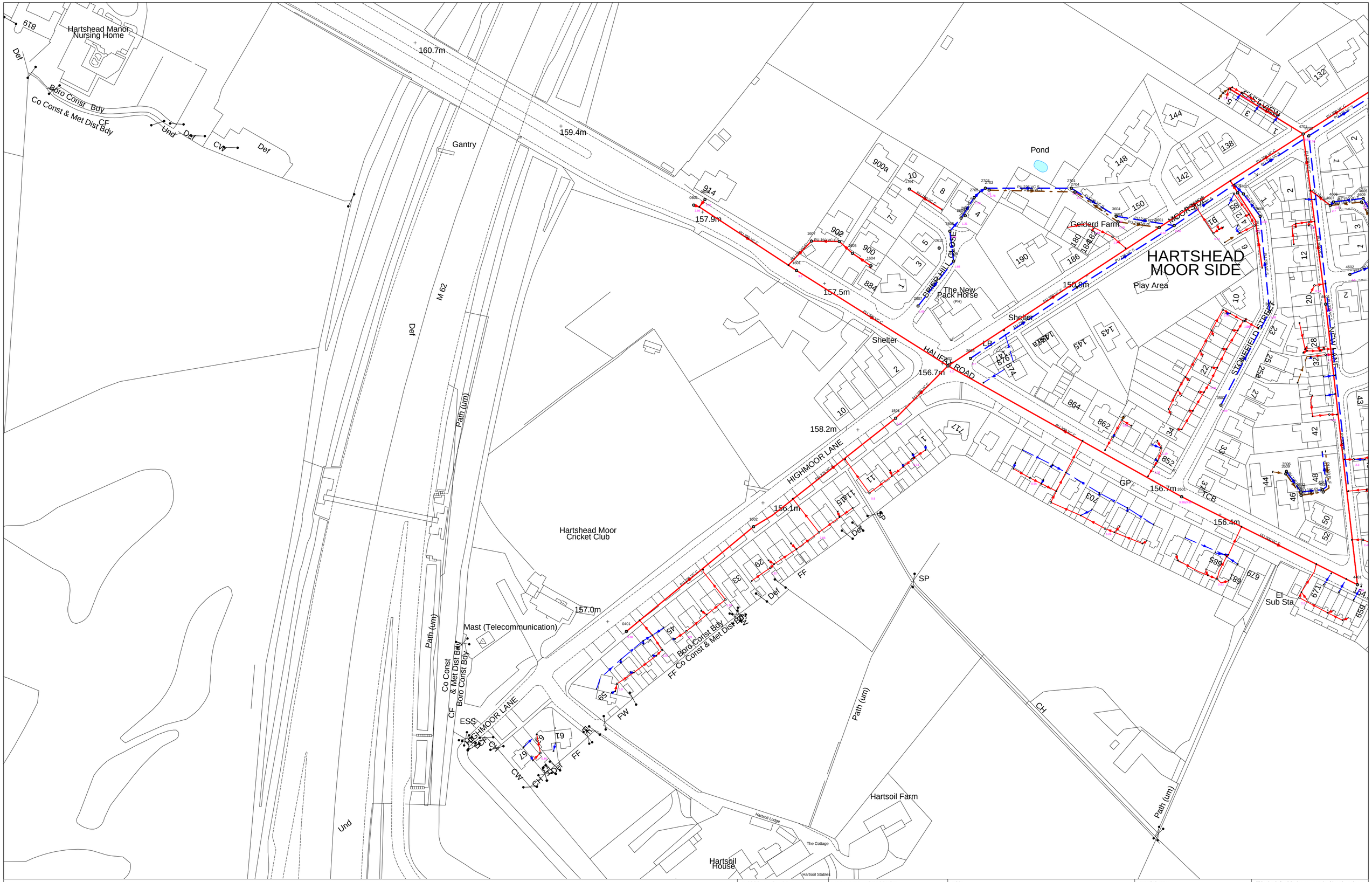
Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the Code for Adoption 2024/25, pursuant to an agreement under Section 104 of the Water Industry Act 1991. We are happy to offer pre-development technical advice on any prospective sites that you would like to put forward for adoption, prior to submission of your adoption application.

An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Sewer Adoption, Diversion and Requisition (telephone 0345 120 84 82) or email technical.sewerage@yorkshirewater.co.uk or visit - https://www.yorkshirewater.com/developers/sewerage/sewer-adoptions/ 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 reserved for specific allocated and adopted future development. 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
Town Planning Technician
Land & Property
For any Pre-Planning correspondence please email -
technical.sewerage@yorkshirewater.co.uk
For any Planning correspondence please email -
planningconsultation@yorkshirewater.co.uk

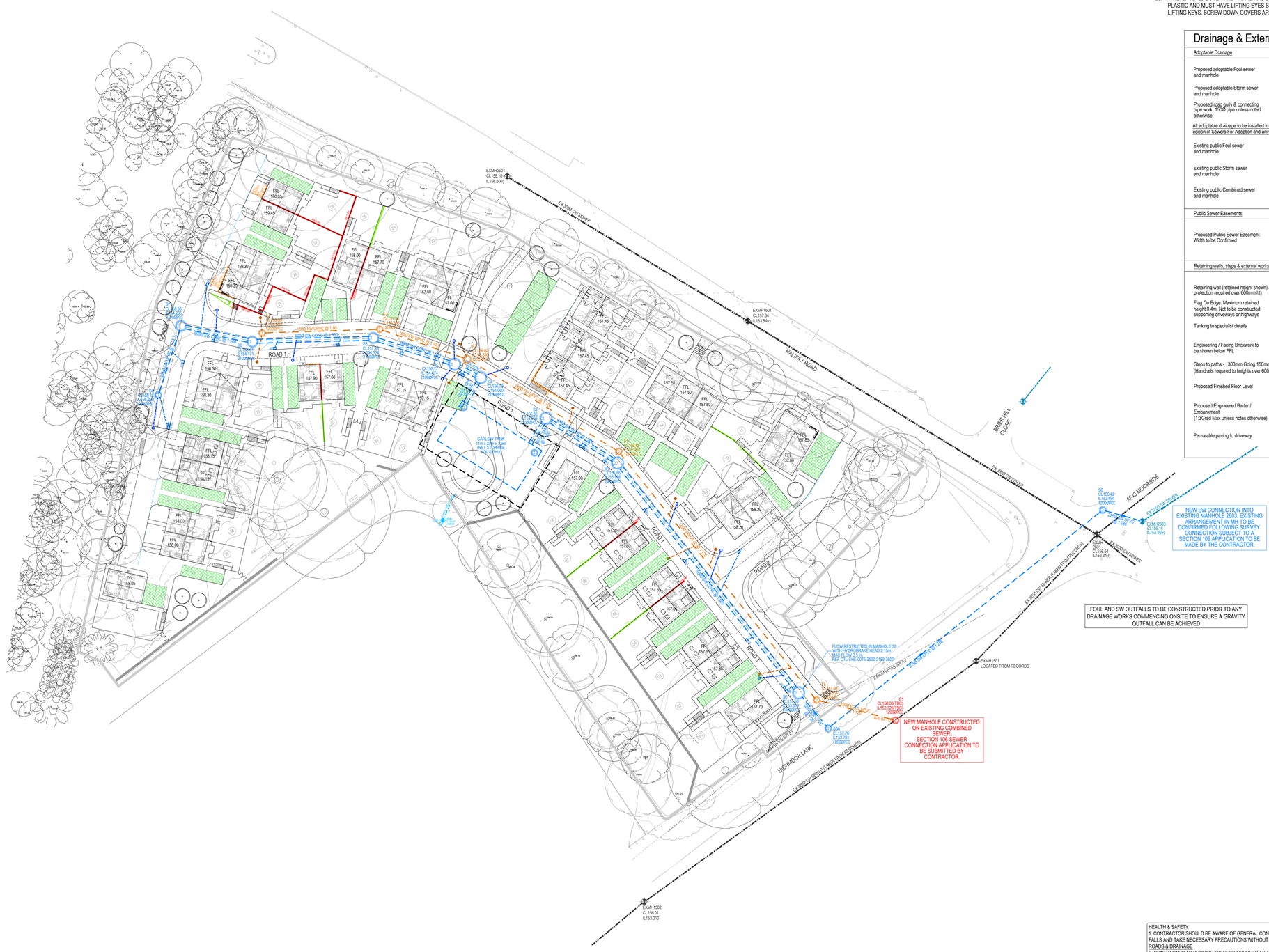


416909 : 424462	Map Name : SE1624SE	Title	Partial Key
Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : YorMap Advisor C ROBERTS Contact Tel : 87 2582	Notes	Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS	This plan is furnished 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.
	(Ody) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2024. All rights reserved Ordnance Survey Licence number AC0000813445	Date Req : 18/02/2025, 09:14:38	Date Gen : 18/02/2025, 09:15:09
		Source : Sewer Network Enquiry	

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

Appendix D Preliminary Drainage Layout Plan

YORKSHIRE WATER REF
H-XXXXX



24. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.

25. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.

26. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVER TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX 300mm. IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY BE INCREASED.

27. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE C BRICK MANHOLES AND 1050mm DIAMETER MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE B MANHOLE WITH 1200mm DIAMETER OR 1500mm DIAMETER RINGS WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1-1.5m.

28. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.

Drainage & External Works Key

Adoptable Drainage

- Proposed adoptable Foul sewer and manhole
- Proposed adoptable Storm sewer and manhole
- Proposed road gully & connecting pipe work. 1500 pipe unless noted otherwise (RG – 1500)

All adoptable drainage to be installed in accordance with the relevant edition of Sewers For Adoption and any regional water authority variations.

