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Quality Assurance Record

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2	17/07/2025	A. Osborne	C. Townsend	C. Townsend	2 nd Issue

Limitation of Liability and Use

The work described in this report was undertaken for the party or parties stated; for the purpose or purposes stated; to the time and budget constraints stated. No liability is accepted for use by other parties or for other purposes, or unreasonably beyond the terms and parameters of its commission and its delivery to normal professional standards.

1. INTRODUCTION

1.1 Purpose of this Report

Townsend Water Engineering Ltd. has been appointed by Breck Homes for a Flood Risk Assessment (FRA) for a residential development of 81 dwellings at the land to the north of Huyton Lane, Knowsley, L36 7SB (Grid Ref: 344432, 391326). This report has been prepared in support of the planning permission for the development.

The report is based on the available flood risk information for the site detailed in Section 1.2 and prepared in accordance with the planning policy requirements set out in Section 1.3. The scope of the FRA is consistent with the 'Site Specific Flood Risk Assessment Checklist' from the National Planning Policy Framework (NPPF) and accompanying Planning Practice Guidance (PPG):

<https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section>

1.2 Sources of Information and Consultation

This Report has been informed by:

- Existing draft Site Plan drawings and respective topographic plan delivered by Breck Homes;
- GEOENVIRONMENTAL HUYTON LANE INTERPRETATIVE REPORT Report Ref: A1356/18/B.0 December 2018;
- UU Sewer Map;
- BGS website <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?mode=boreholes>;
- Defra Magic Map <https://magic.defra.gov.uk/magicmap.aspx>;
- Cranfield University Soil Mapping <http://www.landis.org.uk/soilscapes/>;
- The EA online flood maps;
- Flood Zone Map <https://flood-map-for-planning.service.gov.uk/>; and
- Flood Risk Map: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/>.

1.3 Policy Context

This report has been prepared in accordance with the relevant national, regional and local planning policy and statutory guidance as follows:

- National policy contained within the National Planning Policy Framework (NPPF) dated December 2024; and
- The NPPF Planning Practice Guidance (PPG) dated in December 2024.

1.4 Structure of this Report

The Report has been prepared based on the following structure:

- Section 2 refers to spatial planning considerations by reference to the proposed land use, flood zoning and NPPF vulnerability;
- Section 3 presents the assessment of existing flood risk at the site;
- Section 4 presents the proposed development and findings of flooding;
- Section 5 presents an outline of Ironside Farrar drainage strategy design; and
- Section 6 provides a summary of the assessments.

Additional Appendices are provided that deal with the following:

- Appendix A: Topographical Survey
- Appendix B: EA Flood Levels
- Appendix C: EA Communications about Flood Zones
- Appendix D: LLFA Communications
- Appendix E: United Utilities Sewer Map
- Appendix F: Site Layout
- Appendix G: Ironside Farrar Drainage Strategy and calculations
- Appendix H: Simple Pollution Index

2. SPATIAL PLANNING CONSIDERATION

2.1 Location and Background

The location of the proposed development site is shown in Figure 1 and Figure 2, with location details found in Table 1. The site is located at the land to the north of Huyton Lane, Knowsley, L36 7SB (Grid Ref: 344432, 391326).

The proposed development is for the construction of 81 dwellings with access roads and car parking. The development site is approximately 2.2ha and is currently Huyton Cricket & Bowling Club.

Table 1: Site Details Grid Reference Details Taken from the Site <https://www.streetmap.co.uk/>

Reference	Value
OS X (Eastings)	344432
OS Y (Northings)	391326
Nearest Post Code	L36 7SB
Nat. Grid	SJ 44414 91323

The site is surrounded by residential areas. The River Alt runs along the sites northern border – this is an ordinary watercourse that is culverted in the north-east. St Aidens Primary School is to the north-east of the site. Huyton Lane is to the south of the site, from which the site is accessed. These features are shown in figure 2 and 3.

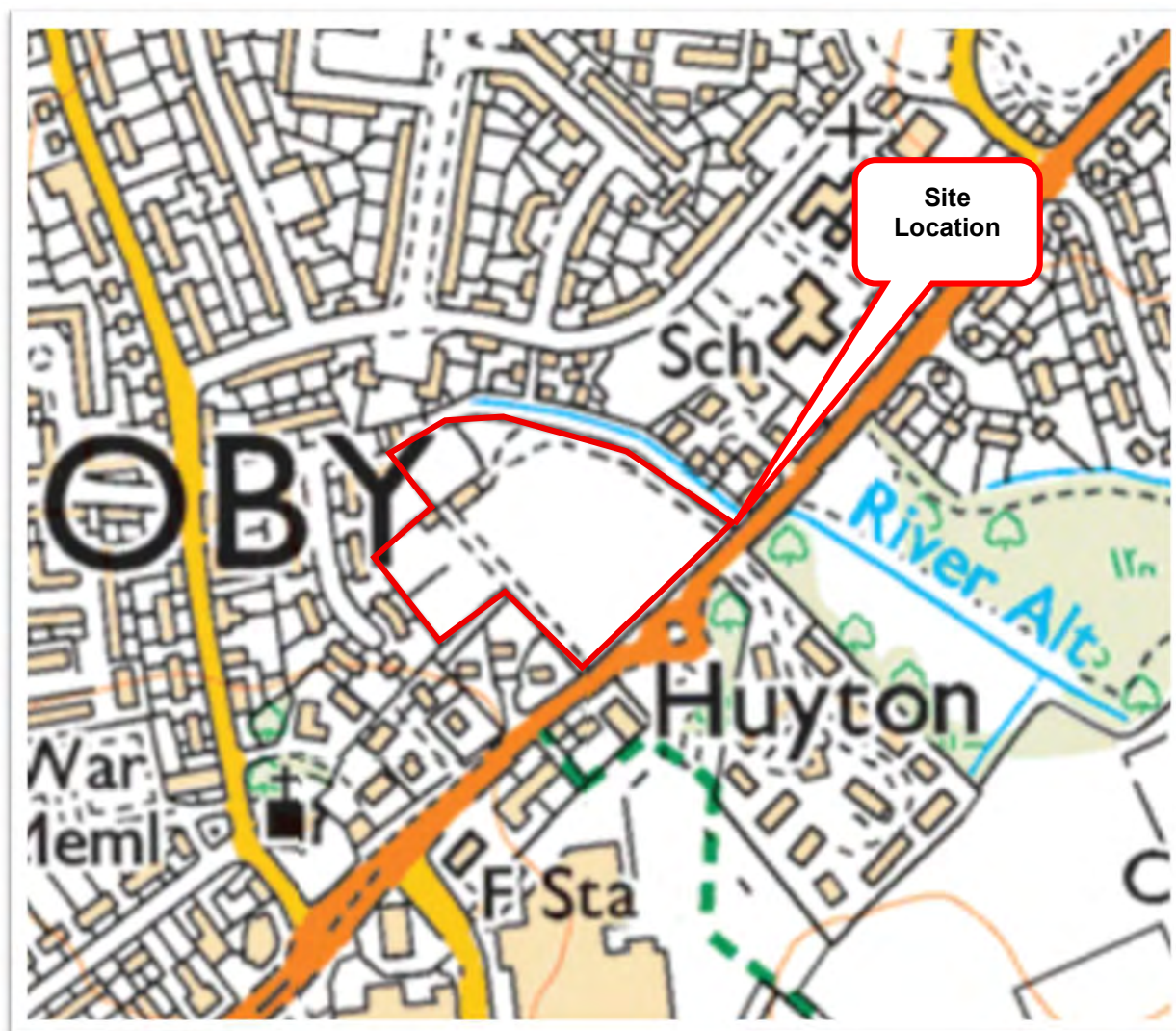


Figure 1: Site Location (Source: Bing OS Map)



Figure 2: Aerial View of the Site (Source: Google Maps)

2.2 Topography

The existing ground elevations on site is shown in the topographic drawing (Figure 3 and Appendix A). They indicate that the site falls from south to north, towards the watercourse in the north. Ground levels vary between 31.24mAOD in the north to 33.49mAOD in the south-west. The River Alt goes into a culvert on the northern boundary.

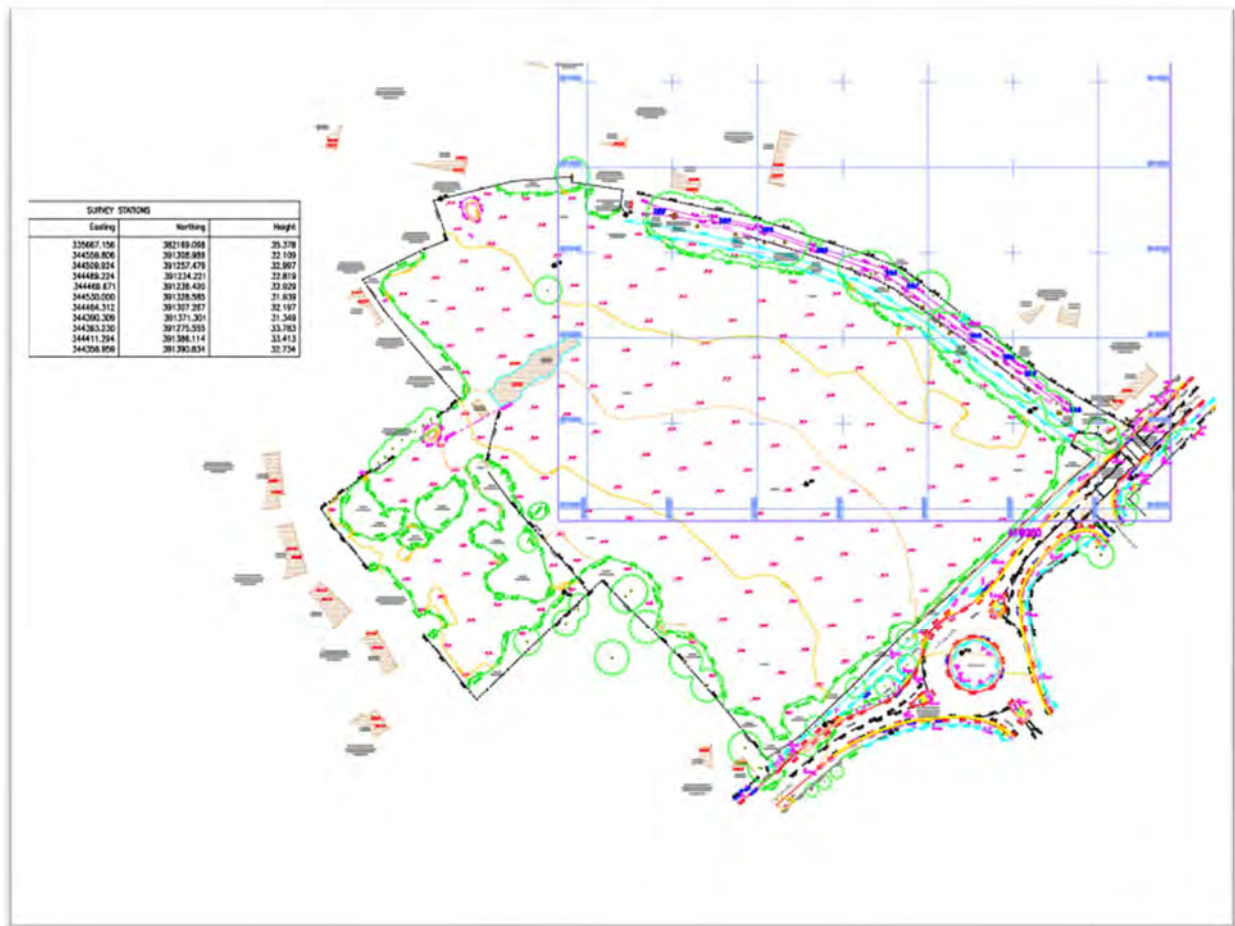


Figure 3: Topographical Survey

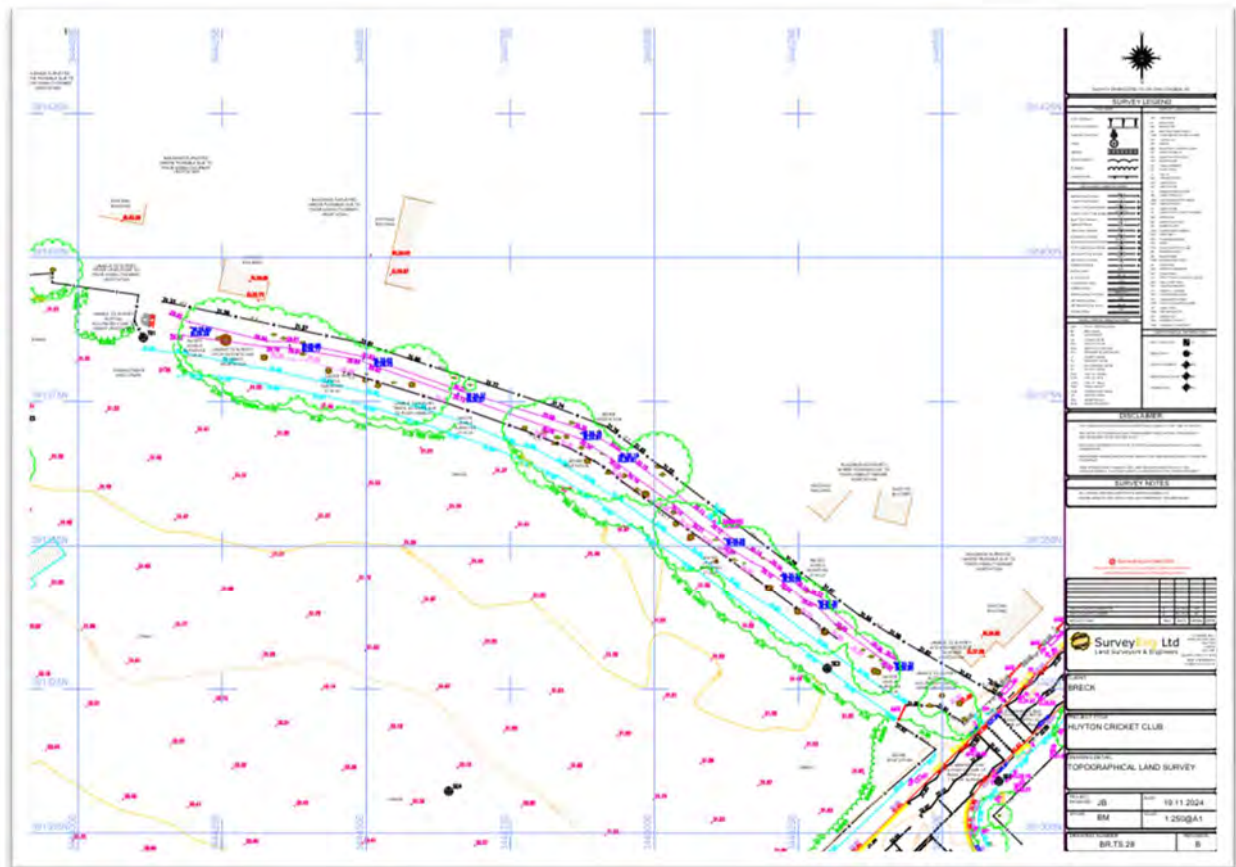


Figure 4: Topographical Levels Along Watercourse

2.3 Geology and Soil

The geology at the site has been obtained from the British Geological Survey (BGS) website. The bedrock beneath the site is described as 'Pennine Middle Coal Measures Formation - Mudstone, siltstone and sandstone'. Superficial deposits are described as 'Till, Devensian - Diamicton'. (Figure 5: Bedrock underneath the Site (Source: BGS Bedrock Geology Mapping)).

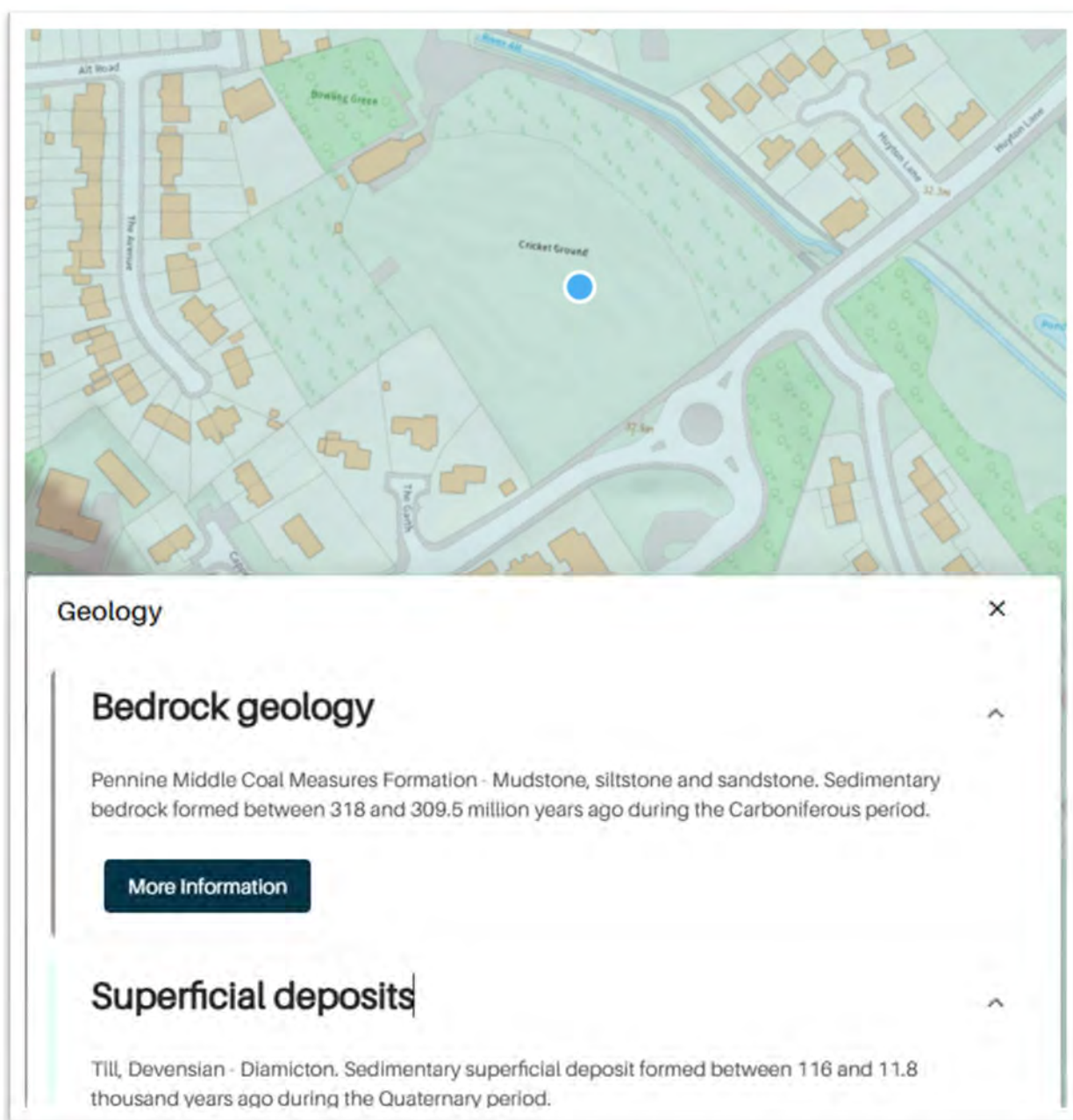


Figure 5: Bedrock underneath the Site (Source: BGS Bedrock Geology Mapping)

Soilscapes Viewer describes the soil conditions at the site as 'Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils' with impeded drainage. Please see Figure 6 below.

