

Kingsman Homes

**Flood Risk Assessment with
Outline Drainage Strategy**

For

**Proposed residential development at
Hollinhurst Farm**

At

Land to the Southwest of Southwood Avenue
Hall Ing
Honley
HD9 6QP

Beam Consulting
14 Bond Street
Wakefield
West Yorkshire
WF1 2QP

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REVISION RECORD

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EXECUTIVE SUMMARY

This Flood Risk Assessment (FRA) has been prepared for Kingsman Homes for the proposed residential development Land on Southwest of Southwood Avenue, Hall Ing, Honley, HD9 6QP.

The Assessment has been undertaken in accordance with the requirements of the National Planning Policy Framework (NPPF) December 2024 and its Technical Guidance.

Flood risk

The site is located within Flood Zone 1 - area where flooding from rivers and the sea is very unlikely with less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The long term flood risk from surface water is very low (less than 0.1% chance). The site is unlikely to experience flooding from reservoirs or groundwater. (See Appendix C for Environment Agency long term flood risk maps). Hence the proposed development is acceptable.

Surface water drainage

Due to the site topography, location in close proximity to other residential, the use of site infiltration and other similar SUDS systems is not suitable for this development.

The existing site is currently a farm field used for livestock grazing etc and has no site surface water drainage. The site contains an existing house to be demolished and replaced.

The surface water drainage for the site will comprise an adopted piped surface water drainage system connected into the existing surface water system in Southwood Avenue.

The site area is 7700 m² and will comprise a total impermeable area of 4750 m². Based on the greenfield surface water run-off rate the discharge from site will be limited to 5.0 litre/sec by a flow control. Based on 1 in 100 year rainfall and 45% allowance for climate change a 313 m³ attenuation (storage) will be provided subject to verification by hydraulic design calculations. (See Appendix D for calculations).

Drainage Strategy drawing in Appendix E indicates the proposed layout.

The final solution for the drainage will depend on further investigation.

Foul water drainage

There is no foul drainage system on this site. The proposed foul drainage system will be connected to the existing public system in Southwood Avenue. Drainage Strategy drawing in Appendix E indicates the proposed layout.

1.0 INTRODUCTION

This Flood Risk Assessment (FRA) has been prepared for Kingsman Homes for the proposed residential development Land on Southwest of Southwood Avenue, Hall Ing, Honley, HD9 6QP.

The assessment has been undertaken in accordance with the requirements of the National Planning Policy Framework (NPPF) December 2024 and its Technical Guidance.

The Report is based on the following information:

- i. Site location
- ii. Current Clients' proposal
- iii. EA online Flood Maps which show indicative hydraulically modelled flooding from rivers or sea without defences - the natural flood plain area that could be affected in the event of flooding from rivers and the sea - based on Light Detection And Ranging (LIDAR) satellite digital terrain maps (DTM's).

All comments and opinions contained in this report, including any conclusions are based on information available to Beam Consulting Engineers during investigations prior to completion of the report. Conclusions drawn by Beam Consulting Engineers may differ if the available information is subsequently found to be inaccurate, incomplete or misleading. Beam Consulting Engineers accept no responsibility should this prove to be the case, nor if additional information exists or becomes available in relation to this site.

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- i. The date on which the assessment was undertaken, and
- ii. The date on which the report is issued.

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This document is a risk assessment of flooding issues associated with the noted site. The information presented and recommendations/conclusions stated are based on published statistical data and are for guidance only. The statements provide no guarantee against flooding of the site or elsewhere, nor as to the absolute accuracy of water levels, flow rates and associated probabilities referenced.

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2.0 BACKGROUND INFORMATION

The site is located off Southwood Avenue, Hall Ing, Honley, HD9 6QP.

National Grid reference for the site is 414723, 411868. The site location plan is enclosed within Appendix A.