- Existing public Foul sewer and manhole (Ex F/W Sewer)
- Existing public Storm sewer and manhole (Ex S/W Sewer)
- Existing public Combined sewer and manhole (Ex C/W Sewer)

Public Sewer Easements

- Proposed Public Sewer Easement Width to be Confirmed (PROPOSED 8.0M WIDE SEWER EASEMENT)

Retaining walls, steps & external works

- Retaining wall (retained height shown). (edge protection required over 600mm ht) (RW0.45m)
- Flag On Edge. Maximum retained height 0.4m. Not to be constructed supporting driveways or highways (FOE 0.4m)
- Tanking to specialist details
- Engineering / Facing Brickwork to be shown below FFL (0.3m exposed bwk below ff)
- Steps to paths - 300mm Going 150mm Rise (Handrails required to heights over 600mm) (6 STEPS)
- Proposed Finished Floor Level (FFL 141.000)
- Proposed Engineered Batter / Embankment. (1:3Grad Max unless notes otherwise) (1:3 Batter)
- Permeable paving to driveway

NOTES

1. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE DESIGN AND CONSTRUCTION GUIDANCE (CODE FOR ADOPTION). THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARD/REQUIREMENTS/LOCAL PRACTICE FOR THE ADOPTION OF SMALL SUBMERSIBLE FOUL AND SW PUMPING STATIONS AND KITEMARKED ADDENDUM TO THE MECHANICAL AND ELECTRICAL: SPECIFICATION AND KITE MARKED.
2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND CLASS D400 TO BS EN 124 WITH A 150mm DEEP FRAME IN HIGHWAYS.
3. CONTRACTOR TO ESTABLISH POSITION SIZE AND DEPTH OF ALL EXISTING SEWERS AND SERVICES PRIOR TO COMMENCEMENT ON SITE.
4. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT, AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXISTING SERVICES.
5. THE CONTRACTOR SHALL ALLOW FOR ALL TRAFFIC MANAGEMENT IN CONNECTION WITH ROAD AND SEWER WORKS.
6. THE CONTRACTOR SHALL ALLOW FOR KEEPING SEWER TRENCHES AND EXCAVATIONS AS DRY AS PRACTICABLE BY PUMPING FROM TEMPORARY SUMPS AND DE WATERING AS APPROPRIATE. THE POINT AND METHOD OF DISCHARGE TO BE AGREED WITH THE DRAINAGE AUTHORITY.
7. PIPES UP TO AND INCLUDING 300mmØ TO BE TWIN WALLED PLASTIC PIPES. PIPES 375mmØ AND GREATER TO BE CONCRETE CLASS H.
8. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERBS FACES AND SERVICE MARGINS.
9. SEWERS MUST HAVE 5 METERS CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.
10. ADOPTABLE PLASTIC SWER PIPES TO BE KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS EN 13476)
11. COVER SLABS MUST CARRY THE BSI KITE MARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITE MARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME A LOAD BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 800mmx600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEAS REFER TO CONCRETE PIPE SYSTEMS ASSOCIATIONS TECHNICAL BULLETIN ISSUED AUTUMN 2004 FOR KITE MARKED COVER SLAB OPENING SIZES.
12. SULPHATE RESISTING CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY..
13. GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN124 AND BE OF A NON-ROCKING DESIGN WITH CAPTIVE HINGE ACCESS AND BE KITE MARKED. LOAD CLASS D400 FOR ROADS REGULARLY CARRYING FAST MOVING HEAVY VEHICLES. CLASS C250 TO BE USED IN LESSER TRAFFICKED AREAS eg. ESTATE ROADS, CUL-DE-SACS, RESIDENTIAL CAR PARKING AREAS ETC.
14. SEWERS TO BE LAID IN CLASS 'S' BEDDING (150MM GRANULAR BED AND SURROUND WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THA1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 0.9m IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHALL BE PROVIDED ABOVE THE GRANULAR BED AND SURROUND
15. BACKFILLING AND REINSTATEMENT TO TRENCHES IN PUBLIC HIGHWAYS SHALL BE TYPE 1 GRANULAR MATERIAL IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE ADOPTING AUTHORITY, OR, IN THE ABSENCE OF SUCH, IN ACCORDANCE WITH THE REQUIREMENTS OF "THE STREET WORKS REGULATIONS 1992" AND RELEVANT PROVISIONS OF H.A.U.C. "SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS" JUNE 1992, BOTH UNDER SECTION 71 OF THE NEW ROADS AND STREET WORKS ACT 1991.
16. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF WATER INDUSTRY SPECIFICATION 4-08-02(TABLE A2)
17. ALL ROAD GULLIES ARE TO BE TRAPPED GULLIES. ALL GULLY LEADS TO BE 150mm DIAMETER.
18. ALL REDUNDANT EXISTING DRAINAGE TO BE GRUBBED UP OR GROUTED, ANY EXISTING LIVE DRAINAGE SHOULD BE REPORTED TO THE ENGINEER AND RECONNECTED.
19. ALL ROAD GULLIES & LEADS TO BE CLEARED OF DEBRIS UPON COMPLETION OF WORKS.
20. THE CONTRACTOR MUST ENSURE THAT ANY OF THE EXISTING DRAINAGE WHICH IS LIVE IS KEPT CLEAR OF DEBRIS AND SHOULD ALLOW FOR JETTING THROUGH THE NEW & EXISTING DRAINAGE UPON COMPLETION.
21. CONTRACTOR TO TAKE MEASURES TO PROTECT HIS OPERATIVES WITH RESPECT TO THE PRESENCE OF GAS IN SEWER TRENCHES AND MANHOLES THROUGH THE USE OF GAS MONITORING EQUIPMENT AND BREATHING APPARATUS AS REQUIRED.
22. CONTRACTOR TO APPLY FOR SEWER PERMITS AND ROAD OPENING PERMITS AS NECESSARY FROM THE APPROPRIATE AUTHORITIES, PRIOR TO COMMENCING WORKS.
23. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUN OFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE SYSTEM (DIRECTLY OR INDIRECTLY). AND ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUN OFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY LAND DRAINAGE SECTION WITH REGARD TO DISPOSAL OF THE FILTER/LAND DRAINAGE RUN OFF.

REVISIONS

P07	FFL's Plots 9 & 29 amended	20/05/25	MP	-- | --
P06	Layout updated to Rev D12	22/04/25	MP	--/--
P05	Layout updated to Rev D11	17/03/25	MP	--/--
P04	Pre-Planning Sewerage Enquiry Issue	05/02/24	JF	MP | MP
P03	Layout Updated	19/09/24	MP	-- | --
P02	Carlow tank indicated	08/11/23	MP	-- | --
P01	Preliminary Issue	25/10/23	MP	-- | --
Rev.	Revision Notes	Date	Drawn By	Checked | Approved

HEALTH & SAFETY
1. CONTRACTOR SHOULD BE AWARE OF GENERAL CONSTRUCTION RISKS TO PREVENT SLIPS, TRIPS AND FALLS AND TAKE NECESSARY PRECAUTIONS WITHOUT SPECIAL INSTRUCTION.
ROADS & DRAINAGE
2. CONTRACTOR TO PROVIDE TRENCH SUPPORTS AS APPROPRIATE AND ENSURE THAT PLANT REMAINS A SAFE DISTANCE FROM TRENCHES PRIOR TO INSTALLING DRAINAGE
3. THE TIME THAT EXCAVATIONS ARE OPEN ON SITE SHOULD BE KEPT TO A MINIMUM AND ALL TRENCHES SHOULD BE SURROUNDED BY A BARRIER.
4. CONNECTIONS TO EXISTING SEWERS TO BE MADE BY YORKSHIRE WATER APPROVED CONTRACTOR ONLY.
5. CONTRACTOR TO MAKE OPERATIVES AWARE OF ASSOCIATED DANGERS TO HEALTH SUCH AS LEPTOSPIROSIS (WEILS DISEASE) AND RECOMMENDED PRECAUTIONS. ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING TO BE PROVIDED AS REQUIRED.
6. UNFINISHED MANHOLES MUST BE COVERED WITH LOAD BEARING MATERIALS AND SURROUNDED WITH BARRIER.
PIPES & CABLES
7. SERVICE RECORDS TO BE REFERRED TO PRIOR TO WORK COMMENCING. CONTRACTOR TO PROCEED WITH CAUTION AND SERVICES TO BE LOCATED BY HAND DIG AND PROTECTED ACCORDINGLY.
EXCAVATION/FILL
8. CONTRACTOR TO ENSURE RELEVANT MEASURES ARE TAKEN TO KEEP PLANT AND PEOPLE A SAFE DISTANCE FROM STEEP SLOPES DURING THE WORKS.
9. CONTRACTOR TO ENSURE THAT PROCEDURES ARE IN PLACE TO KEEP PEOPLE A SAFE DISTANCE FROM WORKING PLANT WHERE NECESSARY.
10. CONTRACTOR TO REFER TO GROUND INVESTIGATION REPORT FOR CONTAMINATION TESTS AND TO PROVIDE ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING AS REQUIRED.

Hydrock
2 Esh Plaza
Sir Bobby Robson Way, Great Park
Newcastle upon Tyne
NE13 9BA
t: +44(0)1912 302993
e: newcastle@3econsult.com

CLIENT
THIRTEEN GROUP

PROJECT
HIGHMOOR LANE
CLECKHEATON

TITLE
PROPOSED DRAINAGE LAYOUT PLAN

HYDROCK PROJECT NO.	SCALE @ A1
C-29177	1:500

STATUS DESCRIPTION	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO.	REVISION
P22-271-HYD-XX-XX-DR-C-1000	P07

Filename: P:\29000-29999\29177 - Highmoor Lane, Cleckheaton (P22-271)\Drawings\Civils\P22-271-HYD-XX-XX-DR-C-1000 Drainage Layout Plan.dwg

YORKSHIRE WATER REF
H-XXXXX

Drainage & External Works Key

Adoptable Drainage

- Proposed adoptable Foul sewer and manhole
- Proposed adoptable Storm sewer and manhole
- Proposed road gully & connecting pipe work. 150Ø pipe unless noted otherwise (RG 150Ø)

All adoptable drainage to be installed in accordance with the relevant edition of Sewers For Adoption and any regional water authority variations.

- Existing public Foul sewer and manhole (Ex FW Sewer)
- Existing public Storm sewer and manhole (Ex SW Sewer)
- Existing public Combined sewer and manhole (Ex CW Sewer)

Public Sewer Easements

- Proposed Public Sewer Easement Width to be Confirmed (PROPOSED 8.0M WIDE SEWER EASEMENT)

Retaining walls, steps & external works

- Retaining wall (retained height shown). (edge protection required over 600mm ht) (RW0.45m)
- Flag On Edge. Maximum retained height 0.4m. Not to be constructed supporting driveways or highways (FOE 0.4m)
- Tanking to specialist details
- Engineering / Facing Brickwork to be shown below FFL (0.3m exposed bwk below ffl)
- Steps to paths - 300mm Going 150mm Rise (Handrails required to heights over 600mm) (6 STEPS)
- Proposed Finished Floor Level (FFL 141.000)
- Proposed Engineered Batter / Embankment. (1:3Grad Max unless notes otherwise) (1:3 Batter)
- Permeable paving to driveway

- Existing flood flow path not affected.
- Proposed exceedance flood flow path.

24. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.

25. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.

26. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVER TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX 300mm. IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY BE INCREASED.

27. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE C BRICK MANHOLES AND 1050mm DIAMETER MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE B MANHOLE WITH 1200mm DIAMETER OR 1500mm DIAMETER RINGS WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1-1.5m.

28. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.

NOTES

1. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE DESIGN AND CONSTRUCTION GUIDANCE (CODE FOR ADOPTION0, THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARD/REQUIREMENTS/LOCAL PRACTICE FOR THE ADOPTION OF SMALL SUBMERSIBLE FOUL AND SW PUMPING STATIONS AND KITEMARKED.ADDENDUM TO THE MECHANICAL AND ELECTRICAL: SPECIFICATION AND KITE MARKED.