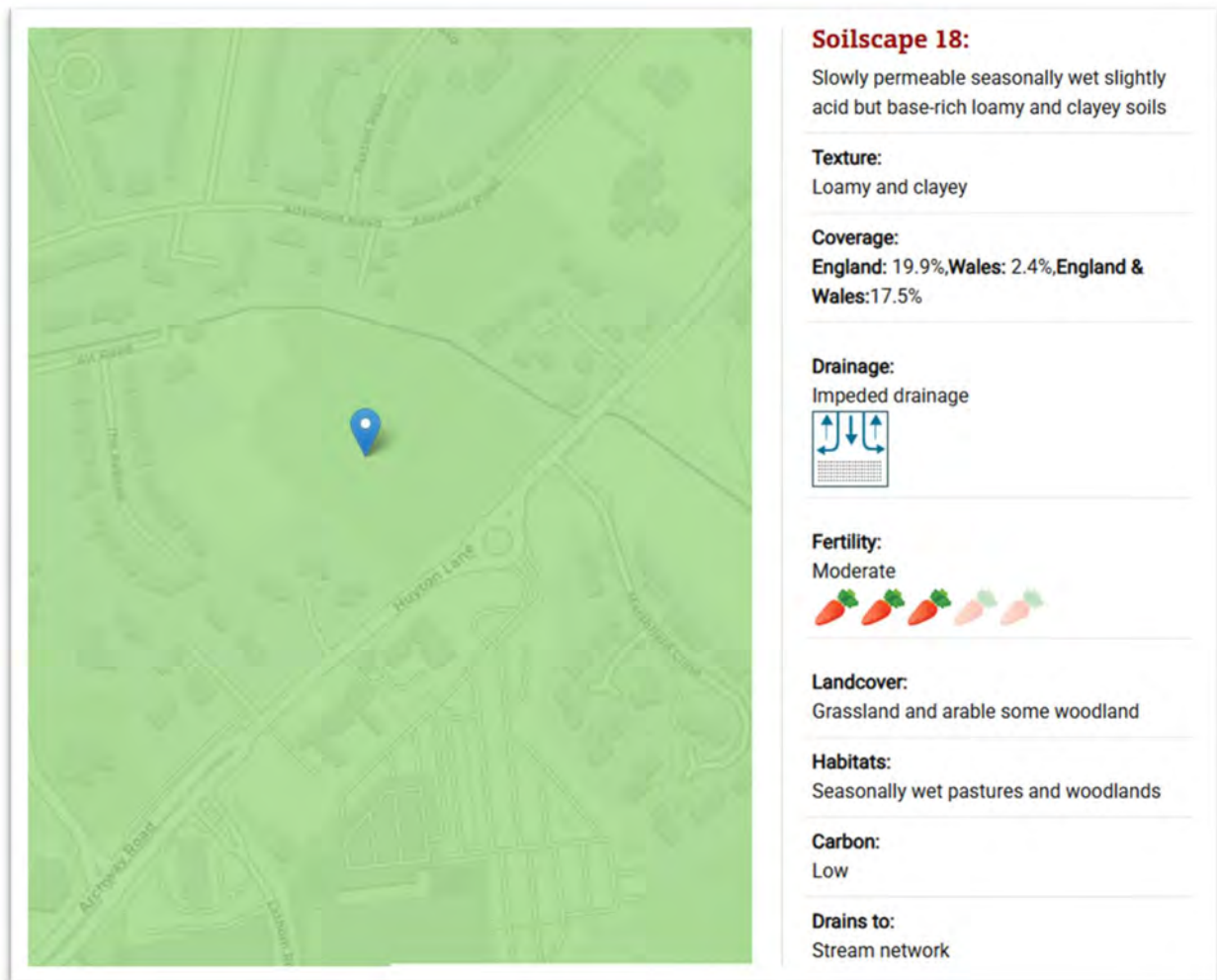


Figure 6: Soilsapes

Within the Geo-environmental report undertaken by Earth Environmental and Geotechnical in December 2018, infiltration testing results were between 2.72×10^{-7} and 9.45×10^{-9} m/s. Therefore, soakaways are not recommended at this site. Please see an extract of the report below:

6.6 Soakaways

Falling head test were carried out in the installed windowless sample boreholes. The natural ground shows variability across the site for deep soakaways.

Better permeability rates were encounter in WS202 ($2.72\text{E-}07$), WS203 ($2.78\text{E-}07$), WS206 ($3.37\text{E-}08$), WS208($2.78\text{E-}07$), WS209 ($1.42\text{E-}08$) and WS210 ($2.84\text{E-}08$) with the poorest rate encountered as $9.45\text{E-}09$ in WS204.

Figure 7: Geo-Environmental Report from Earth Environmental and Geotechnical

Based on these findings, it is believed that infiltration is unsuitable at this site.

2.4 Climate Change Allowances for River Flow

The Environment Agency and NPPF require a consideration of the impacts of climate change in Flood Risk Assessments (FRA). In May 2022, the Environment Agency updated the climate change allowances required in Flood Risk Assessments (last updated 27 May 2022); this advice updates previous climate change allowances to support the NPPF (DCLG, 2021).

The advice splits the country into regions and give climate change split into central, high, upper. According to the guidance the development should use 44% for river flows for more vulnerable development. Please see below the climate change map for river flow allowances:

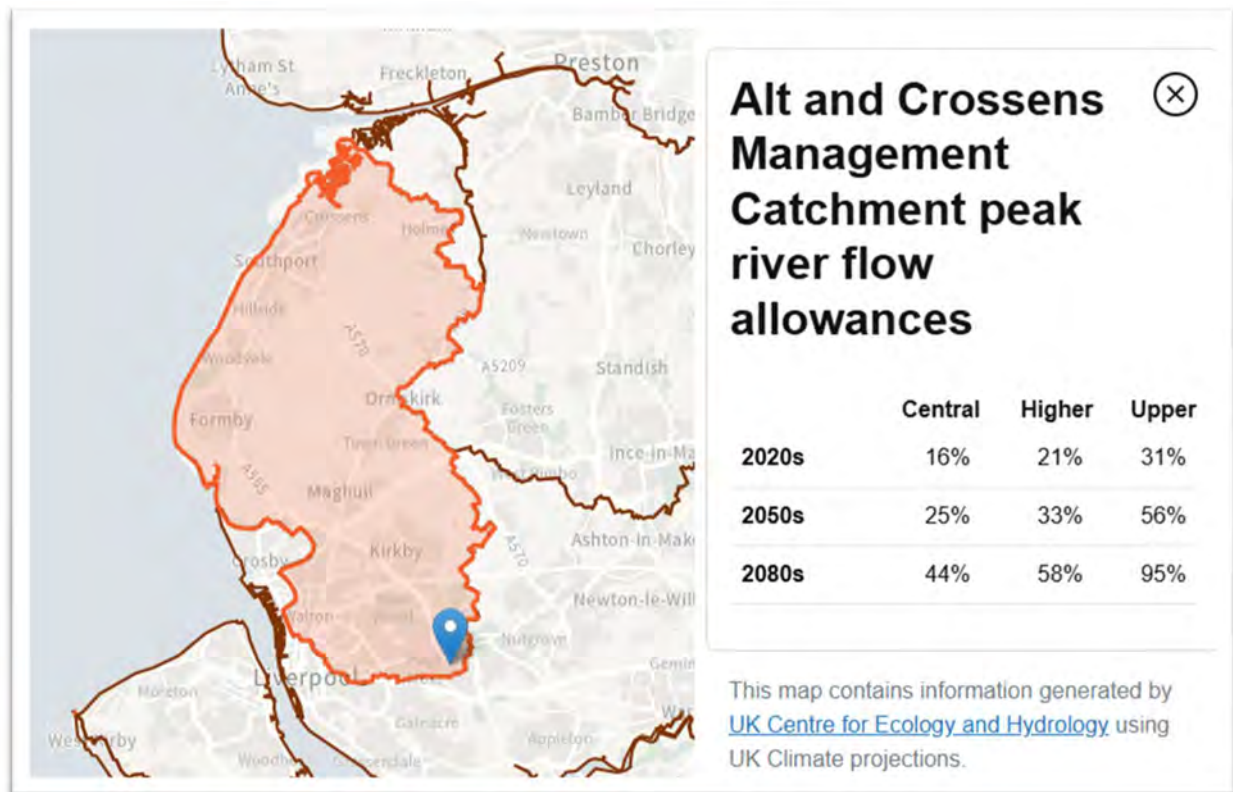


Figure 8: Peak River Flow Allowances

2.5 Climate Change Allowances for Rainfall

Figure 9 shows anticipated changes in small catchments, recommending a progressive increase, reaching 45% for the 'Upper End' allowance by 2125. This allowance would be recommended for this proposed development, which is classified as 'More Vulnerable' and has been taken to have a 100-year design life. The 45% climate change allowance is based on the 90th percentile, meaning that there is a 90% chance that rainfall will not increase by more than the 45% increment.

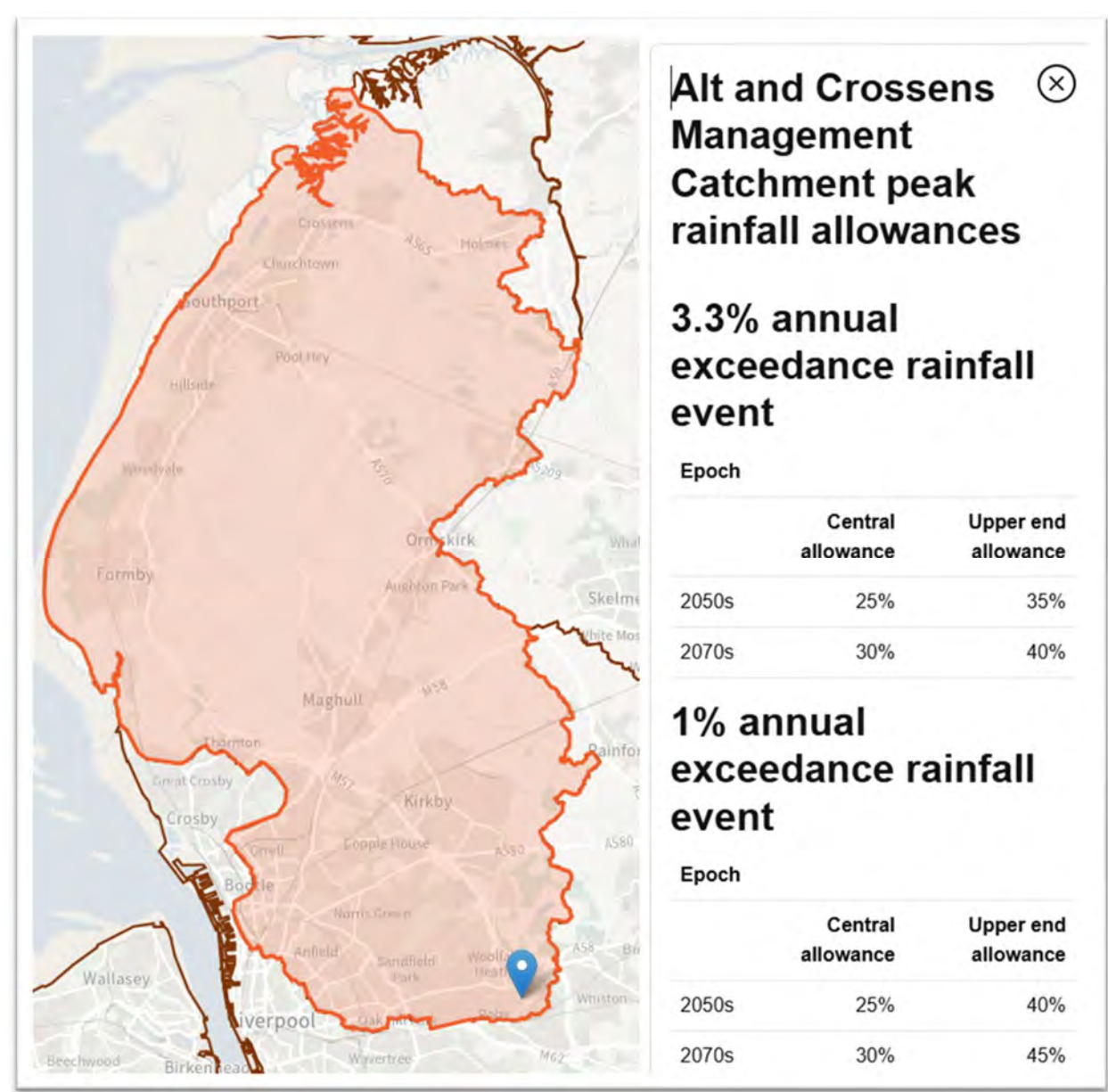


Figure 9: Peak Rainfall Intensity Allowance in Small and Urban Catchments

3. FLOOD HAZARD FOR EXISTING SITE

3.1 Source of Flood Risk

Flood sources and their possibilities at the site is further described below.

3.2 Fluvial Flood Risk

The proposed site is mostly within Flood Zone 1 (area at low risk of flooding). Flood Zone 1 has an estimated less than 1 in 1000-year return period. However, the northern part of the site is in a Flood Zone 2 and 3. Areas within Flood Zone 2 have between a 1 in 1000 (0.1%) and 1 in 100 (1%) annual probability of flooding in any given year. Flood Zone 2 is considered a medium risk. Areas within Flood Zone 3 have a 1 in 100 (1%) or greater annual probability of flooding in any given year, considered to be high risk. Please see Figure 10:

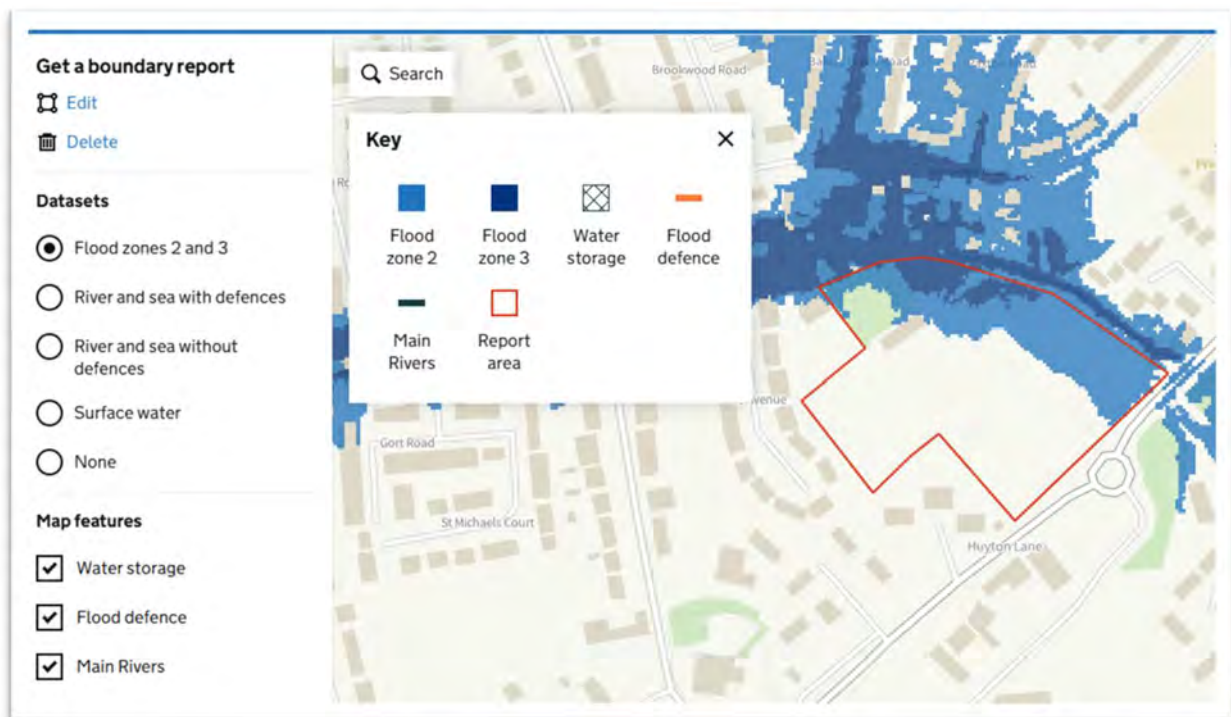


Figure 10: Environment Agency (EA) Flood Map

Townsend Water Engineering put the proposed site layout over the Flood Map For Planning Flood Zone Map using ArcGIS. It shows that no dwellings are placed within Flood Zone 3. Please see Figure 11.