2.1 EXISTING DEVELOPMENT

The existing 7700 m² (0.770 ha) site is currently farmland. The site contains an existing house to be demolished and rebuilt.

2.2 PROPOSED DEVELOPMENT

It is proposed to build a residential development consisting of 9 new houses with associated parking and access roads. The proposed impermeable area is 4570 m² (0.457 ha).

The proposed site layout drawing is enclosed within Appendix B.

3.0 FLOOD RISK

3.1 RISK OF FLOODING OF DEVELOPMENT SITE

The flood risk and site drainage assessment is based on the following sources of information:

- i. EA online Flood Maps:
The site is located within Flood Zone 1 – very low risk of flooding that comprises land assessed as having a less than 1 in 1,000 (<0.1%) annual probability of river or sea flooding and surface water flooding. As the site is within very low flood risk area based on EA flood maps then no further consultation with Environment Agency has been undertaken. The Environment Agency flood map is enclosed within Appendix C.

Based on the above, surface water flooding within the site and surrounding areas is very unlikely, hence the proposed development is acceptable. No flood protection measures are required. Proposed site levels are to be similar to existing and the proposed building floor level should be higher than external levels.

The proposed development shall embody SUDS (Sustainable Urban Drainage Systems) principles. The site surface water is to be collected by a piped drainage system with an attenuation tank prior to exiting the site using the existing combined drainage.

3.2 SOURCES OF FLOODING AND FLOOD RISK

Sources of flooding	Flood risk
<p>Streams and rivers Flooding that can take place from flows that are not contained within the channel due to high levels of rainfall in the catchment.</p>	<p>There are no streams or rivers recorded within the site area. The closest watercourse to the site is Ludhill Dike/Sawgates Clough which is approximately 280 m to the north of the site. In the area there are also the River Holme at approximately 690 m to the southwest of the site and Mag Brook approximately 1.05 km to the northwest of the site. Mag Brook is the major cause of flooding to the area.</p>
<p>Coastal or estuarine Flooding that can occur from the sea due to a particularly high tide or surge, or combination of both.</p>	<p>The site is located inland and therefore is not at risk of flooding from the sea.</p>
<p>Groundwater Where the water table rises to such a height where flooding occurs. Most common in low-lying areas underlain by permeable ground (aquifers), usually due to extended periods of wet weather.</p>	<p>The site is located in a higher-lying area and therefore is not at risk of flooding from groundwater.</p>
<p>Sewers and highway drains Combined, foul or surface water sewers and highway drains that are temporarily over-loaded due to excessive rainfall or due to blockage.</p>	<p>The highways next to the site and adjacent developments have their own drainage systems in place. In the case of them being temporarily over-loaded due to excessive rainfall or due to blockage the water is collected within highways or farmland areas adjacent to the site.</p>
<p>Surface water The net rainfall falling on a surface (on or off the site) which acts as runoff which has not infiltrated into the ground or entered into a drainage system.</p>	<p>The highways next to the site and adjacent developments have their own drainage systems in place. In the case of them being temporarily over-loaded due to excessive rainfall or due to blockage the water is collected within highways or farmland areas adjacent to the site.</p>
<p>Infrastructure failure Canals, reservoirs, industrial processes, burst water mains, blocked sewers or failed pumping stations.</p>	<p>The highways next to the site and adjacent developments have their own drainage systems in place. In the case of them being temporarily over-loaded due to excessive rainfall or due to blockage the water is collected within highways or farmland areas adjacent to the site.</p>

3.3 SEQUENTIAL AND EXCEPTION TEST

Based on NPPF December 2024 and its Technical Guidance the sequential and exception tests are not applicable as the site is within Flood Zone 1 and hence outside the floodplain.