2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND CLASS D400 TO BS EN 124 WITH A 150mm DEEP FRAME IN HIGHWAYS.

3. CONTRACTOR TO ESTABLISH POSITION SIZE AND DEPTH OF ALL EXISTING SEWERS AND SERVICES PRIOR TO COMMENCEMENT ON SITE.

4. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT, AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXISTING SERVICES.

5. THE CONTRACTOR SHALL ALLOW FOR ALL TRAFFIC MANAGEMENT IN CONNECTION WITH ROAD AND SEWER WORKS.

6. THE CONTRACTOR SHALL ALLOW FOR KEEPING SEWER TRENCHES AND EXCAVATIONS AS DRY AS PRACTICABLE BY PUMPING FROM TEMPORARY SUMPS AND DE WATERING AS APPROPRIATE. THE POINT AND METHOD OF DISCHARGE TO BE AGREED WITH THE DRAINAGE AUTHORITY.

7. PIPES UP TO AND INCLUDING 300mmØ TO BE TWIN WALLED PLASTIC PIPES. PIPES 375mmØ AND GREATER TO BE CONCRETE CLASS H.

8. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERBS FACES AND SERVICE MARGINS.

9. SEWERS MUST HAVE 5 METERS CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.

10. ADOPTABLE PLASTIC SWER PIPES TO BE KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS EN 13476)

11. COVER SLABS MUST CARRY THE BSI KITE MARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITE MARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME A LOAD BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600mmx600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEAS REFER TO CONCRETE PIPE SYSTEMS ASSOCIATIONS TECHNICAL BULLETIN ISSUED AUTUMN 2004 FOR KITE MARKED COVER SLAB OPENING SIZES.

12. SULPHATE RESISTING CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY..

13. GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN124 AND BE OF A NON-ROCKING DESIGN WITH CAPTIVE HINGE ACCESS AND BE KITE MARKED. LOAD CLASS D400 FOR ROADS REGULARLY CARRYING FAST MOVING HEAVY VEHICLES. CLASS C250 TO BE USED IN LESSER TRAFFICKED AREAS eg. ESTATE ROADS, CUL-DE-SACS, RESIDENTIAL CAR PARKING AREAS ETC.

14. SEWERS TO BE LAID IN CLASS 'S' BEDDING (150MM GRANULAR BED AND SURROUND WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THA1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 0.9m IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHALL BE PROVIDED ABOVE THE GRANULAR BED AND SURROUND

15. BACKFILLING AND REINSTATEMENT TO TRENCHES IN PUBLIC HIGHWAYS SHALL BE TYPE 1 GRANULAR MATERIAL IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE ADOPTING AUTHORITY, OR, IN THE ABSENCE OF SUCH, IN ACCORDANCE WITH THE REQUIREMENTS OF "THE STREET WORKS REGULATIONS 1992" AND RELEVANT PROVISIONS OF H.A.U.C. "SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS" JUNE 1992, BOTH UNDER SECTION 71 OF THE NEW ROADS AND STREET WORKS ACT 1991.

16. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF WATER INDUSTRY SPECIFICATION 4-08-02(TABLE A2)

17. ALL ROAD GULLIES ARE TO BE TRAPPED GULLIES. ALL GULLY LEADS TO BE 150mm DIAMETER.

18. ALL REDUNDANT EXISTING DRAINAGE TO BE GRUBBED UP OR GROUTED, ANY EXISTING LIVE DRAINAGE SHOULD BE REPORTED TO THE ENGINEER AND RECONNECTED.

19. ALL ROAD GULLIES & LEADS TO BE CLEARED OF DEBRIS UPON COMPLETION OF WORKS.

20. THE CONTRACTOR MUST ENSURE THAT ANY OF THE EXISTING DRAINAGE WHICH IS LIVE IS KEPT CLEAR OF DEBRIS AND SHOULD ALLOW FOR JETTING THROUGH THE NEW & EXISTING DRAINAGE UPON COMPLETION.

21. CONTRACTOR TO TAKE MEASURES TO PROTECT HIS OPERATIVES WITH RESPECT TO THE PRESENCE OF GAS IN SEWER TRENCHES AND MANHOLES THROUGH THE USE OF GAS MONITORING EQUIPMENT AND BREATHING APPARATUS AS REQUIRED.

22. CONTRACTOR TO APPLY FOR SEWER PERMITS AND ROAD OPENING PERMITS AS NECESSARY FROM THE APPROPRIATE AUTHORITIES, PRIOR TO COMMENCING WORKS.

23. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUN OFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE SYSTEM (DIRECTLY OR INDIRECTLY). AND ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUN OFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY LAND DRAINAGE SECTION WITH REGARD TO DISPOSAL OF THE FILTER/LAND DRAINAGE RUN OFF.

REVISIONS

Rev.	Revision Notes	Date	Drawn By	Checked | Approved
P02	FFL's plots 9 & 29 amended	20/05/25	MP	-- | --
P01	Preliminary Issue	22/04/25	MP	-- | --

Hydrock
2 Esh Plaza
Sir Bobby Robson Way, Great Park
Newcastle upon Tyne
NE13 9BA
t: +44(0)1912 302993
e: newcastle@3econsult.com

HEALTH & SAFETY
1. CONTRACTOR SHOULD BE AWARE OF GENERAL CONSTRUCTION RISKS TO PREVENT SLIPS, TRIPS AND FALLS AND TAKE NECESSARY PRECAUTIONS WITHOUT SPECIAL INSTRUCTION.
ROADS & DRAINAGE
2. CONTRACTOR TO PROVIDE TRENCH SUPPORTS AS APPROPRIATE AND ENSURE THAT PLANT REMAINS A SAFE DISTANCE FROM TRENCHES PRIOR TO INSTALLING DRAINAGE
3. THE TIME THAT EXCAVATIONS ARE OPEN ON SITE SHOULD BE KEPT TO A MINIMUM AND ALL TRENCHES SHOULD BE SURROUNDED BY A BARRIER.
4. CONNECTIONS TO EXISTING SEWERS TO BE MADE BY YORKSHIRE WATER APPROVED CONTRACTOR ONLY.
5. CONTRACTOR TO MAKE OPERATIVES AWARE OF ASSOCIATED DANGERS TO HEALTH SUCH AS LEPTOSPIROSIS (WEILS DISEASE) AND RECOMMENDED PRECAUTIONS. ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING TO BE PROVIDED AS REQUIRED.
6. UNFINISHED MANHOLES MUST BE COVERED WITH LOAD BEARING MATERIALS AND SURROUNDED WITH BARRIER.
PIPES & CABLES
7. SERVICE RECORDS TO BE REFERRED TO PRIOR TO WORK COMMENCING. CONTRACTOR TO PROCEED WITH CAUTION AND SERVICES TO BE LOCATED BY HAND DIG AND PROTECTED ACCORDINGLY.
EXCAVATION/FILL
8. CONTRACTOR TO ENSURE RELEVANT MEASURES ARE TAKEN TO KEEP PLANT AND PEOPLE A SAFE DISTANCE FROM STEEP SLOPES DURING THE WORKS.
9. CONTRACTOR TO ENSURE THAT PROCEDURES ARE IN PLACE TO KEEP PEOPLE A SAFE DISTANCE FROM WORKING PLANT WHERE NECESSARY.
10. CONTRACTOR TO REFER TO GROUND INVESTIGATION REPORT FOR CONTAMINATION TESTS AND TO PROVIDE ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING AS REQUIRED.

CLIENT
THIRTEEN GROUP

PROJECT
HIGHMOOR LANE
CLECKHEATON

TITLE
EXCEEDANCE OVERLAND
FLOOD FLOW PLATHS

HYDROCK PROJECT NO.	SCALE @ A1
C-29177	1:500

STATUS DESCRIPTION	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO.	REVISION
P22-271-HYD-XX-XX-DR-C-0003	P02

Filename: P:\29000-29999\29177 - Highmoor Lane, Cleckheaton (P22-271)\Drawings\Civils\P22-271-HYD-XX-XX-DR-C-0003 Overland flood flow paths.dwg

Appendix E Wallingford 'Greenfield Runoff Estimate for Sites'

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Martin Pearse
Site name:	Highmoor Lane
Site location:	Cleckheaton

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

Site Details

Latitude:	53.71756° N
Longitude:	1.7423° W
Reference:	1904563222
Date:	Mar 18 2025 15:49

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.66

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

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

Hydrological characteristics

	Default	Edited
SAAR (mm):	779	779
Hydrological region:	3	3
Growth curve factor 1 year:	0.86	0.86
Growth curve factor 30 years:	1.75	1.75
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

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

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

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

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

(3) Is SPR/SPRHOST ≤ 0.3?

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

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	3.61	3.61
1 in 1 year (l/s):	3.11	3.11
1 in 30 years (l/s):	6.32	6.32
1 in 100 year (l/s):	7.51	7.51
1 in 200 years (l/s):	8.56	8.56

Appendix F Flow Drainage Calculations

Design Settings

Rainfall Methodology	FSR	CV	1.000	Minimum Backdrop Height (m)	0.750
Return Period (years)	1	Time of Entry (mins)	3.00	Preferred Cover Depth (m)	1.250
Additional Flow (%)	0	Maximum Time of Concentration (mins)	30.00	Include Intermediate Ground	✓
FSR Region	England and Wales	Maximum Rainfall (mm/hr)	50.0	Enforce best practice design rules	x
M5-60 (mm)	17.000	Minimum Velocity (m/s)	1.00		
Ratio-R	0.300	Connection Type	Level Soffits		

1 STANDARD Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	499	1350	749	1500	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1350

1 STANDARD Link Type

Shape Circular | Barrels 1 | Auto Increment (mm) 75 | Follow Ground x

Available Diameters (mm)

100 | 150

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	TANK	0.000	3.00	156.800	Junction			417085.668	424632.302	2.790
✓	2	0.021	3.00	156.850	Manhole	1 STANDARD	2100	417089.359	424638.176	2.854
✓	1	0.252	3.00	156.860	Manhole	1 STANDARD	2100	417106.126	424627.734	2.904
✓	0	0.000		157.600	Manhole	1 STANDARD	2400	417148.578	424573.889	3.781
✓	0A	0.000		157.760	Manhole	1 STANDARD	1200	417155.508	424565.434	3.979
✓	0B			157.450	Manhole	1 STANDARD	1200	417219.822	424616.694	3.957
✓	MH 2603			156.160	Manhole	1 STANDARD	1200	417229.123	424614.070	2.701
✓	8	0.100	3.00	158.180	Manhole	1 STANDARD	1200	416998.463	424643.637	2.088
✓	7	0.067	3.00	158.560	Manhole	1 STANDARD	2100	417003.773	424659.844	4.355
✓	6	0.057	3.00	158.070	Manhole	1 STANDARD	2100	417020.536	424656.137	3.899
✓	5	0.012	3.00	157.230	Manhole	1 STANDARD	2100	417048.879	424657.037	3.116
✓	4	0.096	3.00	156.770	Manhole	1 STANDARD	2100	417067.906	424650.872	2.696
✓	3	0.054	3.00	156.790	Manhole	1 STANDARD	2100	417074.035	424647.728	2.730