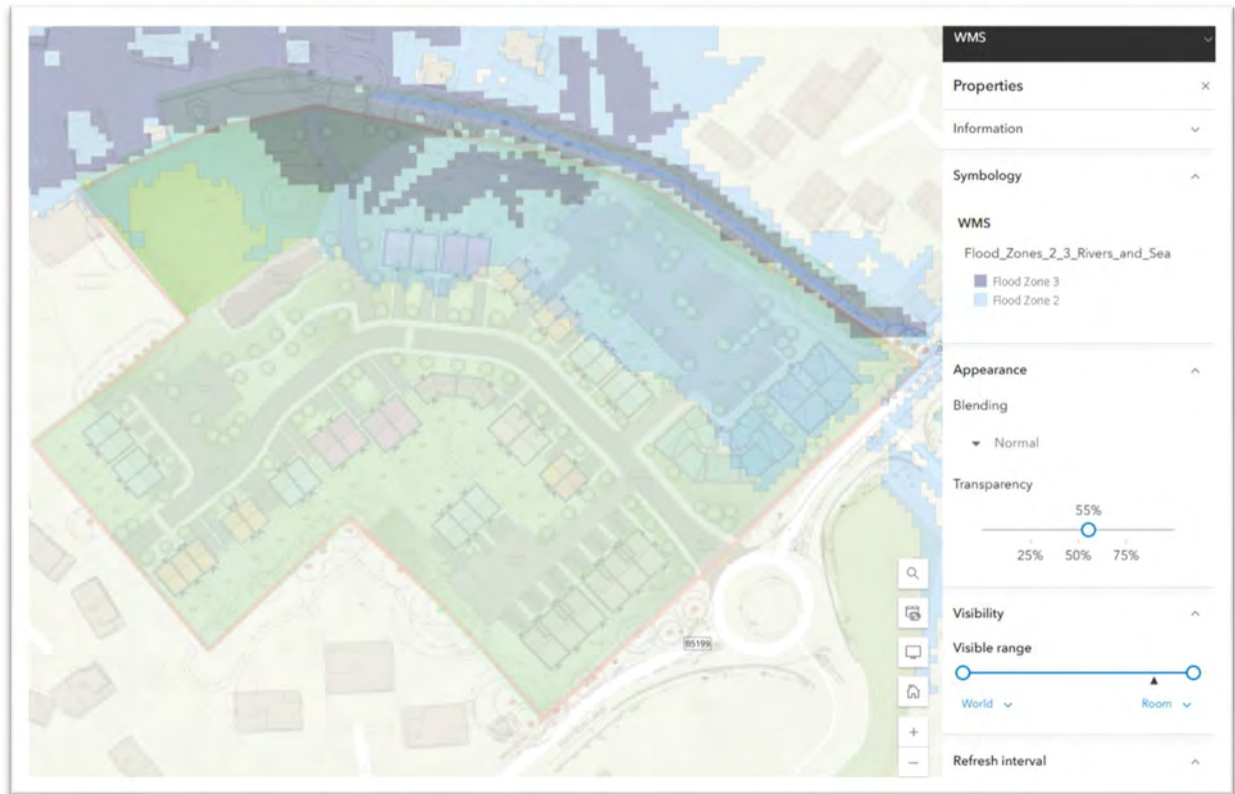


Figure 11: Flood Zones over Proposed Layout

However, on the flood maps for planning rivers and seas flood risk maps, the site is flood free. Please see the rivers and seas flood maps with and without defences in Figure 12 and Figure 13.

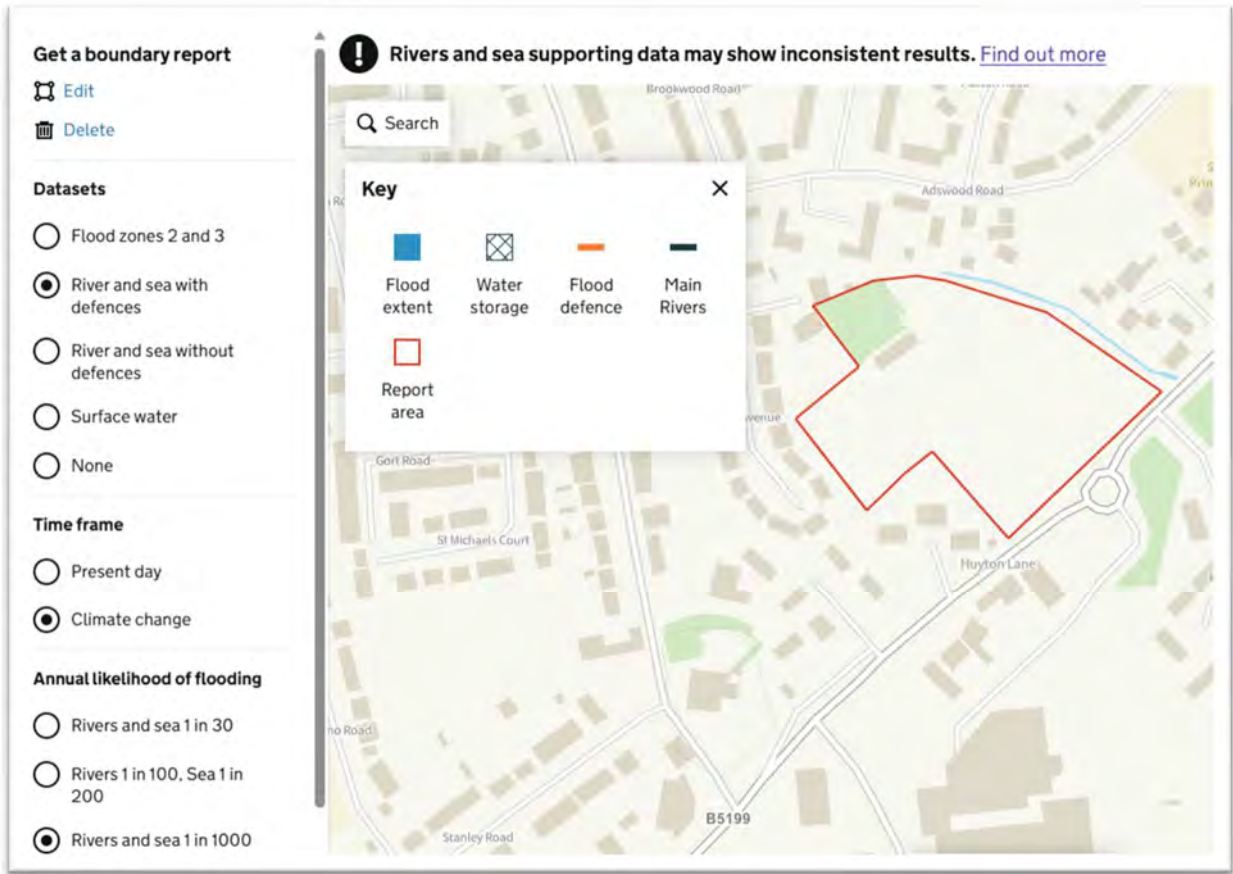


Figure 12: Rivers and Sea with Defences 1 in 1000 + CC

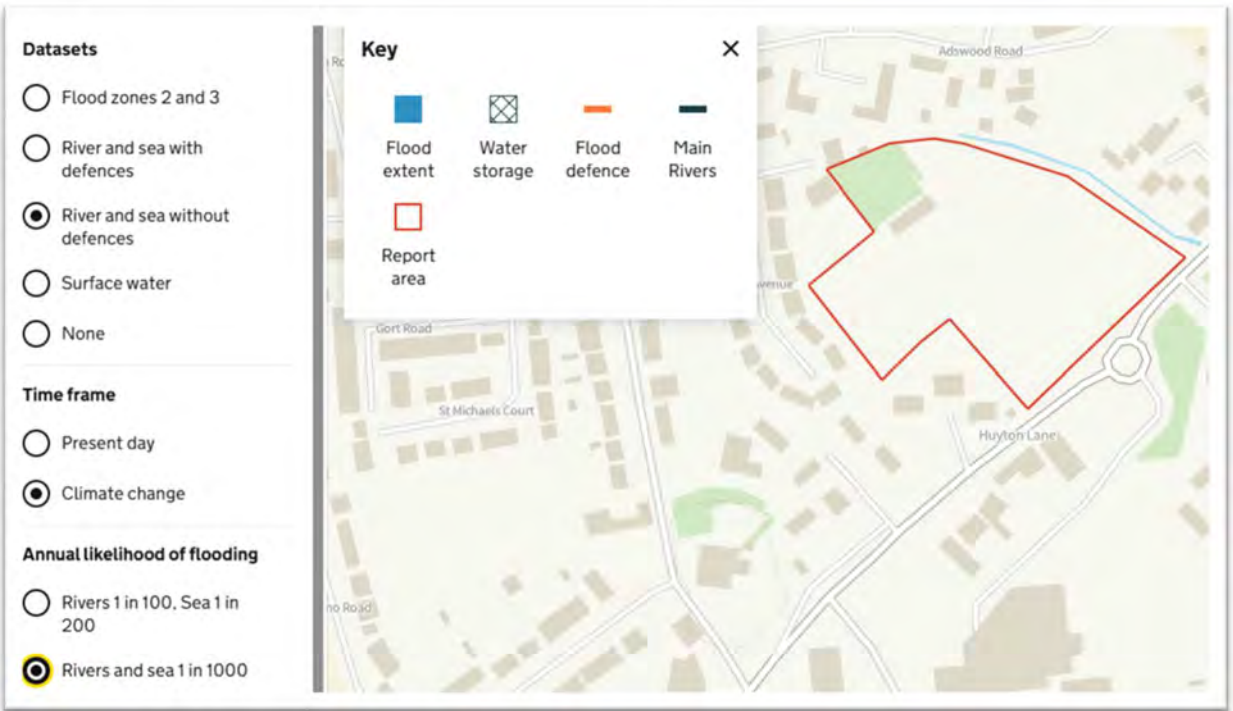
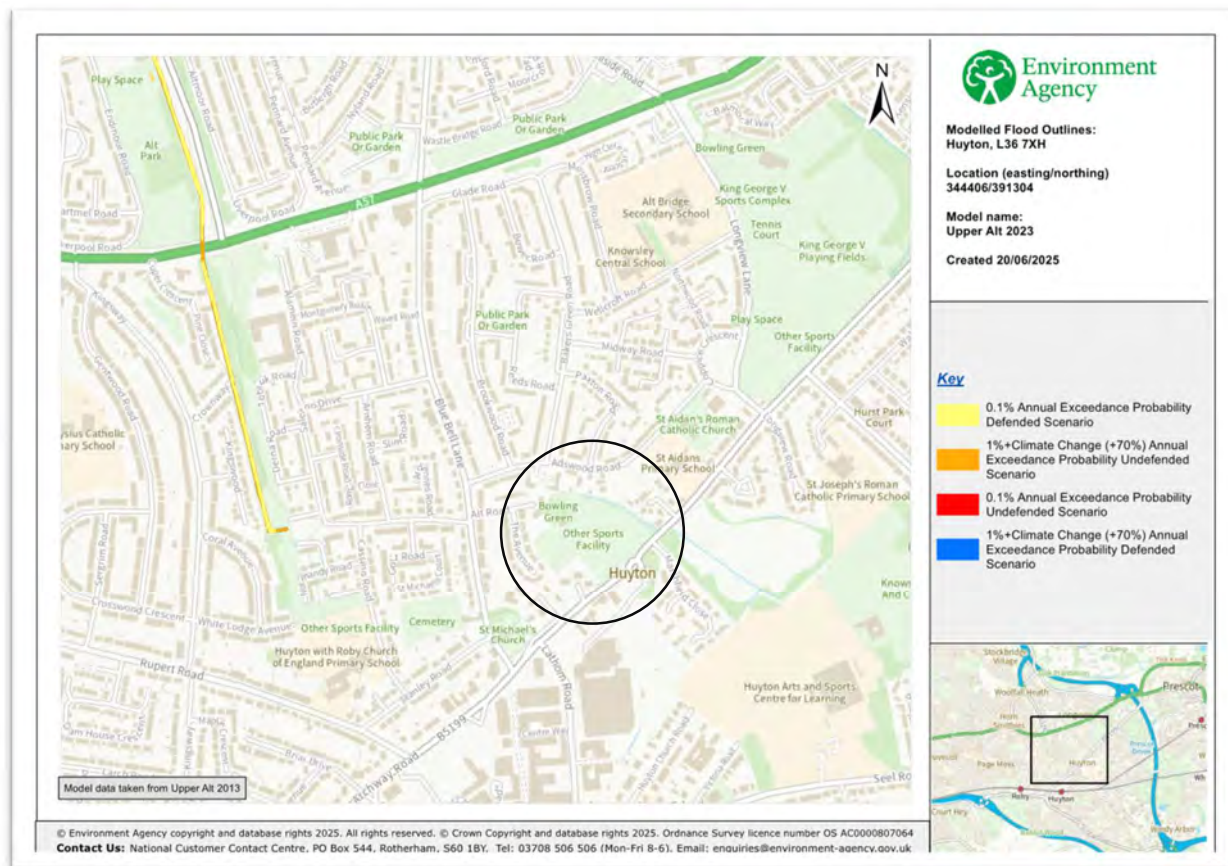


Figure 13: Rivers and Sea without Defences 1 in 1000 + CC

We made inquiries to the Environment Agency and acquired their flood data. The Environment Agency local hydraulic model of the River Alt indicates that the watercourse does not flood the site. Please see below the graphic from the product data from the Environment Agency information, which indicates the site does not flood from the River Alt. For the full results please see appendix B.



Further clarification was sought to understand how the site was situated in a Flood Zone 2 and 3. The Flood Zone 2 and 3 map was designed by a direct rainfall method. Please see an extract from the Environment Agency letter which can be found in Appendix C:

'The site has placed in Flood Zones 3 and 2 because of direct rainfall modelling on the site (part of National Modelling undertaken). This direct rainfall method was applied to the surface water mapping and outputs linked to watercourses have been copied into the Flood Map for Planning. You will be able to see that the surface water mapped extents and the Flood Zones match in this area'.

Therefore, the Flood Zone 2 and 3 is based on surface water maps and not fluvial. This will be discussed in further in detailed in section 3.2.1. However, this site should be designated as Flood Zone 1, as it is not fluvial flooding that it affects the site, but surface water flooding. Please see below the definition of Flood Zone 1:

Areas deemed to be in Flood Zone 1 have been shown to be at less than 0.1% chance of flooding in any year. Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3).

Furthermore, the likely reason the Flood Zone maps indicate flooding in this area is because the direct rainfall model probably does not take account of the culvert at the north-east corner of the site. Therefore, we believe that the existing local model is a more realistic view of the flooding.

3.2.1 Surface Water

The EA surface water flood extents and flood depth have been obtained from the EA open dataset. The site is at risk of surface water flooding in the 1 in 100 year AEP in the north, this flood outline increases in the 1 in 1000 year AEP. Please see Figure 14 and Figure 15.

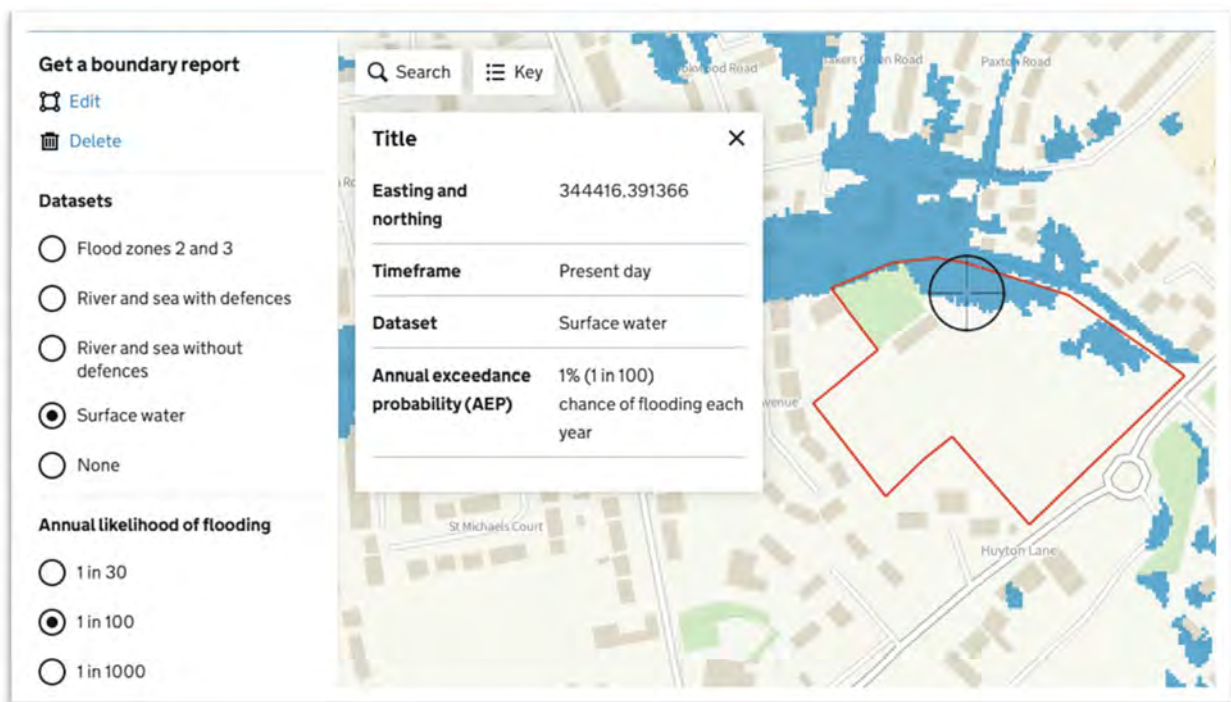


Figure 14: Extent of Flooding from Surface Water 1 in 100 Year AEP (Source: EA Open Dataset)