Whilst the Sequential Test is not applied the principles are followed in general in the flood risk assessment below:

Possible Hazard	Comments/ Remediation
A. Effect of Development on General Flood Risk Flooding caused by local sources - natural watercourses on or near to the site?	The proposed development shall have its own drainage system in place. In excessive rainfall or due to blockage the water shall be collected within highway, car parking spaces or grassed areas.
B. Effect of Development on General Flood Risk Flooding caused to local sources - run-off from adjacent properties/ adjoining land	As above.
C. Contribution to Flood Flows from Development Drainage Flooding caused to adjacent properties from surface run-off from hard-paved areas.	As above.
D. Contribution to Flood Flows from Development Flooding caused to 3rd party properties	As above.

Whilst the Exception Test is not applied the principles are followed in general in the flood risk assessment below:

Possible Issue	Comments/ Remediation
E. Benefit of Site Development to the Wider Community over Flood Risk	The proposed development shall have its own drainage system in place. In excessive rainfall or due to blockage the water shall be collected within highway, car parking spaces or grassed areas.
F. Does an alternative site exist for the development?	The site is existing grassland and at a suitable location for the proposed development with sufficient space to accommodate it.
G. Can the site be made safe?	The proposed development shall consider and embody SUDS (Sustainable Urban Drainage Systems) principles if suitable. Any site surface water runoff shall be restricted and collected within an onsite attenuation tank prior to discharging. The highways next to the site and adjacent developments have their own drainage systems in place. In the case of them being temporarily over-loaded due to excessive rainfall or due to blockage the water is collected within highways or farmland areas adjacent to the site.

4.0 DRAINAGE ASSESSMENT AND STRATEGY

4.1 SURFACE WATER DRAINAGE

The existing field area is 7700 m² (0.770ha). The site currently a field used for animal grazing. It is proposed to develop the site for residential properties with associated highways, drainage and landscaping (see Appendix B).

The proposed redevelopment areas are as follows:

Roofs, parking and Roads	4,570
Grass and permeable surfacing	3,130
TOTAL	7,700 m²

In compliance with SUDS (Sustainable Urban Drainage Systems) various surface water discharge methods and reducing the amount discharged to the water course/sewer have been considered as per the table below.

Infiltration	<p>The use of soakaways is generally an ideal SUDS solution for developments. Permeability testing in accordance with BRE Digest 365 should be carried out and this information then used to determine the viability of the use of soakaways to deal with rainwater runoff. Soakaways can be used to deal with run-off both from buildings and paved areas. It should also be noted that soakaways can cause flooding to nearby basements and properties. Hence, the groundwater flow paths should be determined by a geotechnical investigation. Soakaways should be located in landscaped areas of the site. In accordance with Building Regulations soakaways are not to be located within 5m of any structure.</p> <p>Soakaways must be designed to cope with a 1 in 30 year storm with an allowance for climate change and a factor of safety greater or equal to 2. It is possible that the road or other areas could, with the management of kerbs and levels, be designed to contribute to the additional storage capacity requirements for a 1 in 100 year storm. However if this is not possible then the soakaways would have to be designed for the 1 in 100 year event.</p>
Permeable paving/discharge to soft landscape	<p>The use of permeable surfacing for parking areas combined with discharge from paths onto adjacent soft areas are ideal for reducing run-off via drainage systems. Permeable paving can be used as an infiltration mechanism to discharge direct to the ground if the sub-strata is sufficiently permeable or alternatively can be used as on-site storage where used in conjunction with a flow restriction to attenuate flows into existing drainage systems.</p>
Swales	<p>Swales are similar to wetlands except they are designed to empty when not required to balance flows; similar comments apply as above.</p>