Links

	Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)	Design Flow (l/s)
✓	1.006	TANK	2	6.937	0.600	Colebrook-White	154.010	153.996	0.014	500.0	900	1 STANDARD	4.11	43.4	
✓	1.007	2	1	19.753	0.600	Colebrook-White	153.996	153.956	0.040	500.0	900	1 STANDARD	4.35	42.6	
?	1.008	1	0	68.567	0.600	Colebrook-White	153.956	153.819	0.137	500.0	900	1 STANDARD	5.17	39.8	
?	1.009	0	0A	10.932	0.600	Colebrook-White	153.819	153.781	0.038	286.0	225	1 STANDARD	5.40	39.1	3.5
?	1.010	0A	0B	82.243	0.600	Colebrook-White	153.781	153.493	0.288	286.0	225	1 STANDARD	7.19	34.6	3.5
?	1.011	0B	MH 2603	9.664	0.600	Colebrook-White	153.493	153.459	0.034	286.0	225	1 STANDARD	7.40	34.2	3.5
?	1.000	8	7	17.055	0.600	Colebrook-White	156.092	154.880	1.212	14.1	225	1 STANDARD	3.08	47.6	
?	1.001	7	6	17.168	0.600	Colebrook-White	154.205	154.171	0.034	500.0	900	1 STANDARD	3.29	46.7	
?	1.002	6	5	28.357	0.600	Colebrook-White	154.171	154.114	0.057	500.0	900	1 STANDARD	3.63	45.3	
✓	1.003	5	4	20.001	0.600	Colebrook-White	154.114	154.074	0.040	500.0	900	1 STANDARD	3.86	44.3	
✓	1.004	4	3	6.888	0.600	Colebrook-White	154.074	154.060	0.014	500.0	900	1 STANDARD	3.95	44.0	
✓	1.005	3	TANK	6.842	0.600	Colebrook-White	154.060	154.046	0.014	500.0	900	1 STANDARD	4.03	43.7	

DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)	Notes
	1.394	886.9	60.5	1.890	1.954	1.890	1.954	0.386	0.0	157	0.815	
	1.394	886.9	62.6	1.954	2.004	1.954	2.004	0.407	0.0	160	0.823	
	1.394	886.9	94.9	2.004	2.881	2.004	2.881	0.659	0.0	196	0.926	Downstream Depth is more than twice the specified minimum
	0.768	30.5	3.5	3.556	3.754	3.556	3.754	0.659	0.0	51	0.514	Velocity is less than the specified minimum | Upstream Depth is more than twice the specified minimum | Downstream Depth is more than twice
	0.768	30.5	3.5	3.754	3.732	3.732	3.754	0.659	0.0	51	0.514	Velocity is less than the specified minimum | Upstream Depth is more than twice the specified minimum | Downstream Depth is more than twice
H 2603	0.768	30.5	3.5	3.732	2.476	2.476	3.732	0.659	0.0	51	0.514	Velocity is less than the specified minimum | Upstream Depth is more than twice the specified minimum
	3.506	139.4	17.2	1.863	3.455	1.863	3.455	0.100	0.0	53	2.406	Velocity is more than 3 m/s | Downstream Depth is more than twice the specified minimum
	1.394	886.9	28.2	3.455	2.999	2.999	3.455	0.167	0.0	108	0.652	Upstream Depth is more than twice the specified minimum | Downstream Depth is more than twice the specified minimum
	1.394	886.9	36.6	2.999	2.216	2.216	2.999	0.224	0.0	123	0.705	Upstream Depth is more than twice the specified minimum
	1.394	886.9	37.8	2.216	1.796	1.796	2.216	0.236	0.0	124	0.711	
	1.394	886.9	52.8	1.796	1.830	1.796	1.830	0.332	0.0	146	0.783	
NK	1.394	886.9	61.0	1.830	1.854	1.830	1.854	0.386	0.0	158	0.818	

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.006	6.937	500.0	900	1 STANDARD	156.800	154.010	1.890	156.850	153.996	1.954
1.007	19.753	500.0	900	1 STANDARD	156.850	153.996	1.954	156.860	153.956	2.004
1.008	68.567	500.0	900	1 STANDARD	156.860	153.956	2.004	157.600	153.819	2.881
1.009	10.932	286.0	225	1 STANDARD	157.600	153.819	3.556	157.760	153.781	3.754
1.010	82.243	286.0	225	1 STANDARD	157.760	153.781	3.754	157.450	153.493	3.732
1.011	9.664	286.0	225	1 STANDARD	157.450	153.493	3.732	156.160	153.459	2.476
1.000	17.055	14.1	225	1 STANDARD	158.180	156.092	1.863	158.560	154.880	3.455
1.001	17.168	500.0	900	1 STANDARD	158.560	154.205	3.455	158.070	154.171	2.999
1.002	28.357	500.0	900	1 STANDARD	158.070	154.171	2.999	157.230	154.114	2.216
1.003	20.001	500.0	900	1 STANDARD	157.230	154.114	2.216	156.770	154.074	1.796
1.004	6.888	500.0	900	1 STANDARD	156.770	154.074	1.796	156.790	154.060	1.830
1.005	6.842	500.0	900	1 STANDARD	156.790	154.060	1.830	156.800	154.046	1.854

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.006	TANK		Junction		2	2100	Manhole	1 STANDARD
1.007	2	2100	Manhole	1 STANDARD	1	2100	Manhole	1 STANDARD
1.008	1	2100	Manhole	1 STANDARD	0	2400	Manhole	1 STANDARD
1.009	0	2400	Manhole	1 STANDARD	0A	1200	Manhole	1 STANDARD
1.010	0A	1200	Manhole	1 STANDARD	0B	1200	Manhole	1 STANDARD
1.011	0B	1200	Manhole	1 STANDARD	MH 2603	1200	Manhole	1 STANDARD
1.000	8	1200	Manhole	1 STANDARD	7	2100	Manhole	1 STANDARD
1.001	7	2100	Manhole	1 STANDARD	6	2100	Manhole	1 STANDARD
1.002	6	2100	Manhole	1 STANDARD	5	2100	Manhole	1 STANDARD
1.003	5	2100	Manhole	1 STANDARD	4	2100	Manhole	1 STANDARD
1.004	4	2100	Manhole	1 STANDARD	3	2100	Manhole	1 STANDARD
1.005	3	2100	Manhole	1 STANDARD	TANK		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections		Link	IL (m)	Dia (mm)	Link Type
TANK	417085.668	424632.302	156.800	2.790		Junction			1	1.005	154.046	900	1 STANDARD
									0	1.006	154.010	900	1 STANDARD
2	417089.359	424638.176	156.850	2.854	2100	Manhole	1 STANDARD		1	1.006	153.996	900	1 STANDARD
									0	1.007	153.996	900	1 STANDARD
1	417106.126	424627.734	156.860	2.904	2100	Manhole	1 STANDARD		1	1.007	153.956	900	1 STANDARD
									0	1.008	153.956	900	1 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
0	417148.578	424573.889	157.600	3.781	2400	Manhole	1 STANDARD	1	1.008	153.819	900	1 STANDARD
												
								0	1.009	153.819	225	1 STANDARD
0A	417155.508	424565.434	157.760	3.979	1200	Manhole	1 STANDARD	1	1.009	153.781	225	1 STANDARD
												
								0	1.010	153.781	225	1 STANDARD
0B	417219.822	424616.694	157.450	3.957	1200	Manhole	1 STANDARD	1	1.010	153.493	225	1 STANDARD
												
								0	1.011	153.493	225	1 STANDARD
MH 2603	417229.123	424614.070	156.160	2.701	1200	Manhole	1 STANDARD	1	1.011	153.459	225	1 STANDARD
												
8	416998.463	424643.637	158.180	2.088	1200	Manhole	1 STANDARD					
								0	1.000	156.092	225	1 STANDARD
7	417003.773	424659.844	158.560	4.355	2100	Manhole	1 STANDARD	1	1.000	154.880	225	1 STANDARD
												
								0	1.001	154.205	900	1 STANDARD
6	417020.536	424656.137	158.070	3.899	2100	Manhole	1 STANDARD	1	1.001	154.171	900	1 STANDARD
												
								0	1.002	154.171	900	1 STANDARD
5	417048.879	424657.037	157.230	3.116	2100	Manhole	1 STANDARD	1	1.002	154.114	900	1 STANDARD
												
								0	1.003	154.114	900	1 STANDARD
4	417067.906	424650.872	156.770	2.696	2100	Manhole	1 STANDARD	1	1.003	154.074	900	1 STANDARD
												
								0	1.004	154.074	900	1 STANDARD
3	417074.035	424647.728	156.790	2.730	2100	Manhole	1 STANDARD	1	1.004	154.060	900	1 STANDARD
												
								0	1.005	154.060	900	1 STANDARD

Simulation Settings

Rainfall Methodology	FSR	Ratio-R	0.300	Skip Steady State	x	Check Discharge Rate(s)	x
Rainfall Events	Singular	Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
FSR Region	England and Wales	Winter CV	1.000	Additional Storage (m³/ha)	0.0		
M5-60 (mm)	17.000	Analysis Speed	Detailed	Starting Level (m)			

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440	2160	2880

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	30	0	0	0	100	45	0	0

Node 0 Online Hydro-Brake® Control

Flap Valve	x	Design Flow (l/s)	3.5	Min Outlet Diameter (m)	0.100
Replaces Downstream Link	✓	Objective	(HE) Minimise upstream storage	Min Node Diameter (mm)	1200
Invert Level (m)	153.819	Sump Available	✓		
Design Depth (m)	2.150	Product Number	CTL-SHE-0075-3500-2150-3500		

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	154.010
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.96	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	242.0	242.0	1.900	242.0	346.8	1.901	0.0	346.8

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Crossings	✓	Minimum Full Bore Velocity (m/s)		Maximum Surcharged Depth (m)	0.100
Node Losses	✓	Cover Depth	✓	Maximum Full Bore Velocity (m/s)	3.000	Flooding	✓
Link Size	✓	Minimum Cover Depth (m)		Proportional Velocity	✓	Return Period (years)	30
Minimum Diameter (mm)	150	Maximum Cover Depth (m)	3.000	Return Period (years)		Time to Half Empty	x
Link Length	✓	Backdrops	✓	Minimum Proportional Velocity (m/s)	0.750	Discharge Rates	✓
Maximum Length (m)	100.000	Minimum Backdrop Height (m)		Maximum Proportional Velocity (m/s)	3.000	Discharge Volume	✓
Coordinates	✓	Maximum Backdrop Height (m)	1.500	Surcharged Depth	✓	100 year 360 minute (m³)	
Accuracy (m)	1.000	Full Bore Velocity	✓	Return Period (years)			