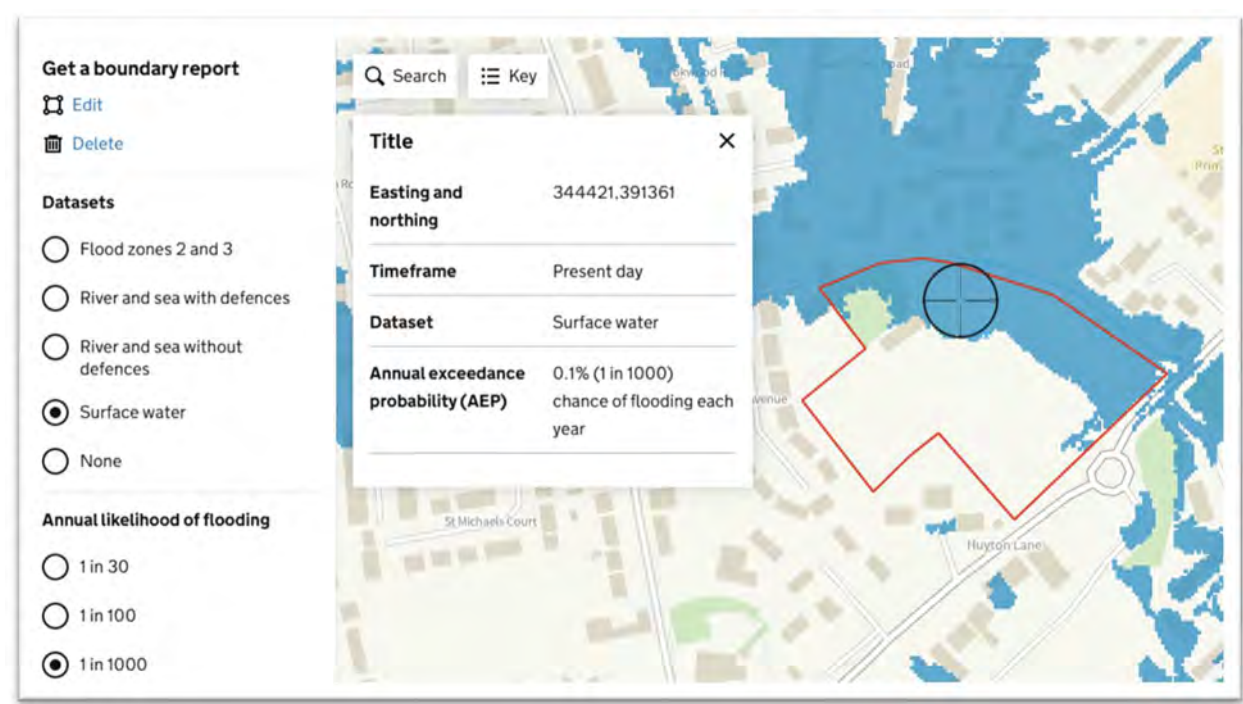
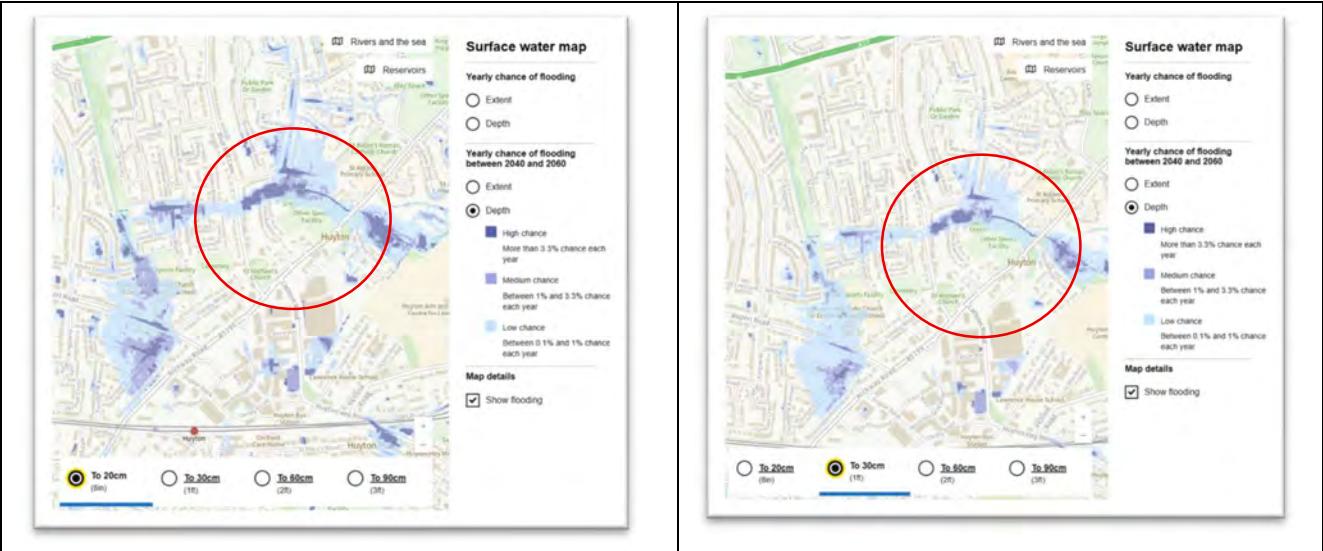


Figure 15:Extent of Flooding from Surface Water 1 in 1000 Year AEP (Source: EA Open Dataset)

Therefore, there is a risk of surface water flooding to the site in the north.

We obtained the surface water flood depth to 20cm, 30cm, 60cm and 90cm for the site on the Long Term Flood Risk checker. Please see Figure 16.



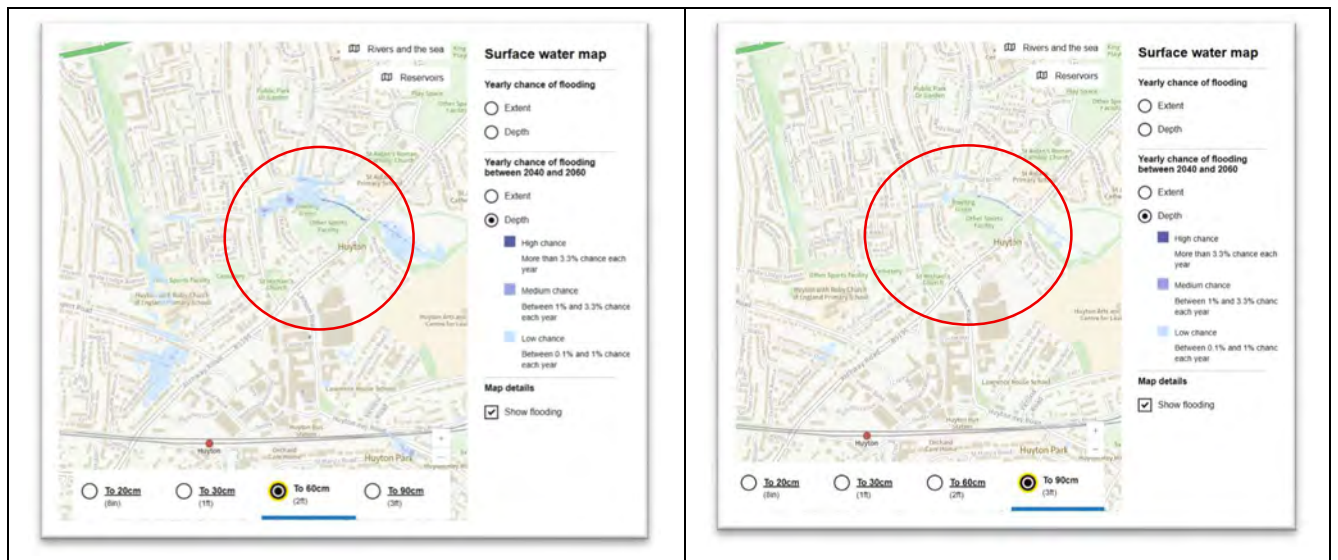


Figure 16: Surface Water Flood Depths at 20cm, 30cm, 60cm and 90cm (Source: EA Long Term Flood Risk Checker)

To investigate this further, we put the sites layout over the surface water flood depths, using ArcGIS. Please see Figure 17.

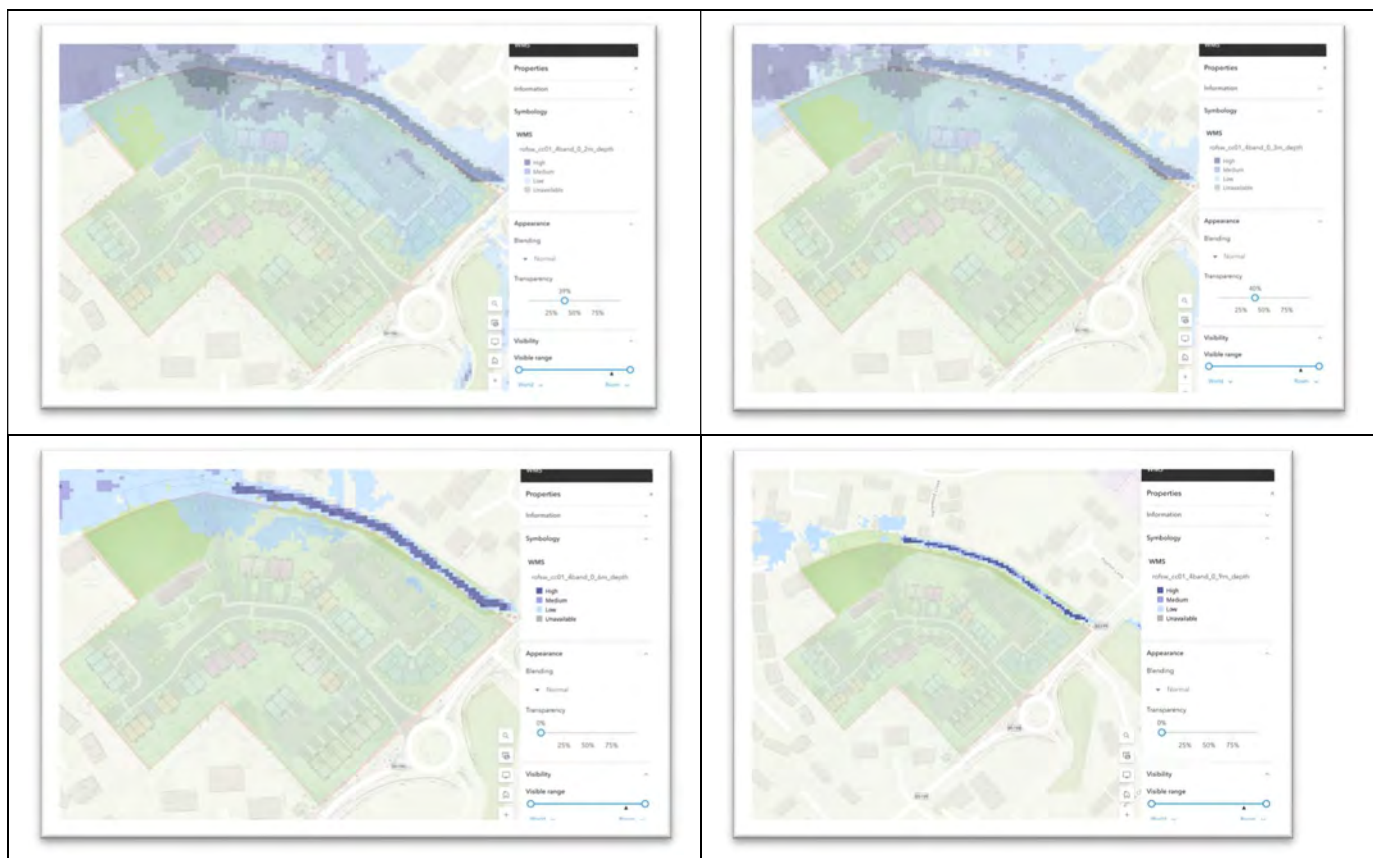


Figure 17: Surface Water Flood Depths at 20cm, 30cm, 60cm and 90cm Over Site Proposed Layout (Tool: ArcGIS)

As can be seen in Figure 17, plots 1-45 are at a low risk of surface water flooding up to 30cm depth. None of the dwellings are placed in areas at medium or high risk of surface water flooding.

Consultation was held with the Environment Agency and they said we need to discuss this with the Lead Local Flood Authority (LLFA), to understand what is required, as it is their remit.

A pre app was undertaken with the LLFA and they have stated that the site is not at risk of surface water flooding, this is likely because they have issues with the new model that the surface water maps are built on. Please see Appendix D for the LLFA comments.

Therefore, the site is not at risk of surface water flooding.

3.2.2 Flood Risk from Reservoir /Canals / Other Artificial Sources

The EA Extent of Flooding from Reservoirs map (Figure 18:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)), based only on large reservoirs (over 25,000 m³ of water), shows that the site is within potential risk of flooding in the event of a breach from reservoirs. Flooding from reservoirs is considered to be extremely unlikely and the risk of flooding to the site is considered to be low.

There is no flood risk from canals or other artificial sources as there are no canals or artificial sources within the vicinity of the site.

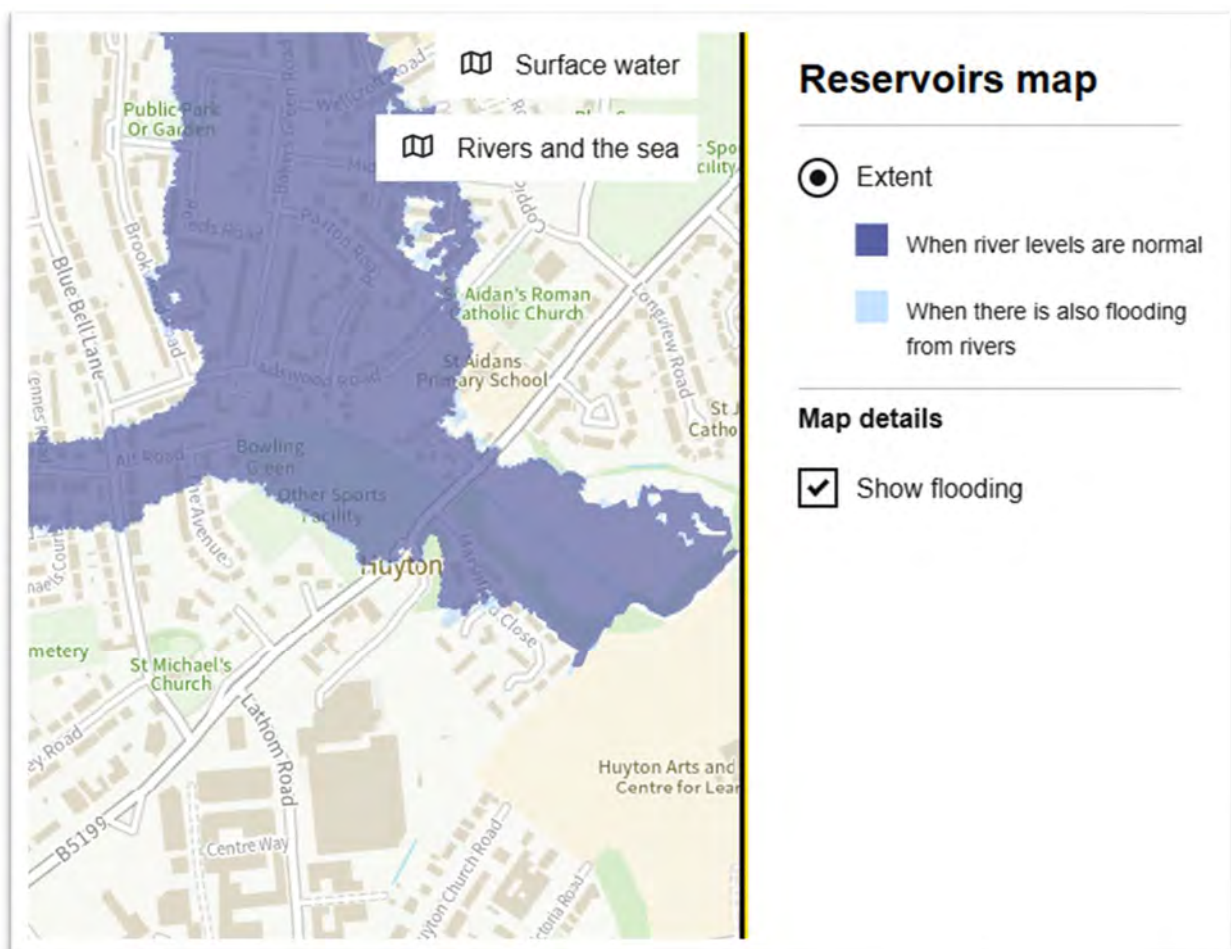


Figure 18:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)

3.2.3 Flood Risk from Groundwater

Within the Geo Report, groundwater testing was undertaken and it did not reach surface level. Please see an extract of the report relating to groundwater in Figure 19.

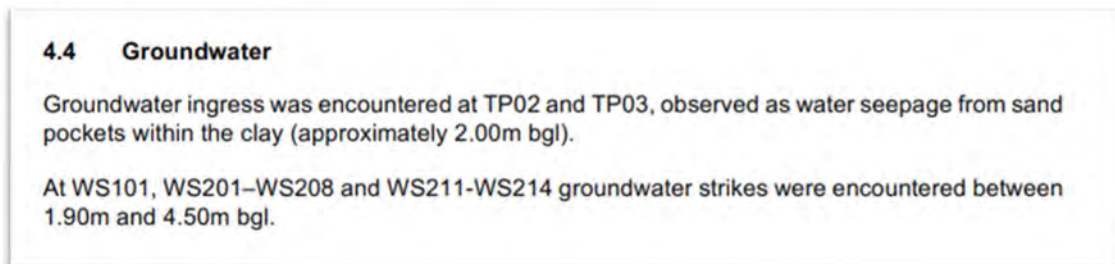


Figure 19: Geo Report

Furthermore, groundwater flooding is noted to be unlikely on the long term flood risk checker for groundwater. Please see Figure 20.