Ponds or wetlands	Ponds or wetlands can be used in conjunction with restricted discharge outlets to control the maximum rate of discharge from a site. However, the health and safety risks associated with ponds and wetlands may make them inappropriate without incorporating significant control measures into the scheme design.
French drains	French drains can be located in landscaped areas of the site. See the notes on soakaways. It is also possible to use French drain construction lined with an impermeable barrier as a storage facility.
Restricted flows combined with onsite storage	<p>If the above solutions are inappropriate then the final drainage system may incorporate a flow restriction and on-site storage. This could be in the form of oversized pipes or tanks to attenuate the additional flows and then discharge into the existing surface water sewer system or into the water subject to consent and approvals.</p> <p>The underground storage system must be designed to accommodate the calculated flows for a 1 in 30 year return period together with an allowance for climate change. The road, with the management of kerbs and levels, can be designed to contribute to the storage capacity for a 1 in 100 year storm. Alternatively the underground storage system should be designed to accommodate the 1 in 100 year event. 45% shall be allowed for climate change.</p> <p>Options for on-site storage include:</p> <ul style="list-style-type: none"> a) Buried tanks b) Lined French drains c) Oversized pipes and manholes d) Paving with under paving storage <p>The choice of solution depends upon relative levels of surfacing, inlet and discharge points and forms part of the detailed drainage design.</p>

Due to the site topography, location in close proximity to other residential the use of site infiltration and other similar SUDS systems are not suitable for this development.

The existing site is currently a farm field used for livestock grazing etc. and has no site surface water drainage.

The surface water drainage for the site will comprise an adopted piped surface water drainage system connected to the existing surface water system in Southwood Avenue.

The site area is 7700 m² and will comprise a total impermeable area of 4570 m². Based on the greenfield surface water run-off rate the discharge from site will be limited to 5.0 litre/sec by a flow control. Based on 1 in 100 year rainfall and 45% allowance for climate change a 313 m³ attenuation (storage) will be provided. (See Appendix D for calculations).

Drainage Strategy drawing in Appendix E indicates the proposed layout.

The final solution for the drainage will depend on further investigation and development of detailed design.

4.2 FOUL WATER DRAINAGE

There is no foul drainage system on this site. The proposed foul drainage system will be connected to the existing public system in Southwood. Drainage Strategy drawing in Appendix E indicates the proposed layout.

The final solution for the drainage will depend on further investigation and development of detailed design.

5.0 RECOMMENDATIONS

Based on the flood risk assessment our recommendations are as follows:

Flood risk

The site is located within Flood Zone 1 - area where flooding from rivers and the sea is very unlikely with less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The long term flood risk from surface water is very low (less than 0.1% chance). The site is unlikely to experience flooding from reservoirs or groundwater. (See Appendix C for Environment Agency long term flood risk maps). Hence the proposed development is acceptable.

Surface water drainage

Due to the site topography, location in close proximity to other residential the use of site infiltration and other similar SUDS systems are not suitable for this development.

The existing site is currently a farm field used for livestock grazing etc and has no site surface water drainage.

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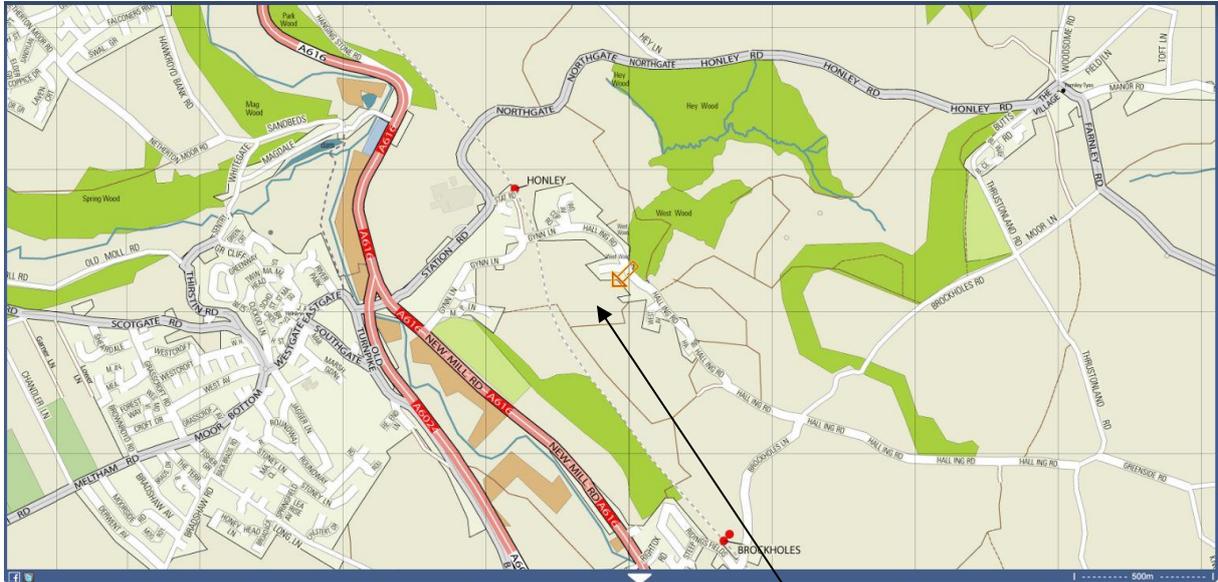
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APPENDIX A - SITE LOCATION