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	84.280	23.848	30 year 15 minute summer	205.071	58.028	100 year +45% CC 15 minute summer	382.027	108.100
1 year 15 minute winter	59.144	23.848	30 year 15 minute winter	143.910	58.028	100 year +45% CC 15 minute winter	268.089	108.100
1 year 30 minute summer	57.102	16.158	30 year 30 minute summer	140.191	39.669	100 year +45% CC 30 minute summer	264.212	74.763
1 year 30 minute winter	40.072	16.158	30 year 30 minute winter	98.380	39.669	100 year +45% CC 30 minute winter	185.412	74.763
1 year 60 minute summer	40.398	10.676	30 year 60 minute summer	98.615	26.061	100 year +45% CC 60 minute summer	187.417	49.529
1 year 60 minute winter	26.839	10.676	30 year 60 minute winter	65.517	26.061	100 year +45% CC 60 minute winter	124.515	49.529
1 year 120 minute summer	26.432	6.985	30 year 120 minute summer	63.038	16.659	100 year +45% CC 120 minute summer	120.234	31.774
1 year 120 minute winter	17.561	6.985	30 year 120 minute winter	41.881	16.659	100 year +45% CC 120 minute winter	79.881	31.774
1 year 180 minute summer	21.115	5.434	30 year 180 minute summer	49.285	12.683	100 year +45% CC 180 minute summer	93.863	24.154
1 year 180 minute winter	13.725	5.434	30 year 180 minute winter	32.037	12.683	100 year +45% CC 180 minute winter	61.013	24.154
1 year 240 minute summer	17.197	4.545	30 year 240 minute summer	39.344	10.398	100 year +45% CC 240 minute summer	74.679	19.735
1 year 240 minute winter	11.425	4.545	30 year 240 minute winter	26.139	10.398	100 year +45% CC 240 minute winter	49.615	19.735
1 year 360 minute summer	13.694	3.524	30 year 360 minute summer	30.343	7.808	100 year +45% CC 360 minute summer	57.145	14.705
1 year 360 minute winter	8.901	3.524	30 year 360 minute winter	19.724	7.808	100 year +45% CC 360 minute winter	37.146	14.705
1 year 480 minute summer	11.066	2.925	30 year 480 minute summer	24.111	6.372	100 year +45% CC 480 minute summer	45.177	11.939
1 year 480 minute winter	7.352	2.925	30 year 480 minute winter	16.019	6.372	100 year +45% CC 480 minute winter	30.014	11.939
1 year 600 minute summer	9.254	2.531	30 year 600 minute summer	19.882	5.438	100 year +45% CC 600 minute summer	37.095	10.146
1 year 600 minute winter	6.323	2.531	30 year 600 minute winter	13.585	5.438	100 year +45% CC 600 minute winter	25.346	10.146
1 year 720 minute summer	8.394	2.250	30 year 720 minute summer	17.819	4.776	100 year +45% CC 720 minute summer	33.125	8.878
1 year 720 minute winter	5.641	2.250	30 year 720 minute winter	11.975	4.776	100 year +45% CC 720 minute winter	22.262	8.878
1 year 960 minute summer	7.097	1.869	30 year 960 minute summer	14.763	3.887	100 year +45% CC 960 minute summer	27.277	7.183
1 year 960 minute winter	4.701	1.869	30 year 960 minute winter	9.779	3.887	100 year +45% CC 960 minute winter	18.069	7.183
1 year 1440 minute summer	5.374	1.440	30 year 1440 minute summer	10.836	2.904	100 year +45% CC 1440 minute summer	19.835	5.316
1 year 1440 minute winter	3.611	1.440	30 year 1440 minute winter	7.282	2.904	100 year +45% CC 1440 minute winter	13.330	5.316
1 year 2160 minute summer	4.012	1.109	30 year 2160 minute summer	7.836	2.166	100 year +45% CC 2160 minute summer	14.196	3.923
1 year 2160 minute winter	2.764	1.109	30 year 2160 minute winter	5.399	2.166	100 year +45% CC 2160 minute winter	9.782	3.923
1 year 2880 minute summer	3.437	0.921	30 year 2880 minute summer	6.555	1.757	100 year +45% CC 2880 minute summer	11.781	3.157
1 year 2880 minute winter	2.310	0.921	30 year 2880 minute winter	4.405	1.757	100 year +45% CC 2880 minute winter	7.918	3.157

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.48%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	TANK	660	154.281	0.271	7.3	62.9770	0.0000	OK
960 minute summer	2	660	154.281	0.285	2.6	0.9875	0.0000	OK
960 minute summer	1	660	154.281	0.325	5.0	1.1260	0.0000	OK
960 minute summer	0	660	154.281	0.462	3.5	2.0903	0.0000	SURCHARGED
15 minute winter	0A	11	153.825	0.044	2.5	0.0503	0.0000	OK
60 minute summer	0B	126	153.538	0.045	2.5	0.0511	0.0000	OK
60 minute summer	MH 2603	126	153.500	0.040	2.5	0.0000	0.0000	OK
15 minute summer	8	9	156.148	0.056	17.9	0.0633	0.0000	OK
15 minute summer	7	9	154.323	0.118	29.6	0.4080	0.0000	OK
15 minute summer	6	10	154.300	0.129	38.2	0.4456	0.0000	OK
960 minute summer	5	660	154.281	0.167	4.6	0.5788	0.0000	OK
960 minute summer	4	660	154.281	0.207	6.4	0.7173	0.0000	OK
960 minute summer	3	660	154.281	0.221	7.2	0.7658	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	TANK	1.006	2	2.4	0.292	0.003	1.1546	
960 minute summer	2	1.007	1	2.3	0.232	0.003	3.7385	
960 minute summer	1	1.008	0	3.5	0.182	0.004	18.3079	
960 minute summer	0	Hydro-Brake®	0A	2.5				
15 minute winter	0A	1.010	0B	2.6	0.538	0.084	0.4528	
60 minute summer	0B	1.011	MH 2603	2.5	0.484	0.083	0.0507	43.1
15 minute summer	8	1.000	7	17.6	2.353	0.126	0.1276	
15 minute summer	7	1.001	6	28.1	0.550	0.032	0.8815	
15 minute summer	6	1.002	5	37.6	0.661	0.042	1.6753	
960 minute summer	5	1.003	4	4.5	0.296	0.005	1.9090	
960 minute summer	4	1.004	3	6.1	0.344	0.007	0.7943	
960 minute summer	3	1.005	TANK	7.0	0.483	0.008	0.8629	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.48%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	TANK	915	154.750	0.740	9.0	171.9457	0.0000	OK
960 minute winter	2	915	154.750	0.754	2.3	2.6123	0.0000	OK
960 minute winter	1	915	154.750	0.794	6.8	2.7508	0.0000	OK
960 minute winter	0	915	154.750	0.931	3.7	4.2124	0.0000	SURCHARGED
15 minute winter	0A	9	153.826	0.045	2.5	0.0507	0.0000	OK
2160 minute winter	0B	900	153.538	0.045	2.5	0.0511	0.0000	OK
960 minute summer	MH 2603	405	153.500	0.040	2.5	0.0000	0.0000	OK
15 minute summer	8	9	156.183	0.091	43.4	0.1032	0.0000	OK
960 minute winter	7	915	154.750	0.545	4.5	1.8883	0.0000	OK
960 minute winter	6	915	154.750	0.579	5.7	2.0061	0.0000	OK
960 minute winter	5	915	154.750	0.636	5.2	2.2035	0.0000	OK
960 minute winter	4	915	154.750	0.676	6.9	2.3421	0.0000	OK
960 minute winter	3	915	154.750	0.690	7.8	2.3906	0.0000	OK