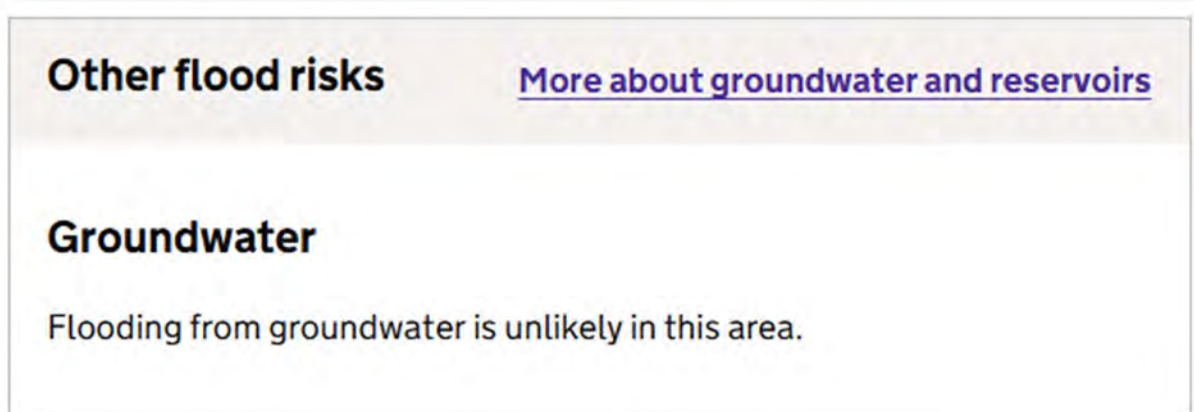


Figure 20: Risk of Groundwater Flooding to Site (Long Term Flood Risk Checker - EA)

3.2.4 Flood Risk from Sewers

According to the United Utilities (UU) sewer map (Appendix E), there are no public sewers crossing the site. Therefore, flooding risk from sewers is believed to be low for this site. Please see Figure 21 below:

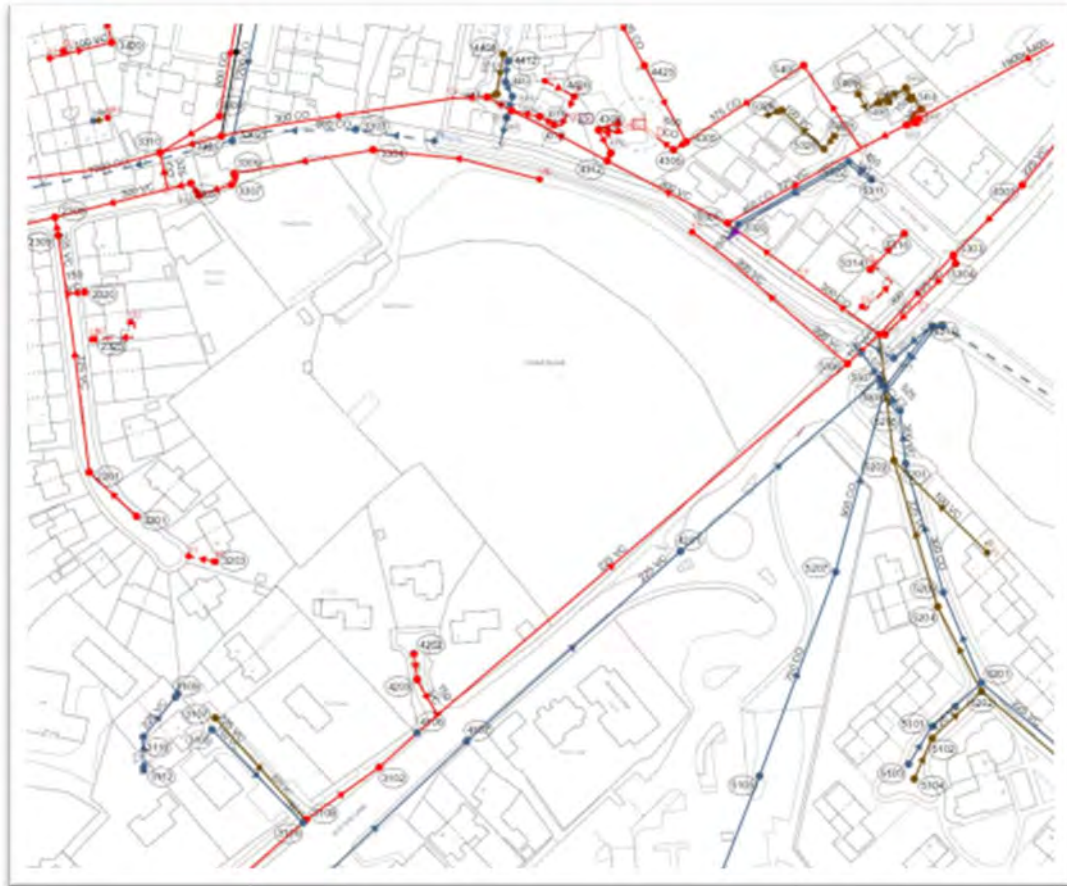


Figure 21: Sewer Map

3.3 Existing Surface Water Drainage Arrangements

The site is assumed to drain to the watercourse in the north.

According to the public sewer map, there are no public sewers crossing the site.

4. ASSESSMENT OF FLOOD RISK FOR PROPOSED DEVELOPMENT

4.1 Development Proposals

It is proposed to create 81 dwellings at the land to the north of Huyton Lane, Knowsley, L36 7SB, as shown on the indicative masterplan Figure 22. Please see appendix F for the layout.

The development area is 2.2ha and the impermeable area has been assessed as 0.973ha. Please see Figure 22 below:



Figure 22: Proposed Site (Source: Client)

4.2 Fluvial Flood Management

Although the Flood Map for Planning shows the site to be within Flood Zones 1, 2 and 3, it is actually wholly within Flood Zone 1, based on the local model and the River and Sea Flood map with and without defences. The EA clarified that the Flood Maps for Planning were based on surface water flooding and not fluvial flooding. Please note that the Flood Zones are based on fluvial and tidal flooding according to NPPF legislation. Therefore, the site is actually within a Flood Zone 1.

On a practical level, it would appear that the national Flood Map For Planning does not take into account the culvert to the north-east of the site. Therefore, the flood outline on the map is larger than it is in reality, because in reality it is contained within the stream channel/culvert. The model does not account for the culvert, this section of the watercourse has been excluded from the model, so the water overtops the channel and floods the area. This is why the local model has different outlines, because it takes into account the culvert.

4.3 Surface Water flooding

The site is at risk of surface water flooding up to and including the 1 in 100-year event. This flood extent increases in the 1 in 1000-year event. Please see Figure 14 and Figure 15.

We obtained the surface water flood depth to 20cm, 30cm, 60cm and 90cm for the site on the Long Term Flood Risk checker and put them over the site layout. As can be seen in Figure 17, plots 1-45 are at a low risk of surface water flooding up to 30cm depth. None of the dwelling are placed in areas at medium or high risk of surface water flooding.

Furthermore, at the recent completed pre application, the LLFA stated that the site is not at risk of surface water flooding. Therefore, it is considered the site is at low risk of surface water flooding according to the LLFA.

4.4 NPPF Vulnerability

The development will be classed as 'More Vulnerable' under the NPPF vulnerability classification (Table 3). The flood risk vulnerability and flood zone compatibility are displayed in Table 3: Flood Risk Vulnerability and Flood Zone Compatibility (Source NPPF Technical Guide). As noted in Section 3.2, the site is within a Flood Zone 1.

Table 2: Flood Risk Vulnerability Classification (Source: NPPF Technical Guide)

More Vulnerable (MV)
Hospitals, residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels
Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
Non-residential uses for health services, nurseries and educational establishments.
Landfill and sites used for waste management facilities for hazardous waste ⁶ .
Sites used for holiday or short let caravans and camping, subject to a specific warning and evacuation plan. ⁷

Table 3: Flood Risk Vulnerability and Flood Zone Compatibility (Source NPPF Technical Guide)

Flood Zone	Definition	Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
1	$T > 1,000$	✓	✓	✓	✓	✓
2	$100 < T_{fluv} < 1,000$ $200 < T_{tidal} < 1,000$	✓	✓	Exc. Test	✓	✓
3a	$T_{fluv} < 100$ $T_{tidal} < 200$	Exc. Test	✓	✗	Exc. Test	✓
3b (functional floodplain)	$T_{fluv} < 20$	Exc. Test	✓	✗	✗	✗

As the development is 'More Vulnerable' and it is in Flood Zone 1, as set out in section 3.2, according to Table 3: Flood Risk Vulnerability and Flood Zone Compatibility (Source NPPF Technical Guide), the sequential test is passed and there is no need for an exception test.

5. DRAINAGE STRATEGY

Please find below the drainage strategy, this is based on Ironside Farrar drainage strategy.

5.1 Existing Drainage Arrangements

5.1.1 Surface Water

It is assumed the existing drainage arrangements is that all the surface water from the existing buildings and hardstanding drain to the watercourse to the north.

5.2 Infiltration Rates

It is considered that infiltration is unlikely to be feasible as infiltration tests at the site failed. Therefore, it is recommended the site does not use infiltration.

5.3 Run-off

The discharge has been set at Q-bar greenfield runoff rate of 14l/s.

5.4 Surface Water Drainage Strategy

5.4.1 Hierarchy of Discharge

In accordance with the Flood Risk and Coastal Change Planning Practice Guidance, where possible, preference should be given to multi-functional sustainable drainage systems, and to solutions that allow surface water to be discharged according to the following hierarchy of drainage options:

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

Infiltration: As detailed in section 3.3, infiltration is not feasible at this site.

Watercourse: There is an ordinary watercourse that runs along the sites northern border. It is proposed to discharge the sites surface water to the watercourse to the north of the site.

Conclusion: Infiltration is not feasible at this site, therefore, it is proposed to discharge the sites surface water to the watercourse to the north.

All lower options on the hierarchy will be discounted.

5.4.2 Sizing of SUDS Features

As discussed in section 4.1 of this report, the proposed area of the dwellings and associated features is 2.2ha. Infiltration SUDS systems have been discounted as the ground is clay and infiltration is not feasible.

The discharge will be restricted to Q-bar greenfield runoff rates of 14l/s in all events via Hydrobrake up the 1 in 100 year event plus climate change (45%). The storage will be held in a swale, rainwater gardens, permeable pavements, filter drains, filter Strips and the car park will have an attenuation tank under it, up to and including the 1 in 100 year event plus 45% climate change.

Modelling of the surface water runoff to the design parameters was carried out using Causeway Flow, an industry leading software which allows design and analysis of SuDS features. The Causeway Flow

modelling results are in Appendix G The following conservative assumptions and design parameters have been set within the Hydraulic model:

- Rainfall intensity was obtained using the Flood Estimation Handbook (FEH) methodology, and increased by 45%, over the 100 years design life of the proposed residential development, in line with the requirements of the NPPF;
- No runoff loss have been assumed in the modelling, therefore, all the design rainfall landing on the impermeable surfaces is expected to reach the swale, rainwater gardens, permeable pavements, filter drains, filter strips and attenuation tank;
- As per the conclusions in Section 3.3, the soil has been modelled with an infiltration rate of zero (0.0) m/hr; and
- A Hydro-Brake has been used to restrict the total discharge from the site to 14l/s.

Please see Appendix G for Ironside Farrar full drainage strategy and calculations.

5.4.3 Maintenance Plan

Structures which manage surface water runoff require little maintenance, however a regular maintenance schedule e.g., after heavy rainfall, should be established by the site owners to reduce the risk of blockage within the drainage system and ensure the design remains in good working order. It is proposed to offer this up for adoption:

Table 4: Operation and Maintenance Requirements for Attenuation Tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Table 5: Operation and Maintenance Requirements for Rainwater Gardens

TABLE 11.6 Operation and maintenance requirements for RWH systems		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspection of the tank for debris and sediment build-up, inlets/outlets/withdrawal devices, overflow areas, pumps, filters	Annually (and following poor performance)
	Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris	Annually (and following poor performance)
Occasional maintenance	Cleaning and/or replacement of any filters	Three monthly (or as required)
Remedial actions	Repair of overflow erosion damage or damage to tank	As required
	Pump repairs	As required

Table 6: Operation and Maintenance Requirements for Filter Strips

TABLE 15.1 Operation and maintenance requirements for filter strips		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect filter strip surface to identify evidence of erosion, poor vegetation growth, compaction, ponding, sedimentation and contamination (eg oils)	Monthly (at start, then half yearly)
	Check flow spreader and filter strip surface for even gradients	Monthly (at start, then half yearly)
	Inspect gravel flow spreader upstream of filter strip for clogging	Monthly (at start, then half yearly)
	Inspect silt accumulation rates and establish appropriate removal frequencies	Monthly (at start, then half yearly)
Occasional maintenance	Reseed areas of poor vegetation growth; alter plant types to better suit conditions, if required	As required or if bare soil is exposed over > 10% of the filter strip area.
Remedial actions	Repair erosion or other damage by re-turfing or reseeded	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

Table 7: Operation and Maintenance Requirements for Filter Drains

TABLE 16.1 Operation and maintenance requirements for filter drains		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly, or as required
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforated pipework of blockages	As required

Table 8: Operation and Maintenance Requirements for Swales

TABLE 17.1 Operation and maintenance requirements for swales			
	Maintenance schedule	Required action	Typical frequency
Regular maintenance		Remove litter and debris	Monthly, or as required
		Cut grass – to retain grass height within specified design range	Monthly (during growing season), or as required
		Manage other vegetation and remove nuisance plants	Monthly at start, then as required
		Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
		Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, or when required
		Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
		Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
Occasional maintenance		Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
Remedial actions		Repair erosion or other damage by re-turfing or reseedling	As required
		Relevel uneven surfaces and reinstate design levels	As required
		Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
		Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
		Remove and dispose of oils or petrol residues using safe standard practices	As required

Table 9: Operation and Maintenance Requirements for Permeable Paving

TABLE 20.15 Operation and maintenance requirements for pervious pavements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

5.4.4 Pre App Consultation

A pre application was undertaken and the LLFA kindly responded, please see below their comments and our comments in bold underneath:

The proposed drainage strategy appears that have not allocated source control SuDS features at the property level as well as spaces for blue and green corridors. A Sustainable Drainage Design (SuDS) aims to minimise the impacts from a proposed development on water quantity and quality and maximise amenity and biodiversity. In designing an appropriate set of SuDS techniques for a development site, the LLFA will be expecting surface water runoff to be managed close to source (Source control/ property level control), only conveying downstream what cannot be managed at source. Therefore, the drainage design shall be required to include source control/property level control (e.g. permeable pavement and rain garden), green and open conveying systems / green corridors (e.g. green swale and ditch) and regional control (e.g. attenuation basin) features. The development of drainage design should therefore be planned as early as possible before the setting the property/other spaces layout in close collaboration with the landscape and biodiversity team. This becomes more important in this case where the surface water runoff is proposed to connect to a culverted watercourse, implying that there is no much flexibility on adopted discharge rate.

Following the comments from the LLFA in the pre app, please find the amended drainage strategy which now includes permeable pavements for the individual houses, the private drives are drained into a swale in the north of the development and a raingarden in the south. The main car park to the east of the site is drained to a grass filter drain and then a traditional filter drain. This means that the private driveways, parking spaces are drained to source control SuDS which will provide attenuation and water quality benefits.

An explanation of existing drainage system/mechanism and flow paths on the site and that how the site is currently affected by off-site surface water runoff shall be required.

The existing site drains towards the watercourse in the north east.

As can be seen the drainage strategy similarly drains to the north east and will discharge into the watercourse. The dwellings and buildings have been raised a minimum of 150mm above the road levels. Therefore if there is surface water flooding which should only happen in above the 1 in 100 year event plus climate change the surface water will flood down the roads and then into the car park and finally into the watercourse.

Evidence and justification (e.g. infiltration tests and groundwater levels) shall be required to demonstrate that in choosing drainage features for post development, the surface water drainage discharge hierarchy has appropriately been followed.

As indicated in section 2.3 infiltration is not feasible at the site, as the infiltration rate is between 2.72×10^{-7} and 9.45×10^{-9} m/s. Therefore traditional infiltration SuDS cannot be used. Therefore it is proposed that raingardens, permeable pavements and swales and raingardens have been used.

Then storage will be held at the car park and storage underneath it. The reason for this is the watercourse is very shallow and a attenuation basin will not be feasible because of the inverts.

The maximum discharge rate from the development site would be expected to be restricted to QBAR greenfield runoff rate. Volume of attenuation storage required on site for the 1% (1in100) plus climate change storm.

Please see the calculations in appendix F which indicate that the site has been restricted to Qbar greenfield rates and has storage up to and including the 1 in 100 year event plus climate change.

Where the proposals are connecting to an existing drainage system/watercourse, it is likely that the authorities responsible for maintaining those systems/watercourse will have their own design requirements. These requirements will need to be reviewed and agreed as part of any surface water drainage scheme.

Agreed, at due course a land drainage consent will be sought.

Detailed Drainage Scheme Plan showing the layout of the proposed drainage network, post development impermeable area, the location of the storage within the proposed development and how these relate to the submitted calculations, including any chamber, pipe numbers, direction of flow, invert and cover levels, gradients diameters and dimensions. The methods of flow control must be detailed as should non-conventional elements such as pond and permeable paving.

Please see appendix F for the drainage strategy.

Sufficient information on the correct number of treatment stages in the surface water management train will also be required, for further information see the CIRIA SuDS Manual (C753).

Please see the simple index pollution from CIRIA 753 indicating that the water quality is acceptable (appendix H)

The mechanism for securing long-term maintenance will need to be considered and agreed between the applicant and the Local Planning Authority. This may involve discussions with those adopting and/or maintaining the proposed systems, which could include the Highway Authority, Planning Authority, Parish Councils, Water Companies and private management companies.

Please see section 5.4.3 but can this be conditioned as this will need to be undertaken at detailed design.

Evidence that exceedance flows and runoff in excess of design criteria shall be considered - calculations and plans shall be provided to show where above ground flooding might occur and where this would pool and flow.

Please see appendix D for the overland flow routes.

6. SUMMARY & CONCLUSIONS

A summary of the main conclusions for the FRA is presented below:

- Development proposals are for a development of 81 dwellings at the land to the north of Huyton Lane, Knowsley, L36 7SB;
- The development site is approximately 2.2ha;
- The northern area of the site is within Flood Zones 2 and 3 (medium to high fluvial flood risk) and the rest of the site is in Flood Zone 1 (low risk) on the national Flood Risk Map for Planning. However, the Local Hydraulic Model indicates that the site is within Flood Zone 1. The Local Hydraulic model is more accurate, therefore, the site is within Flood Zone 1;
- The reason for the disparity between the models is that the local model includes the culvert and the national model, due to its coarseness, does not include the culvert;
- On the Flood Maps for Planning Rivers and Seas Flood Risk Maps (defended and undefended), the site is flood free, and therefore, in a Flood Zone 1;
- The EA Surface Water Flood Risk maps indicate that the site is at flood risk from surface water. The EA recommended that enquiries should be made with the LLFA as the LLFA are the statutory consultee for surface water. The LLFA state there is no surface water flooding on the site;
- None of the dwellings are placed in areas at medium or high risk of surface water flooding. According to the pre application, the LLFA believes that the site is not at risk of surface water flooding. Therefore, according to the LLFA, the risk of surface water is low;
- The site is at risk of reservoir flooding; however, this is very rare;
- The site is at low risk of groundwater, sewer and infrastructure flooding;
- It appears infiltration will not be feasible on this site due to the glacial till ground on site and failed infiltration testing;
- The site will be required to have attenuation up to and including the 1 in 100-year event plus climate change of 45% for the surface water; and
- Ironside Farrar have been commissioned to undertake the drainage strategy, the site will discharge into the watercourse to the north of the site at a Q-bar greenfield runoff rate of 14l/s. Attenuation will be held in a swale, raingardens, filter drains, filter strips and an attenuation tank under the car park.