Site Location

APPENDIX B - PROPOSED SITE DRAWINGS

NOTE: ALL DIMENSIONS SHOWN ARE PROVISIONAL DIMENSIONS ONLY & SHOULD NOT BE READ AS EXACT MEASUREMENTS. THESE MAY NEED TO BE ALTERED DUE TO SITE CONSTRAINTS/INSPECTION. THE DRAWINGS AND DESIGN ARE THE COPYRIGHT OF LARCHE DEVELOPMENTS YORKSHIRE LTD & SHOULD NOT BE REPRODUCED WITHOUT PRIOR PERMISSION.



Reference	EGM	North	Elevation
ST1	414893.818	412040.321	168.37
ST2	414891.191	412090.649	167.28
ST3	414897.892	412084.742	166.95
ST4	414854.936	412124.838	158.79
ST5	414828.908	412098.073	155.53
ST6	414894.718	412133.412	155.27
ST7	414820.454	412084.283	154.58
ST8	414845.404	412154.154	152.25

DRAWING DESCRIPTION
 PROPOSED SITE PLAN
 preliminary issue OPTION 1

JOB TITLE
 HOLLINHURST FARM

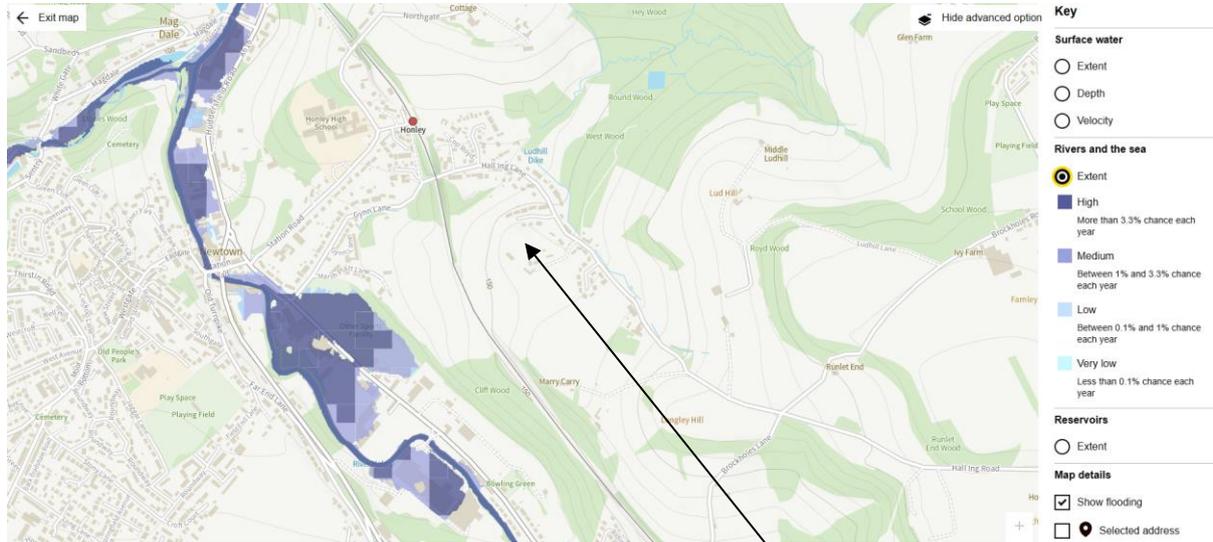
CLIENT
 KINGSMAN HOMES

DRAWN BY
 DATE AUG 2021
 CHECKED

SCALE 1:250 @ A1
 DRAWING NO. 020-90-06
 REVISION E



APPENDIX C - ENVIRONMENT AGENCY FLOOD MAP



Risk of flooding from rivers or the sea

Site Location



Risk of flooding from surface water

Site Location



Risk of flooding from reservoirs

Site Location

APPENDIX D - DRAINAGE CALCULATIONS

Project Title: Hollinhurst Farm

186-62

Prepared By: ES

Date: 12/2024

Checked By: TM

Date: 12/2024

SURFACE WATER ATTENUATION FOR 100 YEAR RAINFALL RETURN PERIOD

DESIGN DATA

Site location =	Honley