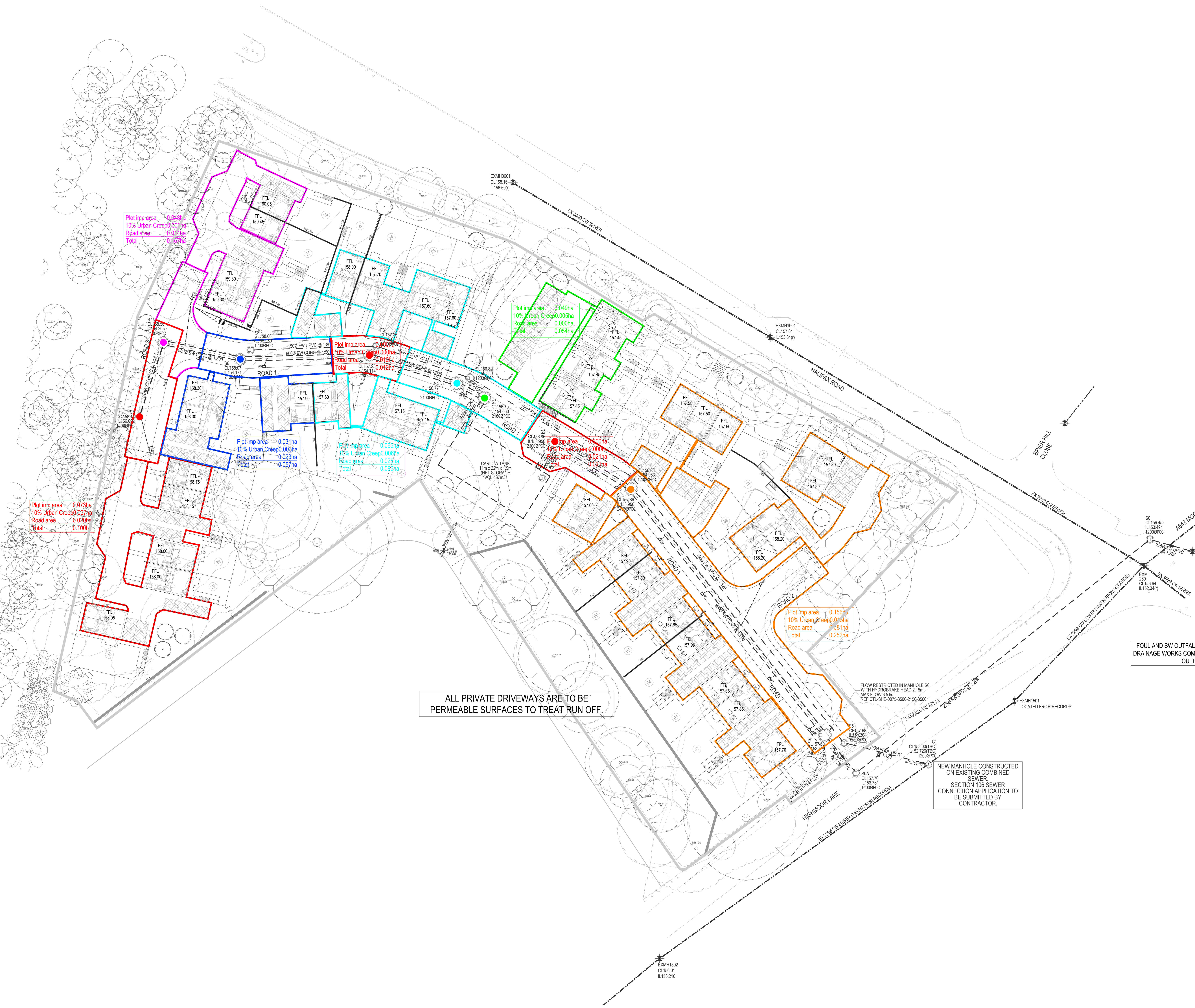
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	TANK	1.006	2	2.0	0.288	0.002	3.9031	
960 minute winter	2	1.007	1	2.1	0.247	0.002	11.4528	
960 minute winter	1	1.008	0	3.7	0.202	0.004	42.0312	
960 minute winter	0	Hydro-Brake®	0A	2.5				
15 minute winter	0A	1.010	0B	2.6	0.553	0.085	0.4535	
2160 minute winter	0B	1.011	MH 2603	2.5	0.484	0.083	0.0507	297.8
15 minute summer	8	1.000	7	42.9	2.973	0.308	0.2461	
960 minute winter	7	1.001	6	4.2	0.313	0.005	7.1492	
960 minute winter	6	1.002	5	4.9	0.347	0.006	12.9073	
960 minute winter	5	1.003	4	4.4	0.279	0.005	9.9023	
960 minute winter	4	1.004	3	6.4	0.323	0.007	3.5570	
960 minute winter	3	1.005	TANK	7.5	0.483	0.008	3.6058	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.48%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	TANK	1380	156.043	2.033	17.7	441.5242	0.0000	SURCHARGED
1440 minute winter	2	1380	156.043	2.047	6.9	7.0895	0.0000	SURCHARGED
1440 minute winter	1	1380	156.043	2.087	9.3	7.2280	0.0000	SURCHARGED
1440 minute winter	0	1380	156.043	2.224	3.8	10.0595	0.0000	SURCHARGED
1440 minute winter	0A	1380	153.832	0.051	3.5	0.0580	0.0000	OK
1440 minute winter	0B	1380	153.546	0.053	3.5	0.0604	0.0000	OK
1440 minute winter	MH 2603	1380	153.507	0.048	3.5	0.0000	0.0000	OK
15 minute summer	8	9	156.227	0.135	80.9	0.1523	0.0000	OK
1440 minute winter	7	1380	156.043	1.838	6.2	6.3655	0.0000	SURCHARGED
1440 minute winter	6	1380	156.043	1.872	7.6	6.4833	0.0000	SURCHARGED
1440 minute winter	5	1380	156.043	1.929	7.2	6.6807	0.0000	SURCHARGED
1440 minute winter	4	1380	156.043	1.969	10.2	6.8193	0.0000	SURCHARGED
1440 minute winter	3	1380	156.043	1.983	11.9	6.8678	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	TANK	1.006	2	-6.7	0.287	-0.008	4.3965	
1440 minute winter	2	1.007	1	-6.1	0.242	-0.007	12.5189	
1440 minute winter	1	1.008	0	3.8	0.141	0.004	43.4560	
1440 minute winter	0	Hydro-Brake®	0A	3.5				
1440 minute winter	0A	1.010	0B	3.5	0.507	0.116	0.5751	
1440 minute winter	0B	1.011	MH 2603	3.5	0.532	0.116	0.0645	281.8
15 minute summer	8	1.000	7	79.9	3.428	0.573	0.3977	
1440 minute winter	7	1.001	6	5.5	0.280	0.006	10.8806	
1440 minute winter	6	1.002	5	6.8	0.306	0.008	17.9719	
1440 minute winter	5	1.003	4	6.9	0.244	0.008	12.6761	
1440 minute winter	4	1.004	3	10.0	0.297	0.011	4.3654	
1440 minute winter	3	1.005	TANK	11.6	0.483	0.013	4.3363	

YORKSHIRE WATER REF
H-XXXXX



24. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.

25. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.

26. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVER TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX 300mm. IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY BE INCREASED.

27. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE C BRICK MANHOLES AND 1050mm DIAMETER MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE B MANHOLE WITH 1200mm DIAMETER OR 1500mm DIAMETER RINGS WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1-1.5m.

28. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.

Drainage & External Works Key

Adoptable Drainage

Proposed adoptable Foul sewer and manhole	
Proposed adoptable Storm sewer and manhole	
Proposed road gully & connecting pipe work. 150Ø pipe unless noted otherwise	RG 150Ø

All adoptable drainage to be installed in accordance with the relevant edition of Sewers For Adoption and any regional water authority variations.

Existing public Foul sewer and manhole	Ex FW Sewer
Existing public Storm sewer and manhole	Ex SW Sewer
Existing public Combined sewer and manhole	Ex CW Sewer

Public Sewer Easements

Proposed Public Sewer Easement Width to be Confirmed	PROPOSED 8.0M WIDE SEWER EASEMENT

Retaining walls, steps & external works

Retaining wall (retained height shown). (edge protection required over 600mm ht)	RW0.45m
Flag On Edge. Maximum retained height 0.4m. Not to be constructed supporting driveways or highways	FOE 0.4m
Tanking to specialist details	T T T T T T T
Engineering / Facing Brickwork to be shown below FFL	0.3m exposed bwk below ffl
Steps to paths - 300mm Going 150mm Rise (Handrails required to heights over 600mm)	6 STEPS
Proposed Finished Floor Level	FFL 141.000
Proposed Engineered Batter / Embankment. (1:3Grad Max unless notes otherwise)	1:3 Batter
Permeable paving to driveway	

HEALTH & SAFETY
1. CONTRACTOR SHOULD BE AWARE OF GENERAL CONSTRUCTION RISKS TO PREVENT SLIPS, TRIPS AND FALLS AND TAKE NECESSARY PRECAUTIONS WITHOUT SPECIAL INSTRUCTION.
ROADS & DRAINAGE
2. CONTRACTOR TO PROVIDE TRENCH SUPPORTS AS APPROPRIATE AND ENSURE THAT PLANT REMAINS A SAFE DISTANCE FROM TRENCHES PRIOR TO INSTALLING DRAINAGE
3. THE TIME THAT EXCAVATIONS ARE OPEN ON SITE SHOULD BE KEPT TO A MINIMUM AND ALL TRENCHES SHOULD BE SURROUNDED BY A BARRIER.
4. CONNECTIONS TO EXISTING SEWERS TO BE MADE BY YORKSHIRE WATER APPROVED CONTRACTOR ONLY.
5. CONTRACTOR TO MAKE OPERATIVES AWARE OF ASSOCIATED DANGERS TO HEALTH SUCH AS LEPTOSPIROSIS (WEILS DISEASE) AND RECOMMENDED PRECAUTIONS. ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING TO BE PROVIDED AS REQUIRED.
6. UNFINISHED MANHOLES MUST BE COVERED WITH LOAD BEARING MATERIALS AND SURROUNDED WITH BARRIER.
PIPES & CABLES
7. SERVICE RECORDS TO BE REFERRED TO PRIOR TO WORK COMMENCING. CONTRACTOR TO PROCEED WITH CAUTION AND SERVICES TO BE LOCATED BY HAND DIG AND PROTECTED ACCORDINGLY.
EXCAVATION/FILL
8. CONTRACTOR TO ENSURE RELEVANT MEASURES ARE TAKEN TO KEEP PLANT AND PEOPLE A SAFE DISTANCE FROM STEEP SLOPES DURING THE WORKS.
9. CONTRACTOR TO ENSURE THAT PROCEDURES ARE IN PLACE TO KEEP PEOPLE A SAFE DISTANCE FROM WORKING PLANT WHERE NECESSARY.
10. CONTRACTOR TO REFER TO GROUND INVESTIGATION REPORT FOR CONTAMINATION TESTS AND TO PROVIDE ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING AS REQUIRED.

NOTES
1. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE DESIGN AND CONSTRUCTION GUIDANCE (CODE FOR ADOPTION0, THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARD/REQUIREMENTS/LOCAL PRACTICE FOR THE ADOPTION OF SMALL SUBMERSIBLE FOUL AND SW PUMPING STATIONS AND KITEMARKED.ADDENDUM TO THE MECHANICAL AND ELECTRICAL: SPECIFICATION AND KITE MARKED.

2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND CLASS D400 TO BS EN 124 WITH A 150mm DEEP FRAME IN HIGHWAYS.

3. CONTRACTOR TO ESTABLISH POSITION SIZE AND DEPTH OF ALL EXISTING SEWERS AND SERVICES PRIOR TO COMMENCEMENT ON SITE.

4. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT, AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXISTING SERVICES.

5. THE CONTRACTOR SHALL ALLOW FOR ALL TRAFFIC MANAGEMENT IN CONNECTION WITH ROAD AND SEWER WORKS.

6. THE CONTRACTOR SHALL ALLOW FOR KEEPING SEWER TRENCHES AND EXCAVATIONS AS DRY AS PRACTICABLE BY PUMPING FROM TEMPORARY SUMPS AND DE WATERING AS APPROPRIATE. THE POINT AND METHOD OF DISCHARGE TO BE AGREED WITH THE DRAINAGE AUTHORITY.

7. PIPES UP TO AND INCLUDING 300mmØ TO BE TWIN WALLED PLASTIC PIPES. PIPES 375mmØ AND GREATER TO BE CONCRETE CLASS H.

8. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERBS FACES AND SERVICE MARGINS.

9. SEWERS MUST HAVE 5 METERS CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.

10. ADOPTABLE PLASTIC SWER PIPES TO BE KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS EN 13476)

11. COVER SLABS MUST CARRY THE BSI KITE MARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITE MARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME A LOAD BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600mmx600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEAS REFER TO CONCRETE PIPE SYSTEMS ASSOCIATIONS TECHNICAL BULLETIN ISSUED AUTUMN 2004 FOR KITE MARKED COVER SLAB OPENING SIZES.

12. SULPHATE RESISTING CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY..

13. GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN124 AND BE OF A NON-ROCKING DESIGN WITH CAPTIVE HINGE ACCESS AND BE KITE MARKED. LOAD CLASS D400 FOR ROADS REGULARLY CARRYING FAST MOVING HEAVY VEHICLES. CLASS C250 TO BE USED IN LESSER TRAFFICKED AREAS eg. ESTATE ROADS, CUL-DE-SACS, RESIDENTIAL CAR PARKING AREAS ETC.