7. REFERENCES

Author	Date	Title/Description
Department for Communities and Local Government	Dec 2024	Technical Guidance to the National Planning Policy Framework
Ministry of Housing, Communities and Local Government.	Dec 2024	National Planning Policy Framework

Appendix A: Topographical Survey

Appendix B: EA Flood Levels

Flood risk assessment data



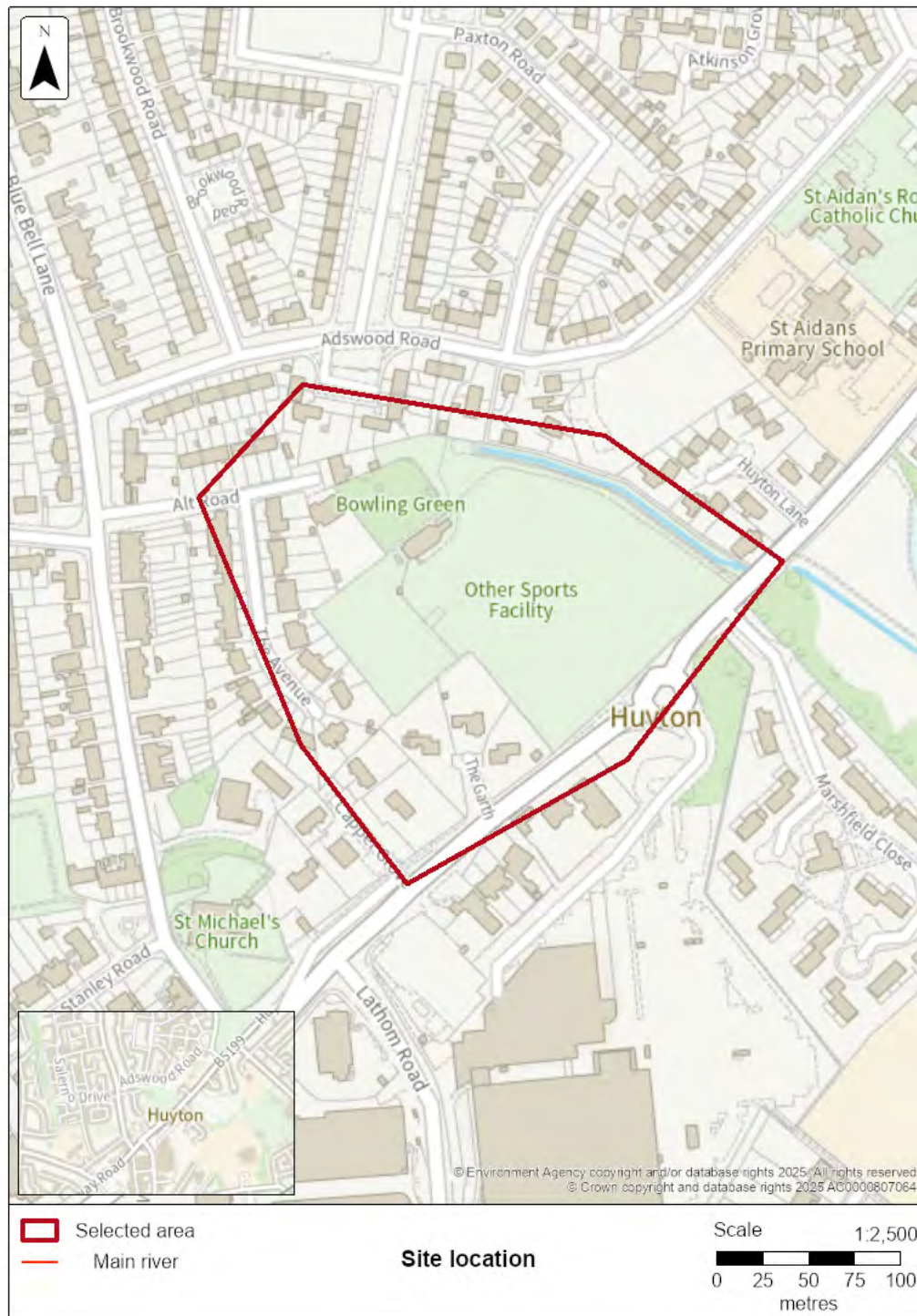
Location of site: 344406 / 391304 (shown as easting and northing coordinates)

Document created on: 19 June 2025

This information was previously known as a product 4.

Customer reference number: UJTU4AFAYPD

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- past floods
- flood defences and attributes

We do not have past flooding data for this location.

Please note that:

- flooding may have occurred that we do not have records for
- flooding can come from a range of different sources
- we can only supply flood risk data relating to flooding from rivers or the sea

You can contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

Surface water and other sources of flooding

When using the surface water map on the [check your long term flood risk service](#) the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- [reservoir flood risk](#)
- groundwater flood risk - you could use the [British Geological Survey groundwater flooding data](#), [groundwater: current status and flood risk](#) and the guide on [mining and groundwater constraints for development](#) - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is Knowsley District.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Upper Alt 2013

Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial, defences removed climate change fluvial

Date: 1 July 2013

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

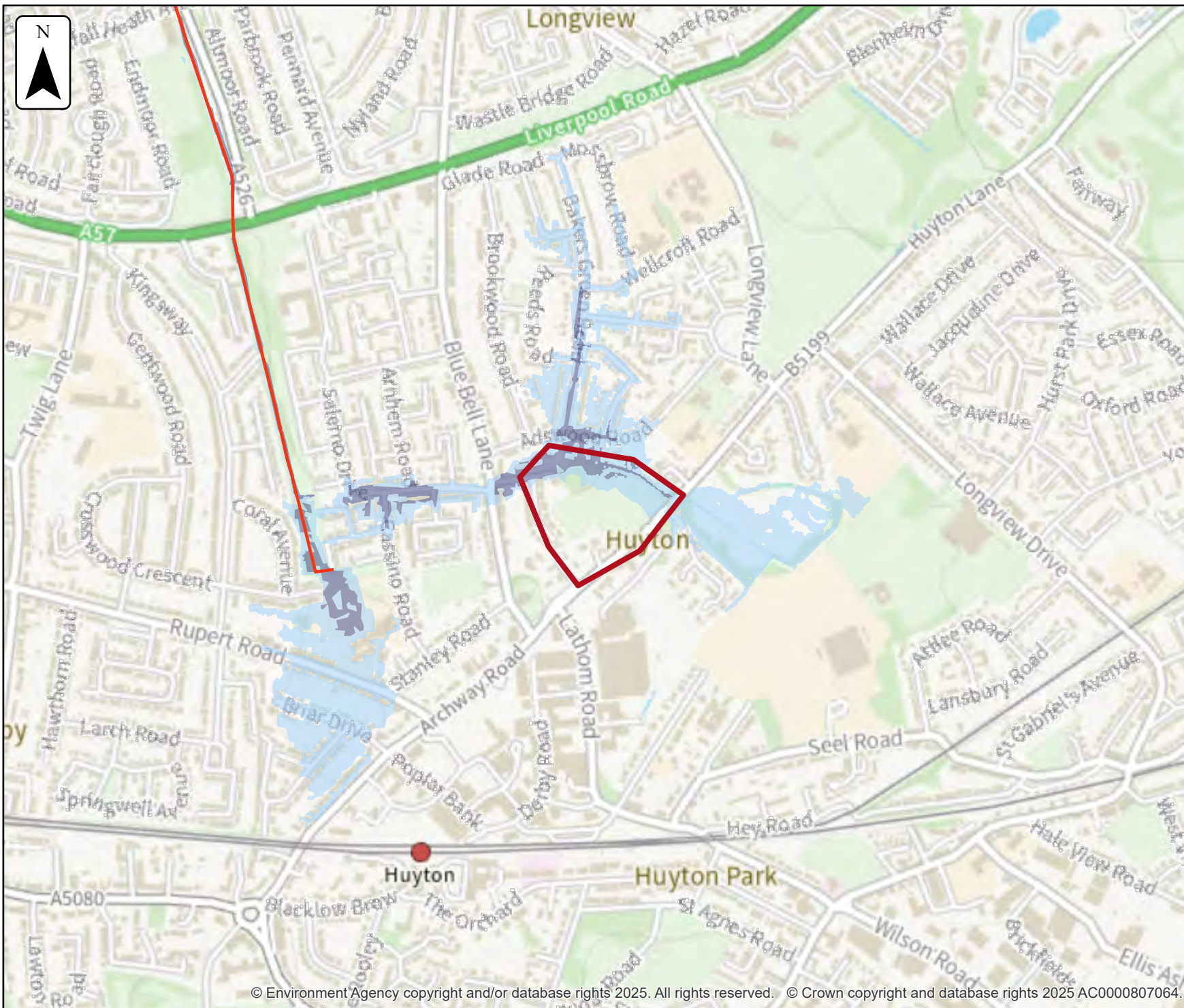
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change



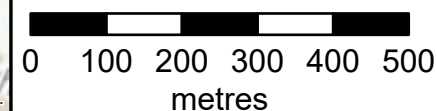
Flood map for planning

Location (easting/northing)
344406/391304

Scale
1:10,000

Created
19 Jun 2025

- Selected area
- Main river
- Flood Zone 3
- Flood Zone 2



Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

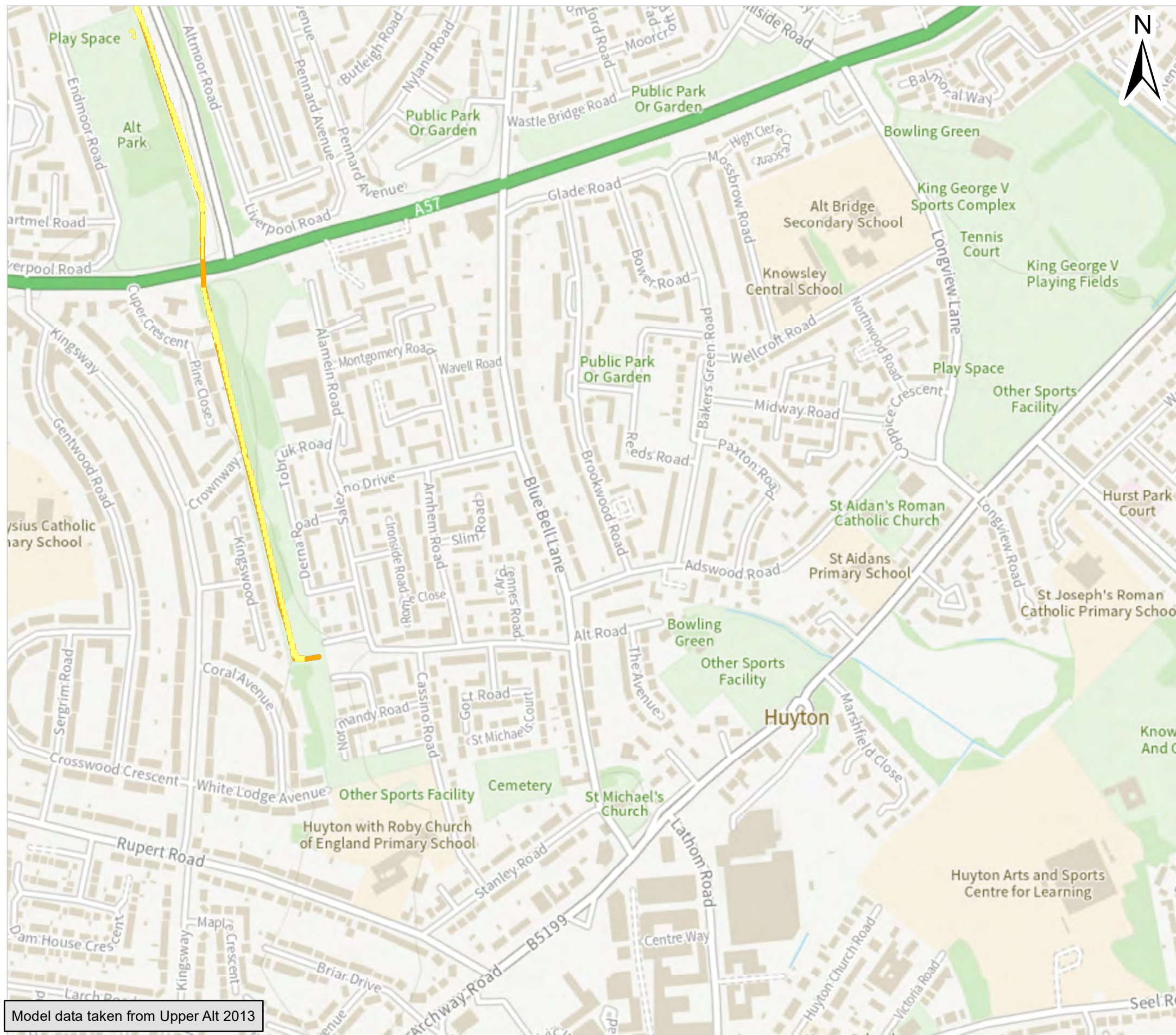
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change



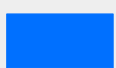
**Modelled Flood Outlines:
Huyton, L36 7XH**

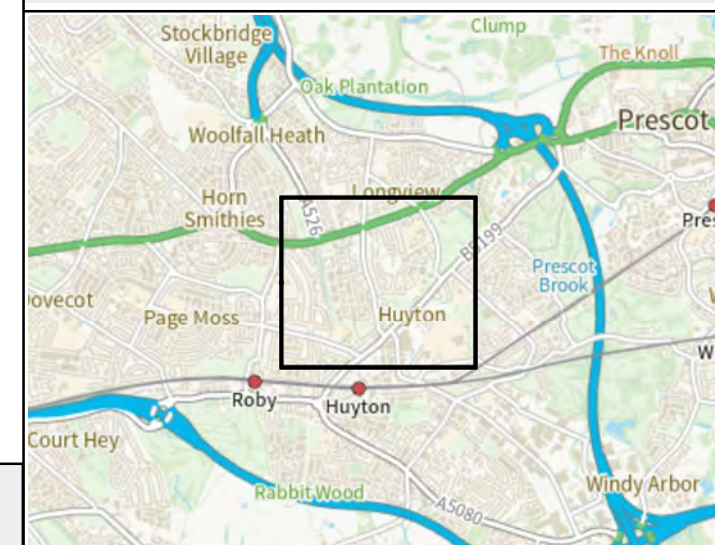
**Location (easting/northing)
344406/391304**

**Model name:
Upper Alt 2023**

Created 20/06/2025

Key

-  0.1% Annual Exceedance Probability Defended Scenario
-  1%+Climate Change (+70%) Annual Exceedance Probability Undefended Scenario
-  0.1% Annual Exceedance Probability Undefended Scenario
-  1%+Climate Change (+70%) Annual Exceedance Probability Defended Scenario



Modelled Flood Levels:
Huyton, L36 7XH

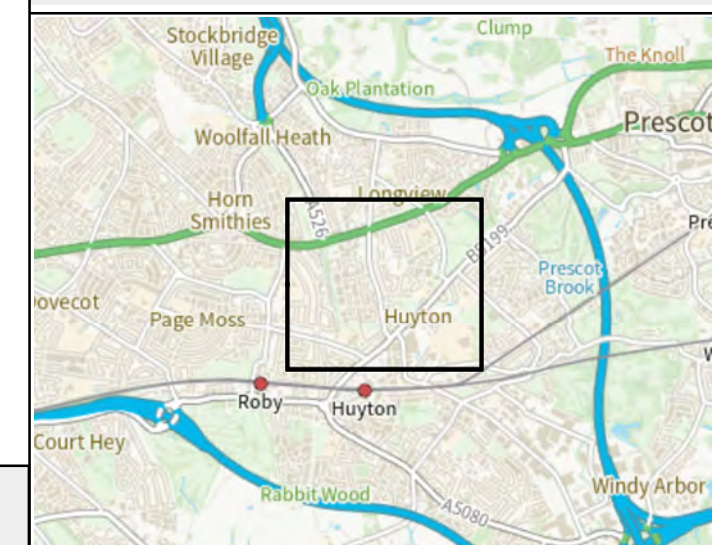
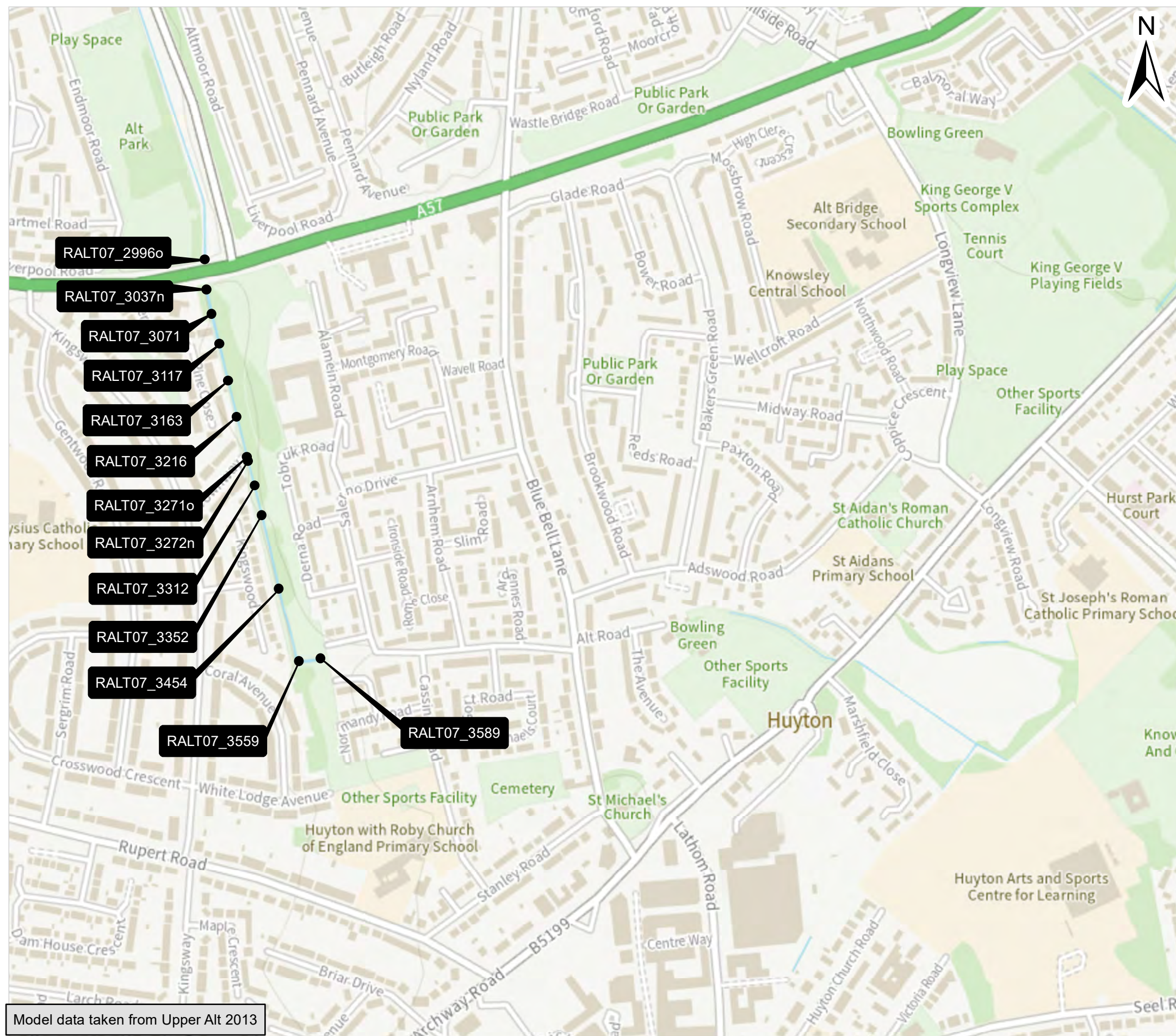
Location (easting/northing)
344406/391304