M5-60 rainfall ratio (mm) =	20
60min rainfall ratio to 2 day rainfalls of 5 year return period, r =	0.3
Impemeable area (m ²) =	4570
Total site area (m ²) =	7700
Proposed discharge rate (l/s) =	5.0
Allowance for Climate Change (%) =	45

CALCULATIONS RESULTS

Required storage volume (m ³) =	313
Rainfall intensity (mm/hr) =	145

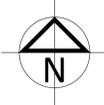
DETAILED CALCULATIONS

Duration, D	15	30	60	120	240	360	600	1440	2880
Z1	0.64	0.79	1.00	1.20	1.44	1.63	1.85	2.35	2.81
M5-D	12.8	15.8	20.0	24.0	28.8	32.6	37.0	47.0	56.2
Z2	1.955	1.996	2.030	2.014	1.980	1.949	1.914	1.834	1.768
M100-D	25.02	31.54	40.60	48.34	57.01	63.54	70.82	86.20	99.35
i (mm/hr)	100.09	63.09	40.60	24.17	14.25	10.59	7.08	3.59	2.07
i + Climate Change %	145.12	91.48	58.87	35.04	20.67	15.36	10.27	5.21	3.00
Area (m ²)	4570	4570	4570	4570	4570	4570	4570	4570	4570
Qp (l/s)	184.37	116.22	74.79	44.52	26.26	19.51	13.05	6.62	3.81
Qe (l/s)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Balancing Q	179.37	111.22	69.79	39.52	21.26	14.51	8.05	1.62	-1.19
Storage volume (m ³)	161.44	200.19	251.25	284.55	306.10	313.41	289.65	139.65	-205.11

DESIGN NOTES

1. Surface water storage design is in accordance with the Wallingford Procedure - Design and Analysis of Urban Drainage. Volume 1 Principles, Methods and Practice. Volume 4 - Modified Rational Method.