14. SEWERS TO BE LAID IN CLASS 'S' BEDDING (150MM GRANULAR BED AND SURROUND WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THA1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 0.9m IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHALL BE PROVIDED ABOVE THE GRANULAR BED AND SURROUND

15. BACKFILLING AND REINSTATEMENT TO TRENCHES IN PUBLIC HIGHWAYS SHALL BE TYPE 1 GRANULAR MATERIAL IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE ADOPTING AUTHORITY, OR, IN THE ABSENCE OF SUCH, IN ACCORDANCE WITH THE REQUIREMENTS OF "THE STREET WORKS REGULATIONS 1992" AND RELEVANT PROVISIONS OF H.A.U.C. "SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS" JUNE 1992, BOTH UNDER SECTION 71 OF THE NEW ROADS AND STREET WORKS ACT 1991.

16. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF WATER INDUSTRY SPECIFICATION 4-08-02(TABLE A2)

17. ALL ROAD GULLIES ARE TO BE TRAPPED GULLIES. ALL GULLY LEADS TO BE 150mm DIAMETER.

18. ALL REDUNDANT EXISTING DRAINAGE TO BE GRUBBED UP OR GROUTED, ANY EXISTING LIVE DRAINAGE SHOULD BE REPORTED TO THE ENGINEER AND RECONNECTED.

19. ALL ROAD GULLIES & LEADS TO BE CLEARED OF DEBRIS UPON COMPLETION OF WORKS.

20. THE CONTRACTOR MUST ENSURE THAT ANY OF THE EXISTING DRAINAGE WHICH IS LIVE IS KEPT CLEAR OF DEBRIS AND SHOULD ALLOW FOR JETTING THROUGH THE NEW & EXISTING DRAINAGE UPON COMPLETION.

21. CONTRACTOR TO TAKE MEASURES TO PROTECT HIS OPERATIVES WITH RESPECT TO THE PRESENCE OF GAS IN SEWER TRENCHES AND MANHOLES THROUGH THE USE OF GAS MONITORING EQUIPMENT AND BREATHING APPARATUS AS REQUIRED.

22. CONTRACTOR TO APPLY FOR SEWER PERMITS AND ROAD OPENING PERMITS AS NECESSARY FROM THE APPROPRIATE AUTHORITIES, PRIOR TO COMMENCING WORKS.

23. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUN OFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE SYSTEM (DIRECTLY OR INDIRECTLY). AND ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUN OFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY LAND DRAINAGE SECTION WITH REGARD TO DISPOSAL OF THE FILTER/LAND DRAINAGE RUN OFF.

REVISIONS

Rev.	Revision Notes	Date	Drawn By	Checked | Approved
P02	FFL's to plots 9&29 amended	20/05/25	MP	-- | --
P01	Preliminary Issue	22/04/25	MP	-- | --

Hydrock
2 Esh Plaza
Sir Bobby Robson Way, Great Park
Newcastle upon Tyne
NE13 9BA
t: +44(0)1912 302993
e: newcastle@3econsult.com

CLIENT
THIRTEEN GROUP

PROJECT
HIGHMOOR LANE
CLECKHEATON

TITLE
IMPERMEABLE AREAS PLAN

HYDROCK PROJECT NO.	SCALE @ A1
C-29177	1:500
STATUS DESCRIPTION	STATUS
SUITABLE FOR INFORMATION	S2
DRAWING NO.	REVISION
P22-271-HYD-XX-XX-DR-C-0002	P02

Filename: P:\29000-29999\29177 - Highmoor Lane, Cleckheaton (P22-271)\Drawings\Civils\P22-271-HYD-XX-XX-DR-C-0002 Impermeable Area Plan.dwg

Appendix G Drainage Maintenance Plan

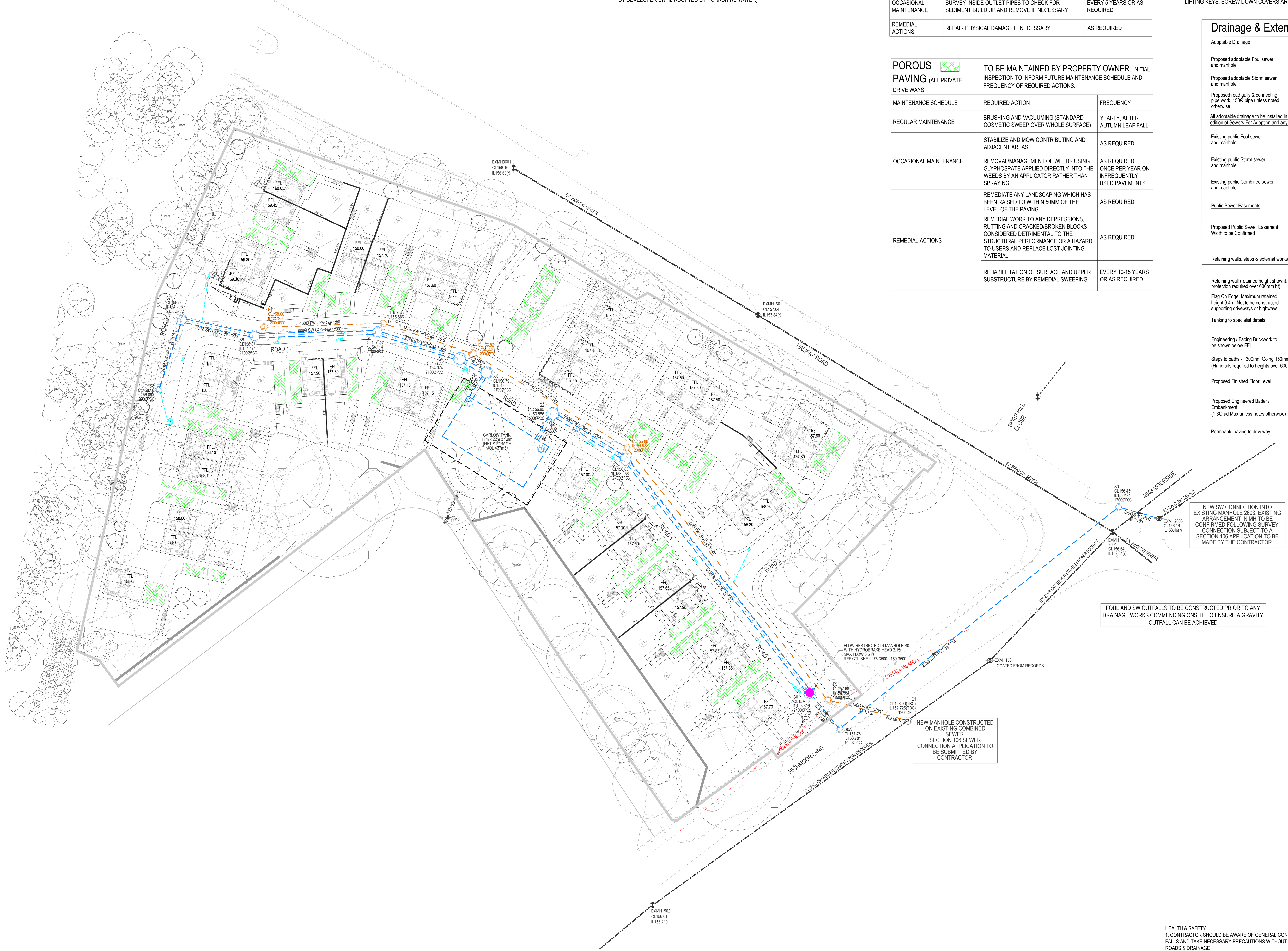
YORKSHIRE WATER REF
H-XXXXX

SW DRAINS & MANHOLES	TO BE MANAGED BY DEVELOPER UNTIL ADOPTED BY YORKSHIRE WATER	
MAINTENANCE SCHEDULE	REQUIRED ACTION	FREQUENCY
REGULAR MAINTENANCE	INSPECT AND IDENTIFY ANY AREAS THAT ARE NOT OPERATING CORRECTLY. IF REQUIRED TAKE REMEDIAL ACTION	MONTHLY FOR 3 MONTHS THEN ANNUALLY
OCCASIONAL MAINTENANCE	SURVEY INSIDE OF OUTLET PIPES TO CHECK FOR SEDIMENT BUILD UP AND REMOVE IF NECESSARY	EVERY 5 YEARS OR AS REQUIRED
REMEDIAL ACTIONS	REPAIR PHYSICAL DAMAGE IF NECESSARY	AS REQUIRED

DENOTES LOCATION OF HYDROBRAKE FLOW RESTRICTION UNIT (MAINTAINED BY DEVELOPER UNTIL ADOPTED BY YORKSHIRE WATER)

HIGHWAY GULLIES	TO BE MAINTAINED BY DEVELOPER UNTIL ADOPTED BY KIRKLEES COUNTY COUNCIL HIGHWAYS	
MAINTENANCE SCHEDULE	REQUIRED ACTION	FREQUENCY
REGULAR MAINTENANCE	INSPECT ACCESS POINTS FOR SILT ACCUMULATION TO ESTABLISH SILT REMOVAL FREQUENCIES	MONTHLY FOR 3 MONTHS THEN ANNUALLY
	INSPECT FOR PONDING ON ROAD CHANNEL - MAY BE CAUSED BY OBSTRUCTION IN KERB DRAIN. REMOVE BY RODDING/JETTING FROM ACCESS POINT OR FROM KERB APERTURE	ANNUALLY OR AS REQUIRED
OCCASIONAL MAINTENANCE	SURVEY INSIDE OUTLET PIPES TO CHECK FOR SEDIMENT BUILD UP AND REMOVE IF NECESSARY	EVERY 5 YEARS OR AS REQUIRED
REMEDIAL ACTIONS	REPAIR PHYSICAL DAMAGE IF NECESSARY	AS REQUIRED

POROUS PAVING (ALL PRIVATE DRIVE WAYS	TO BE MAINTAINED BY PROPERTY OWNER. INITIAL INSPECTION TO INFORM FUTURE MAINTENANCE SCHEDULE AND FREQUENCY OF REQUIRED ACTIONS.	
MAINTENANCE SCHEDULE	REQUIRED ACTION	FREQUENCY
REGULAR MAINTENANCE	BRUSHING AND VACUUMING (STANDARD COSMETIC SWEEP OVER WHOLE SURFACE)	YEARLY, AFTER AUTUMN LEAF FALL
OCCASIONAL MAINTENANCE	STABILIZE AND MOW CONTRIBUTING AND ADJACENT AREAS.	AS REQUIRED
	REMOVAL/MANAGEMENT OF WEEDS USING GLYPHOSPATE APPLIED DIRECTLY INTO THE WEEDS BY AN APPLICATOR RATHER THAN SPRAYING	AS REQUIRED. ONCE PER YEAR ON INFREQUENTLY USED PAVEMENTS.
REMEDIAL ACTIONS	REMEDIATE ANY LANDSCAPING WHICH HAS BEEN RAISED TO WITHIN 50MM OF THE LEVEL OF THE PAVING.	AS REQUIRED
	REMEDIAL WORK TO ANY DEPRESSIONS, RUTTING AND CRACKED/BROKEN BLOCKS CONSIDERED DETRIMENTAL TO THE STRUCTURAL PERFORMANCE OR A HAZARD TO USERS AND REPLACE LOST JOINTING MATERIAL.	AS REQUIRED
	REHABILLITATION OF SURFACE AND UPPER SUBSTRUCTURE BY REMEDIAL SWEEPING	EVERY 10-15 YEARS OR AS REQUIRED.



24. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.

25. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.

26. THERE MUST BE ENOUGH CLEARANCE AT CROSSOVER TO ACCOMMODATE BEDDING TO BOTH PIPES, APPROX 300mm. IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY BE INCREASED.

27. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE C BRICK MANHOLES AND 1050mm DIAMETER MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE B MANHOLE WITH 1200mm DIAMETER OR 1500mm DIAMETER RINGS WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1-1.5m.

28. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.

Drainage & External Works Key

Adoptable Drainage	
Proposed adoptable Foul sewer and manhole	
Proposed adoptable Storm sewer and manhole	
Proposed road gully & connecting pipe work. 150Ø pipe unless noted otherwise	RG 150Ø
All adoptable drainage to be installed in accordance with the relevant edition of Sewers For Adoption and any regional water authority variations.	
Existing public Foul sewer and manhole	Ex FW Sewer
Existing public Storm sewer and manhole	Ex SW Sewer
Existing public Combined sewer and manhole	Ex CW Sewer
Public Sewer Easements	
Proposed Public Sewer Easement Width to be Confirmed	PROPOSED 8.0M WIDE SEWER EASEMENT
Retaining walls, steps & external works	
Retaining wall (retained height shown). (edge protection required over 600mm ht)	RW0.45m
Flag On Edge. Maximum retained height 0.4m. Not to be constructed supporting driveways or highways	FOE 0.4m
Tanking to specialist details	
Engineering / Facing Brickwork to be shown below FFL	0.3m exposed bwk below ffl
Steps to paths - 300mm Going 150mm Rise (Handrails required to heights over 600mm)	6 STEPS
Proposed Finished Floor Level	FFL 141.000
Proposed Engineered Batter / Embankment. (1:3Grad Max unless notes otherwise)	1:3 Batter
Permeable paving to driveway	

NOTES

1. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE DESIGN AND CONSTRUCTION GUIDANCE (CODE FOR ADOPTION0, THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARD/REQUIREMENTS/LOCAL PRACTICE FOR THE ADOPTION OF SMALL SUBMERSIBLE FOUL AND SW PUMPING STATIONS AND KITEMARKED.ADDENDUM TO THE MECHANICAL AND ELECTRICAL: SPECIFICATION AND KITE MARKED.

2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND CLASS D400 TO BS EN 124 WITH A 150mm DEEP FRAME IN HIGHWAYS.

3. CONTRACTOR TO ESTABLISH POSITION SIZE AND DEPTH OF ALL EXISTING SEWERS AND SERVICES PRIOR TO COMMENCEMENT ON SITE.

4. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT, AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXISTING SERVICES.

5. THE CONTRACTOR SHALL ALLOW FOR ALL TRAFFIC MANAGEMENT IN CONNECTION WITH ROAD AND SEWER WORKS.

6. THE CONTRACTOR SHALL ALLOW FOR KEEPING SEWER TRENCHES AND EXCAVATIONS AS DRY AS PRACTICABLE BY PUMPING FROM TEMPORARY SUMPS AND DE WATERING AS APPROPRIATE. THE POINT AND METHOD OF DISCHARGE TO BE AGREED WITH THE DRAINAGE AUTHORITY.

7. PIPES UP TO AND INCLUDING 300mmØ TO BE TWIN WALLED PLASTIC PIPES. PIPES 375mmØ AND GREATER TO BE CONCRETE CLASS H.

8. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERBS FACES AND SERVICE MARGINS.

9. SEWERS MUST HAVE 5 METERS CLEARANCE FROM TREES AND HEDGES OR THE WIDTH OF THE CANOPY AT MATURE HEIGHT.

10. ADOPTABLE PLASTIC SWER PIPES TO BE KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS EN 13476)

11. COVER SLABS MUST CARRY THE BSI KITE MARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITE MARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME A LOAD BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600mmx600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEAS REFER TO CONCRETE PIPE SYSTEMS ASSOCIATIONS TECHNICAL BULLETIN ISSUED AUTUMN 2004 FOR KITE MARKED COVER SLAB OPENING SIZES.

12. SULPHATE RESISTING CEMENT (C20-DC2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY..

13. GULLY GRATES AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN124 AND BE OF A NON-ROCKING DESIGN WITH CAPTIVE HINGE ACCESS AND BE KITE MARKED. LOAD CLASS D400 FOR ROADS REGULARLY CARRYING FAST MOVING HEAVY VEHICLES. CLASS C250 TO BE USED IN LESSER TRAFFICKED AREAS eg. ESTATE ROADS, CUL-DE-SACS, RESIDENTIAL CAR PARKING AREAS ETC.

14. SEWERS TO BE LAID IN CLASS 'S' BEDDING (150MM GRANULAR BED AND SURROUND WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THA1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 0.9m IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHALL BE PROVIDED ABOVE THE GRANULAR BED AND SURROUND

15. BACKFILLING AND REINSTATEMENT TO TRENCHES IN PUBLIC HIGHWAYS SHALL BE TYPE 1 GRANULAR MATERIAL IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE ADOPTING AUTHORITY, OR, IN THE ABSENCE OF SUCH, IN ACCORDANCE WITH THE REQUIREMENTS OF "THE STREET WORKS REGULATIONS 1992" AND RELEVANT PROVISIONS OF H.A.U.C. "SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS" JUNE 1992, BOTH UNDER SECTION 71 OF THE NEW ROADS AND STREET WORKS ACT 1991.

16. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF WATER INDUSTRY SPECIFICATION 4-08-02(TABLE A2)

17. ALL ROAD GULLIES ARE TO BE TRAPPED GULLIES. ALL GULLY LEADS TO BE 150mm DIAMETER.

18. ALL REDUNDANT EXISTING DRAINAGE TO BE GRUBBED UP OR GROUTED, ANY EXISTING LIVE DRAINAGE SHOULD BE REPORTED TO THE ENGINEER AND RECONNECTED.

19. ALL ROAD GULLIES & LEADS TO BE CLEARED OF DEBRIS UPON COMPLETION OF WORKS.

20. THE CONTRACTOR MUST ENSURE THAT ANY OF THE EXISTING DRAINAGE WHICH IS LIVE IS KEPT CLEAR OF DEBRIS AND SHOULD ALLOW FOR JETTING THROUGH THE NEW & EXISTING DRAINAGE UPON COMPLETION.

21. CONTRACTOR TO TAKE MEASURES TO PROTECT HIS OPERATIVES WITH RESPECT TO THE PRESENCE OF GAS IN SEWER TRENCHES AND MANHOLES THROUGH THE USE OF GAS MONITORING EQUIPMENT AND BREATHING APPARATUS AS REQUIRED.

22. CONTRACTOR TO APPLY FOR SEWER PERMITS AND ROAD OPENING PERMITS AS NECESSARY FROM THE APPROPRIATE AUTHORITIES, PRIOR TO COMMENCING WORKS.

23. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAIN/LAND DRAINAGE RUN OFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE SYSTEM (DIRECTLY OR INDIRECTLY). AND ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUN OFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY LAND DRAINAGE SECTION WITH REGARD TO DISPOSAL OF THE FILTER/LAND DRAINAGE RUN OFF.

REVISIONS

Rev.	Revision Notes	Date	Drawn By	Checked | Approved
P03	FFL to plots 9& 29 amended	20/05/25	MP	-- | --
P02	Layout updated.	22/04/25	MP	-- | --
P01	Preliminary Issue	18/03/25	MP	-- | --

HEALTH & SAFETY
1. CONTRACTOR SHOULD BE AWARE OF GENERAL CONSTRUCTION RISKS TO PREVENT SLIPS, TRIPS AND FALLS AND TAKE NECESSARY PRECAUTIONS WITHOUT SPECIAL INSTRUCTION.
ROADS & DRAINAGE
2. CONTRACTOR TO PROVIDE TRENCH SUPPORTS AS APPROPRIATE AND ENSURE THAT PLANT REMAINS A SAFE DISTANCE FROM TRENCHES PRIOR TO INSTALLING DRAINAGE
3. THE TIME THAT EXCAVATIONS ARE OPEN ON SITE SHOULD BE KEPT TO A MINIMUM AND ALL TRENCHES SHOULD BE SURROUNDED BY A BARRIER.
4. CONNECTIONS TO EXISTING SEWERS TO BE MADE BY YORKSHIRE WATER APPROVED CONTRACTOR ONLY.
5. CONTRACTOR TO MAKE OPERATIVES AWARE OF ASSOCIATED DANGERS TO HEALTH SUCH AS LEPTOSPIROSIS (WEILS DISEASE) AND RECOMMENDED PRECAUTIONS. ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING TO BE PROVIDED AS REQUIRED.
6. UNFINISHED MANHOLES MUST BE COVERED WITH LOAD BEARING MATERIALS AND SURROUNDED WITH BARRIER.
PIPES & CABLES
7. SERVICE RECORDS TO BE REFERRED TO PRIOR TO WORK COMMENCING. CONTRACTOR TO PROCEED WITH CAUTION AND SERVICES TO BE LOCATED BY HAND DIG AND PROTECTED ACCORDINGLY.
EXCAVATION/FILL
8. CONTRACTOR TO ENSURE RELEVANT MEASURES ARE TAKEN TO KEEP PLANT AND PEOPLE A SAFE DISTANCE FROM STEEP SLOPES DURING THE WORKS.
9. CONTRACTOR TO ENSURE THAT PROCEDURES ARE IN PLACE TO KEEP PEOPLE A SAFE DISTANCE FROM WORKING PLANT WHERE NECESSARY.
10. CONTRACTOR TO REFER TO GROUND INVESTIGATION REPORT FOR CONTAMINATION TESTS AND TO PROVIDE ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING AS REQUIRED.

Hydrock
2 Esh Plaza
Sir Bobby Robson Way, Great Park
Newcastle upon Tyne
NE13 9BA
t: +44(0)1912 302993
e: newcastle@3econsult.com

CLIENT
THIRTEEN GROUP

PROJECT
HIGHMOOR LANE
CLECKHEATON

TITLE
PROPOSED DRAINAGE
MAINTENANCE PLAN

HYDROCK PROJECT NO.	SCALE @ A1
C-29177	1:500

STATUS DESCRIPTION	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO.	REVISION
P22-271-HYD-XX-XX-DR-C-0001	P03

Filename: P:\29000-29999\29177 - Highmoor Lane, Cleckheaton (P22-271)\Drawings\Civils\P22-271-HYD-XX-XX-DR-C-0001 Drainage MaintenancePlan.dwg