Model name:
Upper Alt 2023

Created 20/06/2025

Key

- Node Point ID



Node Point ID	Model Flood Group ID (D = Defended, UD = Undefended, CC = Climate Change)	Annual Exceedance Probability (AEP %)	Water Level (mAOD)	Flow (m ³ /s ⁻¹)
RALT07_3589	UAlt2013_D	20	28	0.45
RALT07_3589	UAlt2013_D	0.1	28.3	1.24
RALT07_3589	UAlt2013_D	2	28.07	0.62
RALT07_3589	UAlt2013_U	2	28.07	0.62
RALT07_3589	UAlt2013_U	20	28	0.45
RALT07_3589	UAlt2013_U	3.33	28.04	0.56
RALT07_3589	UAlt2013_D	1	28.11	0.71
RALT07_3589	UAlt2013_D	3.33	28.04	0.56
RALT07_3589	UAlt2013_U	1	28.11	0.71
RALT07_3589	UAlt2013_D_20%CC	1	28.16	0.86
RALT07_3589	UAlt2013_U	0.1	28.3	1.24
RALT07_3589	UAlt2013_U_70%CC	1	28.29	1.21
RALT07_3589	UAlt2013_U_35%CC	1	28.2	0.96
RALT07_3589	UAlt2013_U_30%CC	1	28.19	0.93
RALT07_3589	UAlt2013_D_70%CC	1	28.29	1.21
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RALT07_3589	UAlt2013_D_30%CC	1	28.19	0.93
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RALT07_3559	UAlt2013_D	20	27.97	0.45
RALT07_3559	UAlt2013_U	2	28.04	0.62
RALT07_3559	UAlt2013_U	0.1	28.28	1.24
RALT07_3559	UAlt2013_U	3.33	28.01	0.56
RALT07_3559	UAlt2013_D	2	28.04	0.62
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RALT07_3559	UAlt2013_D	0.1	28.28	1.24
RALT07_3559	UAlt2013_U	1	28.08	0.71
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RALT07_3559	UAlt2013_U_35%CC	1	28.18	0.96
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RALT07_3559	UAlt2013_D_35%CC	1	28.18	0.96
RALT07_3559	UAlt2013_D_30%CC	1	28.16	0.93
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RALT07_3454	UAlt2013_U	1	27.95	0.71
RALT07_3454	UAlt2013_D	2	27.91	0.62

RALT07_3454	UAlt2013_U	2	27.91	0.62
RALT07_3454	UAlt2013_D	3.33	27.88	0.56
RALT07_3454	UAlt2013_D	0.1	28.15	1.24
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RALT07_3454	UAlt2013_U_35%CC	1	28.05	0.96
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RALT07_3352	UAlt2013_U	2	27.78	0.62
RALT07_3352	UAlt2013_D	20	27.71	0.45
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RALT07_3352	UAlt2013_D_20%CC	1	27.88	0.86
RALT07_3352	UAlt2013_U	3.33	27.76	0.56
RALT07_3352	UAlt2013_U_70%CC	1	28.01	1.21
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RALT07_3352	UAlt2013_U_30%CC	1	27.91	0.93
RALT07_3352	UAlt2013_D_70%CC	1	28.01	1.21
RALT07_3352	UAlt2013_D_35%CC	1	27.92	0.96
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RALT07_3312	UAlt2013_D	3.33	27.71	0.56
RALT07_3312	UAlt2013_U	2	27.74	0.62
RALT07_3312	UAlt2013_U	1	27.78	0.71
RALT07_3312	UAlt2013_D	20	27.66	0.45
RALT07_3312	UAlt2013_U	0.1	27.96	1.24
RALT07_3312	UAlt2013_D	0.1	27.96	1.24
RALT07_3312	UAlt2013_D	2	27.74	0.62
RALT07_3312	UAlt2013_D	1	27.78	0.71
RALT07_3312	UAlt2013_U	20	27.66	0.45
RALT07_3312	UAlt2013_D_20%CC	1	27.83	0.86
RALT07_3312	UAlt2013_U	3.33	27.71	0.56
RALT07_3312	UAlt2013_U_70%CC	1	27.95	1.21
RALT07_3312	UAlt2013_U_35%CC	1	27.87	0.96
RALT07_3312	UAlt2013_U_30%CC	1	27.86	0.93
RALT07_3312	UAlt2013_D_70%CC	1	27.95	1.21
RALT07_3312	UAlt2013_D_35%CC	1	27.87	0.96
RALT07_3312	UAlt2013_D_30%CC	1	27.86	0.93
RALT07_3272n	UAlt2013_D_20%CC	1	27.77	0.86
RALT07_3272n	UAlt2013_U	3.33	27.65	0.56

RALT07_3272n	UAlt2013_D	3.33	27.65	0.56
RALT07_3272n	UAlt2013_U	20	27.6	0.45
RALT07_3272n	UAlt2013_U	1	27.72	0.71
RALT07_3272n	UAlt2013_D	2	27.68	0.62
RALT07_3272n	UAlt2013_D	0.1	27.9	1.24
RALT07_3272n	UAlt2013_D	1	27.72	0.71
RALT07_3272n	UAlt2013_U	0.1	27.9	1.24
RALT07_3272n	UAlt2013_D	20	27.6	0.45
RALT07_3272n	UAlt2013_U	2	27.68	0.62
RALT07_3272n	UAlt2013_U_70%CC	1	27.89	1.21
RALT07_3272n	UAlt2013_U_35%CC	1	27.81	0.96
RALT07_3272n	UAlt2013_U_30%CC	1	27.8	0.93
RALT07_3272n	UAlt2013_D_70%CC	1	27.89	1.21
RALT07_3272n	UAlt2013_D_35%CC	1	27.81	0.96
RALT07_3272n	UAlt2013_D_30%CC	1	27.8	0.93
RALT07_3271o	UAlt2013_D	3.33	27.65	0.56
RALT07_3271o	UAlt2013_D_20%CC	1	27.77	0.86
RALT07_3271o	UAlt2013_D	0.1	27.9	1.24
RALT07_3271o	UAlt2013_U	0.1	27.9	1.24
RALT07_3271o	UAlt2013_D	1	27.72	0.71
RALT07_3271o	UAlt2013_D	2	27.68	0.62
RALT07_3271o	UAlt2013_D	20	27.6	0.45
RALT07_3271o	UAlt2013_U	20	27.6	0.45
RALT07_3271o	UAlt2013_U	2	27.68	0.62
RALT07_3271o	UAlt2013_U	1	27.72	0.71
RALT07_3271o	UAlt2013_U	3.33	27.65	0.56
RALT07_3271o	UAlt2013_D_70%CC	1	27.89	1.21
RALT07_3271o	UAlt2013_U_70%CC	1	27.89	1.21
RALT07_3271o	UAlt2013_U_35%CC	1	27.81	0.96
RALT07_3271o	UAlt2013_U_30%CC	1	27.8	0.93
RALT07_3271o	UAlt2013_D_35%CC	1	27.81	0.96
RALT07_3271o	UAlt2013_D_30%CC	1	27.8	0.93
RALT07_3216	UAlt2013_U	20	27.52	0.45
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RALT07_3216	UAlt2013_D	3.33	27.57	0.56
RALT07_3216	UAlt2013_D	2	27.59	0.62
RALT07_3216	UAlt2013_D	0.1	27.81	1.24
RALT07_3216	UAlt2013_D_20%CC	1	27.69	0.86
RALT07_3216	UAlt2013_U	2	27.59	0.62
RALT07_3216	UAlt2013_D	20	27.52	0.45
RALT07_3216	UAlt2013_U	1	27.63	0.71
RALT07_3216	UAlt2013_U	3.33	27.57	0.56
RALT07_3216	UAlt2013_D	1	27.63	0.71
RALT07_3216	UAlt2013_D_70%CC	1	27.81	1.21
RALT07_3216	UAlt2013_D_35%CC	1	27.72	0.96
RALT07_3216	UAlt2013_D_30%CC	1	27.71	0.93
RALT07_3216	UAlt2013_U_70%CC	1	27.81	1.21
RALT07_3216	UAlt2013_U_35%CC	1	27.72	0.96

RALT07_3216	UAlt2013_U_30%CC	1	27.71	0.93
RALT07_3163	UAlt2013_D	20	27.41	0.45
RALT07_3163	UAlt2013_U	20	27.41	0.45
RALT07_3163	UAlt2013_D	0.1	27.72	1.24
RALT07_3163	UAlt2013_D	3.33	27.46	0.56
RALT07_3163	UAlt2013_D	1	27.53	0.71
RALT07_3163	UAlt2013_U	0.1	27.72	1.24
RALT07_3163	UAlt2013_D	2	27.49	0.62
RALT07_3163	UAlt2013_U	2	27.49	0.62
RALT07_3163	UAlt2013_U	1	27.53	0.71
RALT07_3163	UAlt2013_D_20%CC	1	27.59	0.86
RALT07_3163	UAlt2013_U	3.33	27.46	0.56
RALT07_3163	UAlt2013_D_70%CC	1	27.71	1.21
RALT07_3163	UAlt2013_D_35%CC	1	27.63	0.96
RALT07_3163	UAlt2013_D_30%CC	1	27.61	0.93
RALT07_3163	UAlt2013_U_70%CC	1	27.71	1.21
RALT07_3163	UAlt2013_U_35%CC	1	27.63	0.96
RALT07_3163	UAlt2013_U_30%CC	1	27.61	0.93
RALT07_3117	UAlt2013_D	0.1	27.55	1.64
RALT07_3117	UAlt2013_U	0.1	27.55	1.64
RALT07_3117	UAlt2013_U	1	27.38	0.94
RALT07_3117	UAlt2013_D	2	27.34	0.82
RALT07_3117	UAlt2013_U	2	27.34	0.82
RALT07_3117	UAlt2013_D_20%CC	1	27.43	1.13
RALT07_3117	UAlt2013_D	1	27.38	0.94
RALT07_3117	UAlt2013_U	20	27.27	0.59
RALT07_3117	UAlt2013_D	20	27.27	0.59
RALT07_3117	UAlt2013_D	3.33	27.32	0.74
RALT07_3117	UAlt2013_U	3.33	27.32	0.74
RALT07_3117	UAlt2013_U_70%CC	1	27.54	1.61
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RALT07_3117	UAlt2013_D_35%CC	1	27.47	1.28
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RALT07_3117	UAlt2013_U_35%CC	1	27.47	1.28
RALT07_3117	UAlt2013_U_30%CC	1	27.46	1.23
RALT07_3071	UAlt2013_D	1	27.23	0.94
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RALT07_3071	UAlt2013_D	20	27.15	0.59
RALT07_3071	UAlt2013_D_20%CC	1	27.26	1.13
RALT07_3071	UAlt2013_D	2	27.2	0.82
RALT07_3071	UAlt2013_U	2	27.2	0.82
RALT07_3071	UAlt2013_U	1	27.23	0.94
RALT07_3071	UAlt2013_U	0.1	27.34	1.64
RALT07_3071	UAlt2013_U	3.33	27.18	0.74
RALT07_3071	UAlt2013_D	3.33	27.18	0.74
RALT07_3071	UAlt2013_U_70%CC	1	27.34	1.61
RALT07_3071	UAlt2013_U_35%CC	1	27.28	1.28

RALT07_3071	UAlt2013_U_30%CC	1	27.28	1.23
RALT07_3071	UAlt2013_D_70%CC	1	27.34	1.61
RALT07_3071	UAlt2013_D_35%CC	1	27.28	1.28
RALT07_3071	UAlt2013_D_30%CC	1	27.28	1.23
RALT07_3037n	UAlt2013_U	0.1	27.19	1.64
RALT07_3037n	UAlt2013_D	20	26.97	0.59
RALT07_3037n	UAlt2013_U	20	26.97	0.59
RALT07_3037n	UAlt2013_D	1	27.06	0.94
RALT07_3037n	UAlt2013_U	3.33	27.01	0.74
RALT07_3037n	UAlt2013_D	3.33	27.01	0.74
RALT07_3037n	UAlt2013_D	2	27.03	0.82
RALT07_3037n	UAlt2013_U	2	27.03	0.82
RALT07_3037n	UAlt2013_D_20%CC	1	27.1	1.13
RALT07_3037n	UAlt2013_U	1	27.06	0.94
RALT07_3037n	UAlt2013_D	0.1	27.19	1.64
RALT07_3037n	UAlt2013_U_70%CC	1	27.18	1.61
RALT07_3037n	UAlt2013_U_35%CC	1	27.12	1.28
RALT07_3037n	UAlt2013_U_30%CC	1	27.11	1.23
RALT07_3037n	UAlt2013_D_70%CC	1	27.18	1.61
RALT07_3037n	UAlt2013_D_35%CC	1	27.12	1.28
RALT07_3037n	UAlt2013_D_30%CC	1	27.11	1.23
RALT07_2996o	UAlt2013_D_20%CC	1	26.94	1.13
RALT07_2996o	UAlt2013_U	0.1	27.01	1.64
RALT07_2996o	UAlt2013_U	1	26.9	0.94
RALT07_2996o	UAlt2013_D	2	26.88	0.82
RALT07_2996o	UAlt2013_U	3.33	26.86	0.74
RALT07_2996o	UAlt2013_U	20	26.82	0.59
RALT07_2996o	UAlt2013_U	2	26.88	0.82
RALT07_2996o	UAlt2013_D	1	26.9	0.94
RALT07_2996o	UAlt2013_D	20	26.82	0.59
RALT07_2996o	UAlt2013_D	3.33	26.86	0.74
RALT07_2996o	UAlt2013_D	0.1	27.01	1.64
RALT07_2996o	UAlt2013_U_70%CC	1	27.01	1.61
RALT07_2996o	UAlt2013_U_35%CC	1	26.96	1.28
RALT07_2996o	UAlt2013_U_30%CC	1	26.95	1.23
RALT07_2996o	UAlt2013_D_70%CC	1	27.01	1.61
RALT07_2996o	UAlt2013_D_35%CC	1	26.96	1.28
RALT07_2996o	UAlt2013_D_30%CC	1	26.95	1.23

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is Knowsley District.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

[Find out more about flood risk activity permits](#)

Help and advice

Contact the Cumbria and Lancashire Environment Agency team at inforequests.cmblnc@environment-agency.gov.uk for:

- [more information about getting a product 5, 6, 7 or 8](#)
- general help and advice about the site you're requesting data for

Appendix C: EA Communications

FW: FOLLOW UP TO RESPONSE- Request for information - Ref: EIR2025/14592RI

From CMBLNC Info Requests <Inforequests.cmblnc@environment-agency.gov.uk>

Date Tue 24/06/2025 14:06

To Charles Townsend <charles@townsendwaterengineering.co.uk>

Cc eir2025/14592/con1@ea.ecase.co.uk <eir2025/14592/con1@ea.ecase.co.uk>

External (inforequests.cmblnc@environment-agency.gov.uk)

[Report This Email](#) [FAQ](#) [GoDaddy Advanced Email Security](#), Powered by [INKY](#)

Hello Charles,

Regarding your enquiry below, the teams confirm that matters relating to surface water flooding are not within the remit of the Environment Agency; they advise that you direct this particular enquiry to the Lead Local Flood Authority.

Kind regards,
Rosie

Rosie Irlam
Customer and Engagement Officer
Cumbria and Lancashire

From: Charles Townsend <charles@townsendwaterengineering.co.uk>

Sent: 20 June 2025 16:50

To: CMBLNC Info Requests <Inforequests.cmblnc@environment-agency.gov.uk>

Subject: Re: RESPONSE- Request for information - Ref: EIR2025/14592RI

Hi Rosie,

Thank you for Stirling efforts in turning this around so quickly. It is brilliant.

Is it possible that I can discuss this with planning liaison as this is a highly unusual reply. I am likely to place the finished floor levels at the surface water 1 in 100 year event plus climate change depth and add 600mm. However as the flooding is not fluvial flooding it is surface water flooding I will not be undertaking compensatory storage.

Does that sound reasonable?

Kind regards
Charles

Charles Townsend BSc (Hons) CIWEM CSci
Townsend Water Engineering
charles@townsendwaterengineering.co.uk
Tel: 07786912617
Landline (better reception) 01244 294890

From: Cumbria and Lancashire Enquiries <inforequests.cmlnc@environment-agency.gov.uk>
Sent: 20 June 2025 16:08
To: Charles Townsend <charles@townsendwaterengineering.co.uk>
Subject: RESPONSE- Request for information - Ref: EIR2025/14592RI

Hi Charles,

I am writing in response to your request for information, received 19 June 2025, regarding Request for Flood risk assessment data (product 4). Customer request reference UJTU4AFAYPD.

We respond to requests for information under the Freedom of Information Act 2000 (FOI) and Environmental Information Regulations 2004 (EIR).

Upper Alt model 2013

Our detailed local modelling shows that there is currently no risk of flooding from the River Alt to the site of interest. Please find attached a product 4 for the River Alt showing the most extreme flood outlines that we have modelled so you can see the risk from the River Alt. In-channel modelled measurements have been provided as part of the Product 4.

New National Modelling

The site has placed in Flood Zones 3 and 2 because of direct rainfall modelling on the site (part of National Modelling undertaken). This direct rainfall method was applied to the surface water mapping and outputs linked to watercourses have been copied into the Flood Map for Planning. You will be able to see that the surface water mapped extents and the Flood Zones match in this area.

We don't have specific water level information associated with the National Modelling that we are able to provide yet, it is estimated that we will receive these in December 2025.