APPENDIX E - PROPOSED DEVELOPMENT DRAINAGE STRATEGY

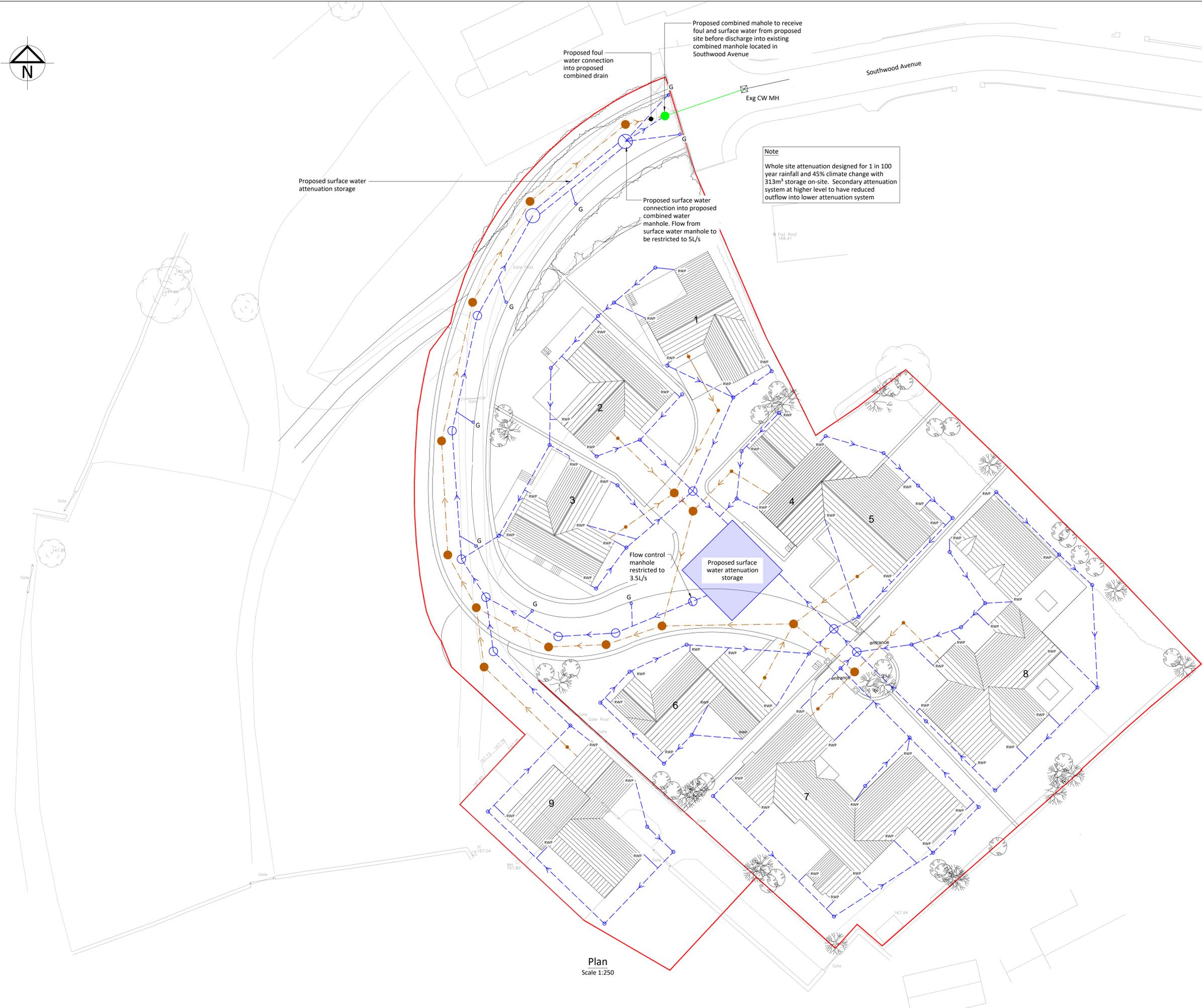


Key

- Proposed Surface Water Drain
- Proposed Foul Water Drain
- Proposed Combined Water Drain
- Proposed Surface Water Manhole
- Proposed Foul Water Manhole
- Proposed Combined Water Manhole
- G Proposed Surface Water Gully
- RWP Proposed RWP
- Existing Combined Water Manhole

Note:
Outline drainage strategy. Subject to approval and detailed design

Note
Whole site attenuation designed for 1 in 100 year rainfall and 45% climate change with 313m³ storage on-site. Secondary attenuation system at higher level to have reduced outflow into lower attenuation system



DESCRIPTION	REV	DATE	CHK	APR
Beam Consulting 14 Bond Street Wakefield WF1 2QP Tel: 01924 361653 Fax: 01924 364631				
PROJECT Hollinhurst Farm				
DRAWING TITLE Outline Drainage Strategy				
CLIENT Kingsman Homes				
STATUS Information				
DRAWN	WS	DATE	19/12/2024	
CHECKED	TM	SCALE	AS SHOWN @ A1	
APPROVED	KGP	REVISION		
DRAWING NUMBER		186-62-500		

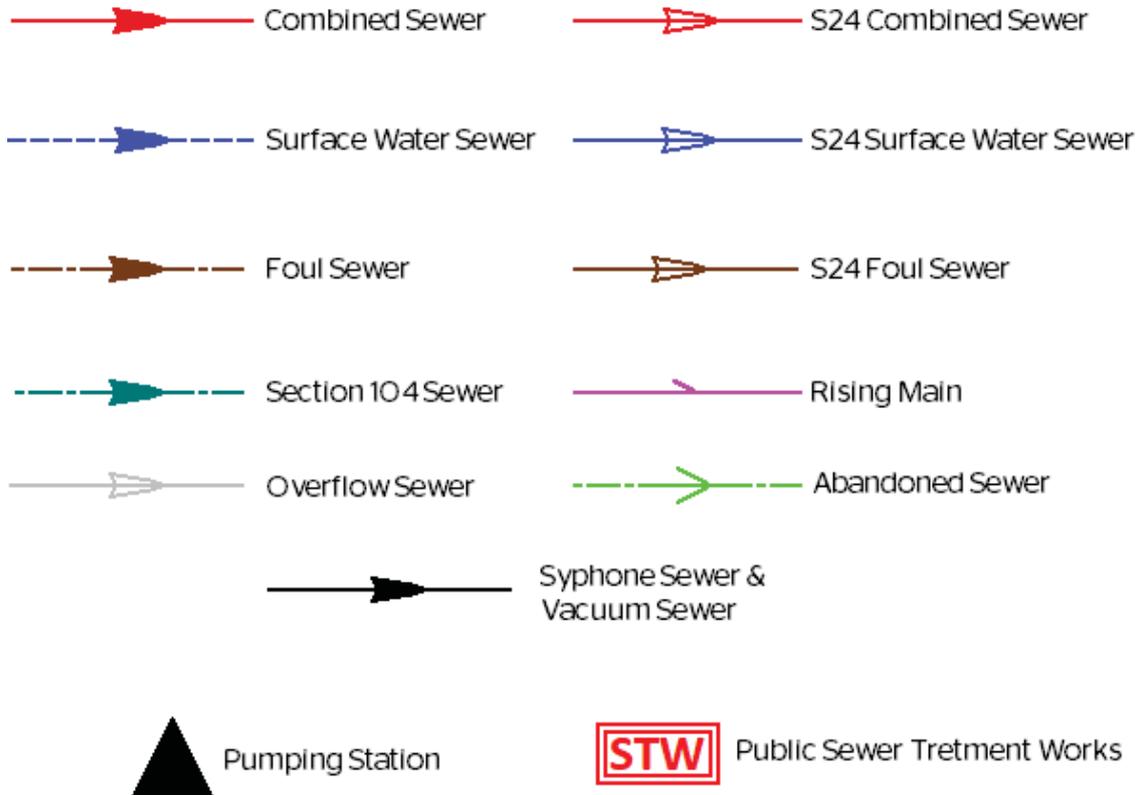
Plan
Scale 1:250

APPENDIX F – EXISTING SITE INFORMATION

Property Identifier



Sewer Legend



Water Legend