You may wish to download the surface water mapping via [Risk of Flooding from Surface Water](#). You have the opportunity to download the extent of surface water flooding (rofsw_4band) and some depth data. The depth data labels are slightly misleading e.g rofsw_4band_0_3 depth actually means depth of flooding = 30cm and the likelihood of that depth occurring, rofsw_4band_0_6 means depth of flooding = 60cm and the likelihood of that depth occurring.

These are specific depth categories and the chance of flooding to that depth in the category.

We are unable to provide Product 4 information for New National Modelling/Direct rainfall modelling at this time.

Where we cannot provide flood levels or depths and these are needed to inform a Flood Risk Assessment (FRA) to support a planning application, you will need to interpret the data we provide to determine indicative flood levels and depths. The approach you take to do this should be presented in your FRA and we will review it if we are a statutory consultee on the planning application. We may also review it if you submit a draft FRA to us through our chargeable planning advice service. You can submit a request for chargeable planning advice to our Sustainable Places team at clplanning@environment-agency.gov.uk

Other information

- The Environment Agency holds no records of flooding for the site of interest. Please be aware, however, that this does not necessarily mean that flooding has not occurred here in the past as our records are not comprehensive.*

- *For all queries relating to flooding from surface water, ordinary watercourses and groundwater flooding, please contact the Lead Local Flood Authority, Knowsley Council.*
- *Surface Water Maps can be viewed online at <https://flood-map-for-planning.service.gov.uk/>*

Please refer to the [Open Government Licence](#) which explains the permitted use of this information.

Rights of appeal

If you are not satisfied with our decision, you can contact us within two calendar months to ask for the decision to be reviewed. We will then conduct an internal review of our response to your request and give you our decision in writing within 40 working days.

If you are not satisfied with the outcome of the internal review, you can then make an appeal to the Information Commissioner Office, the statutory regulator for EIR and FOI. The address is: Information Commissioner's Office, Wycliff House, Water Lane, Wilmslow, Cheshire. SK9 5AF.

Tel: 0303 123 1113 (local rate) or 01625 545 745 (national rate) | Fax: 01625 524 510 Email: casework@ico.org.uk | Website: www.ico.org.uk

Yours sincerely,

Rosie Irlam

CLA Area Customers and Engagement Team

Your feedback is important to us - please visit Environment Agency FOI Customer Satisfaction Survey

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

Appendix D: LLFA Communications



Breck Homes Limited
c/o Mrs Kirstie Oakey - Lichfields
Ship Canal House
98 King Street
Manchester
M2 4WU

Our Ref: 25/00016/PREAPP

Date: 13 June 2025

Dear Sir/Madam

**TOWN AND COUNTRY PLANNING ACT 1990
PLANNING (LISTED BUILDINGS & CONSERVATION AREAS) ACT 1990**

**PROPOSAL: RESIDENTIAL DEVELOPMENT OF 89 NO. DWELLINGS, REFURBISHMENT OF
PAVILLION TOGETHER WITH ASSOCIATED INFRASTRUCTURE WORKS**
LOCATION: Former Huyton Cricket Club, Huyton Lane, Huyton, Knowsley, L36 7XH,

I write further to the submission of the above pre application proposal.

Following an assessment of the proposals and the receipt of consultation responses I can provide the following response.

This response is provided on the basis of the following information submitted on 03/03/2025 & 18.03.2025 , 23.04.2025 , 28.04.2025 & 13.05.2025

PROPOSED SITE PLAN – REV B

PROPOSED SITE SECTIONS - 1443-JDA-XX-XX-PP-A-0002 REV P01

DRAFT TYPICAL ELEVATIONS – APR 25

PRE-APPLICATION DOCUMENT - 1443-JDA-XX-XX-RP-A-0001 REV P01

PRE APP COVERING LETTER – 69995/01/SPM/HR/33474725V2

BUILDING PLAN

INITIAL DRAINAGE PROPOSAL -HL/INITDRAIN REV A

OPEN SPACE NOTE - 69995/01/SPM/HR

PRELIMINARY TREE CONSTRAINTS PLAN -01

PROVISIONAL HERITAGE STATEMENT

SITE LOCATION PLAN

TRANSPORT BRIEFING NOTE

ARBORICULTURAL IMPACT ASSESSMENT – 25/AIA/KNOWSLEY/31
BAT SCOPING SURVEY
PRELIMINARY ECOLOGICAL APPRAISAL

Principle of Development

Part of the site (to the north and west including the pavilion building) is designated as primarily residential area on the Local Plan Policies Map and the remainder of the site is allocated as Urban Greenspace.

The parts of the site designated as primarily residential area would be acceptable in principle for new residential development subject to the detailed matters set out below.

The part of the site allocated as Urban Greenspace would need to be assessed against Local Plan policy CS21 – Greenspaces & Trees and Paragraph 104 in NPPF (2025).

Policy CS21 sets out several criteria of which at least one should be complied with when considering proposals resulting in the loss of urban greenspace.

These criteria include :-

- a) A surplus of provision for all types of greenspace would be maintained relative to local standards;
- b) The land is considered unsuitable in terms of size, location or character to prevent or address individual deficiencies of different types of greenspace relative to local standards;

The application site is in deficit for the following greenspace typologies , Amenity Greenspace, Provision for Children and Young people and Allotments. Criteria a) is therefore not complied with.

However as the site is currently in private ownership it is currently not considered to be suitable to address the individual deficiencies of different types of greenspace at detailed above and therefore the proposal would comply with criteria b) in Policy CS21

In addition to the above because of the proximity of other identified green spaces close to the site (i.e.. King George V playing fields , Huyton) it is considered that higher quality provision can be made by improving existing facilities rather than providing new facilities.

In accordance with Local Plan policy CS21 and Developer Contributions SPD (2016) the following financial contributions would be required (based on Site layout Rev B for 89 Dwellings)

Parks & Gardens £64,259.25

Provision for Children & Young people £10,040.25

Outdoor Sports Provision £46,395.25

Allotments £401.50

Total contribution required £121,096.25

Given the greenspace to be provided on site in this instance we would not request any additional contribution for the Amenity Greenspace typology.

Subject to appropriate mitigation in the form of financial contributions criteria b) of Policy CS21 is complied with.

Given that the proposal would result in the permanent loss of former cricket pitches it is considered that additional mitigation is required specifically to enhance existing cricket facilities in the Borough. The Knowsley Playing Pitch Strategy (2021) conclusions on cricket state "Future demand utilises all spare capacity and creates shortfalls for all formats of senior and junior cricket." Additionally, the PPS cricket conclusion states: "Lancashire Cricket Foundation has identified that Knowsley has the highest club to population ratio in the whole of Lancashire. It anticipates that there is significant latent demand for the sport."

Lichfield's Suitability for Development paragraph 4.3 in the Open Space Note states: "The drainage issues on the Site highlight the pitches unsuitability for play." However, no investment to mitigate drainage problems has been made and with investment these drainage issues could be remedied. As such the site cannot be discounted as unsuitable for play if this development does not take place.

Lichfield's Conclusions, point 6.2, states: "As the Site has not been in formal use for any use associated with its open space designation for c. 13-years, it is clearly demonstrated that it is surplus to requirements." However, in point 4.5 of their note, they state that: "The Site has not been publicly accessible ... for c.13-years." As such, it does not imply that the site is surplus to requirements, just inaccessible for use.

Although commenting in a non- statutory basis Sport England have raised objections to the proposal based on the loss of playing field land given that the proposal does not comply with any of the exceptions in Sport England's Playing Fields Policy. The refurbishment of the pavilion and creation of padel courts is not considered to be specific mitigation for the loss of the cricket pitches.

The proposal as currently submitted without any mitigation would be contrary to paragraph 104 in NPPF which states

"Existing open space, sports and recreational buildings and land, including playing fields and formal play spaces, should not be built on unless:

- a) an assessment has been undertaken which has clearly shown the open space, buildings or land to be surplus to requirements; or*
- b) the loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or*
- c) the development is for alternative sports and recreational provision, the benefits of which clearly outweigh the loss of the current or former use"*

Following consultation with the England Cricket Board (ECB) and the Lancashire Cricket Foundation (LCF) they have stated that they would strongly object to the permanent loss of Huyton Cricket Club as a cricket facility without a replacement facility in the borough being identified and installed.

The ECB and LCF have indicated that an advisory cost for instating a six-pitch square (which would be the minimum required for club play) would cost approximately £70,000, dependent on existing ground conditions and volunteer maintenance capacity.

Therefore, it is considered appropriate in this instance for an additional financial contribution of £70,000 to be secured as mitigation for a replacement cricket facility in the Borough. (the precise location of the six -pitch square will be confirmed at a later date).

PLANNING POLICY

In addressing the guidance in Policy CS4 I would make the following points in relation to this proposal:

- The new standard methodology for calculating housing need has increased Knowsley's requirement from 450 dpa to 630 dpa (inclusive of a buffer).
- New residential development in Huyton would comply with the broad indicative distribution of new housing development set out in Policy CS4.
- The council has a 5 year housing land supply. Having said that new residential development in the urban area is sequentially preferable to the development of land outside the urban area (e.g. Green Belt sites) and will add strength to our position in resisting speculative proposals outside the urban area. Residential development on the site would be sustainably located close to services, facilities and transport nodes.
- Applications for new residential development must demonstrate how they contribute to the re-balancing of the housing market to better meet housing needs and demands. Should the proposal be considered acceptable in all other aspects the mix of dwelling types proposed is welcomed, which seeks to comply with Policy CS4.
- At a rate of 40 dwellings per hectare the proposal exceeds the minimum density of 30 dwellings per hectare satisfying the policy.

Heritage Considerations

Significance of Heritage Assets

The Pavillion was listed as grade II on the 21st of September 2020 and the reasons for designation include "its symmetrical timber-framed form, featuring mirror-image long elevations with verandas beneath the overhanging roof, and ample fenestration to observe play on both the cricket pitch and the bowling green" much of which survives today, "the equal emphasis of the dual aspect design is unusual and possibly unique in pavilion design nationally and highlights the parity given to both teams at Huyton" and as "a very rare example nationally of an early pavilion erected by a local cricket club, rather than being associated with a county club ground, educational establishment or public park".

Its condition as found today is one of slow deterioration associated with a lack of ongoing maintenance as a result of a lack of active use. There are also some modern extensions to the northeast along with an outbuilding that is not of either architectural or historic significance. The former bowling green and cricket grounds, even in their current overgrown state, contribute positively to the setting of the Grade II listed pavilion. As per

the submitted provisional heritage report, both the bowling green and the cricket grounds are intrinsically linked to the understanding of the pavilions original use and therefore these areas of the application site, make a positive contribution to the setting of the listed building.

Assessment of Proposal

Legislative and Policy

There is a legislative requirement that planning decisions take into account the impact of development on the setting of a listed building. This is set out in s66 of the Planning (Listed Buildings and Conservation Areas) Act (1990). it states:

“66 (1) In considering whether to grant planning permission or permission in principle for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.”

This is more than a ‘material consideration’. Case law has established a strong statutory presumption against development that harms the setting of listed buildings. Irrespective of the level of harm, decision makers should give “considerable importance and weight” to the desirability of preserving the setting of listed buildings when carrying out the balancing exercise.

Paragraph 215 states that “Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.” Furthermore, paragraph 219 states “Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the **setting of heritage assets**, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.”

The NPPF defines setting as “The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.”

Moreover, paragraph: 007 Reference ID: 18a-007-20190723 of the national 'Planning Practice Guidance',

“Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and importance of the significance of a heritage asset, and the contribution of its setting, is very important to understanding the potential impact and acceptability of development proposals.”

Impact Assessment: Grade II Listed Pavillion

The proposals for the reuse of the bowling green for padel courts is welcomed as it will retain a sporting use to this section of the site as well as its sense of openness. That said, there will still be a degree of harm to the setting of the Pavillion as the lawned bowling green will be replaced with courts with hard standing. As per the submitted 'Provisional heritage Statement' (PHS), means of mitigation such as ensuring that the design of the courts/landscaping allows some interpretation of its original use would be welcomed. This harm will need to be considered against the wider benefits of introducing a new active use for the pavilion and any associated repairs. In terms of the re-use pavilion, we welcomed the proposals subject to the acceptability of any proposed alterations and repairs.

One possible means of mitigation would be the removal of the 2 no proposed bungalows directly to the northeast of the bowling green. The proximity of these to the Grade II listed pavilion undermines the historic open and green setting of the pavilion. The removal of these bungalows and their associated parking would allow for the introduction of robust planting/ trees/hedges to the northeast of the pavilion that could screen the other bungalows from view, thereby reducing the harmful impact of the proposal on the setting of the listed building.

The proposed housing and assisted living block on the cricket ground will harm the setting of the listed building. As per its list description, "the equal emphasis of the dual aspect design is unusual and possibly unique in pavilion design nationally and highlights the parity given to both teams at Huyton" and development on the cricket ground will essentially result in the loss of a significant part of its setting which will undermine the duality of the building. The level of harm to its setting would be at the very high end of 'less than substantial'. It would be substantial harm to the buildings setting if the bowling green were also developed on.

The submitted PHS does suggest that any proposed development within the application site, takes its design cues from the Pavillion, and the arts and crafts revival styles present in the Conservation Area which will lessen but not overcome the identified harm.

Therefore, as per section Paragraph 215 of the NPPF "Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use."

In terms of the submitted heritage statement, Historic OS maps from the turn of the 20th century depict another building within the application site, to the southwest of the pavilion and consequently, there is a possibility of archaeological remains in this location. There are other smaller outbuildings visible on these maps as well. The mid-20th century maps also show tennis courts in the furthest west section. The scope of the submitted Heritage reports needs to be expanded to include this information and should include some later 20th century maps for this reason.

Listed Building Consent

In addition to the planning application a separate application would be required for Listed Building Consent for the refurbishment works to the Pavillion building. This should be submitted at the same time as the planning application. A schedule of works, existing and proposed elevations/floor plans/ sections as applicable, details of all materials and a structural survey are required to be submitted with the Listed Building Consent. This should be submitted at the same time as the planning application.

The precise terms of the refurbishment for the listed building would need to be agreed (works that need to be undertaken internally and externally) and a trigger for these works to be completed for the building to be ready for future use. To provide a degree of flexibility the agreed works to the listed building shall be fully completed prior to the occupation of 30% of total dwellings on the site. This can be secured through the S106 legal agreement.

Impact Assessment: St Michael's Conservation Area & associated listed buildings.

St Michael's Conservation Area is located to the northwest of the application site and contains 5 listed buildings, one of which is the Grade II* Church of St Michaels. The conservation area focuses on the high ground in the immediate vicinity of St. Michael's Church encompassing the remnants of the historic village of Huyton. As found today, the conservation area is comprised of mostly Victorian housing with substantial tree cover and important green spaces.

Due to the intervening development between these designated heritage assets and the application site, the proposed development in its current form is unlikely to unduly harm their setting. That said, for completeness, any supporting heritage statement should include a full assessment including views to and from the proposed development and in particular to and from St Michael's church in the winter months as it is visible during these times.

Highway Safety

As previously advised to the Transport Consultant, the Council has an aspiration to upgrade the existing roundabout junction to signal control to facilitate pedestrian and cycle movements. Any works to provide access to this site would be expected to at least take this into consideration within the design.

TS Scoping Exercise

A trip generation exercise is required for the proposed use of the listed building and include theoretical car park accumulation.

The trip generation is based upon 60 dwellings + 70 unit assisted care, whilst the pre-application is now for 89 dwellings in total. Given that the assisted care units have been removed from the scheme the trip generation should be based on the proposed 89 dwellings.

A Travel Plan should be submitted with the application.

Highway Layout

The car parking for the maisonettes and apartments is below the levels set out in the 'Ensuring a Choice of Travel' SPD, and this should be justified in the TS, but the proximity to the town centre and associated amenities, plus public transport links is noted.

Small parking courts, such as that for 46, 47 and 48 are not supported, as they are poorly overlooked and tend to attract anti-social behaviour.

The removal of dwelling access from the initial section of the site road is welcomed to avoid potential conflicts with vehicles entering the site.

The access way serving Plots 75-83 is labelled as a parking court, although its layout is more akin to a shared surface road. If this is intended for adoption, it would need to have a 2m service strip introduced. Kerb radii would need to be increased to 6m if the intention is for refuse collection vehicles to enter, in order to avoid overrunning. Similarly for the car park serving the apartments.

Highways question whether the intention is to provide vehicular access to number 50 Adswood Road via the 4m wide pedestrian link. If so, further detailed design would be required at the application stage to enable careful consideration.

Servicing arrangements including the location of bin storage and cycle storage areas for the apartment element of the scheme should be clearly identified.

TRO – the site is located close to the town centre and all residential roads within walking distance are subject to residents' parking zones, this development will also need to be covered by such a TRO.

Highways would require a Road Safety Audit to be conducted of the proposed access arrangements as a fourth arm of the existing roundabout. The entry radii at 10m could permit relatively high speeds of traffic from the south western approach on Huyton Lane into the site, which would be hazardous to pedestrians crossing the access. The existing street trees, although currently immature will increase in size and this could cause an impairment to visibility of vehicles approaching from this direction. The estate will be subject to a 20mph speed limit and the layout will need to ensure that this speed is adhered to. On straight alignments greater than 60m, traffic calming features will be required.

ECOLOGY AND BIODIVERSITY NET GAIN

Ecology

Local Wildlife Sites

The development site is close to the following designated site and Local Plan policy CS8 applies:

- Huyton Lane Wetland LWS

The applicant should consider how effects on these sites will be avoided, minimised and mitigated. If adverse effects cannot be avoided, options for compensation should be identified (NPPF paragraph 193). Proposals should only be taken forward where the benefits of the development clearly outweigh the effects on habitats and species.

Ecological Appraisal

In support of the pre-application enquiry the applicant has submitted the following ecological survey reports:

- Preliminary Ecological Appraisal (PEA) (*UES Ltd, 18 March 2025, UES04790/01, V2*); and
- Bat Scoping Survey (*UES Ltd, 11 March 2025, UES04790/04*).

The PEA report reveals that site clearance works have already been undertaken on the site. The PEA submitted in support of the planning application will need to include Merseyside Biobank data as part as the desktop study.

Bats

As part of the PEA, a ground-level tree assessment was undertaken to inspect for potential bat roosting features. In summary, two trees (T5 and T6) were considered to have features which could provide roosting opportunities for individual or low numbers of bats (PRF-I). As recommended in the PEA report, these trees will therefore need to be soft-felled under supervision of a suitably qualified ecologist in line with best practice guidelines. This can be secured by a planning condition or included within a CEMP.

As stated in the PEA report, if any further trees are to removed in addition to those already assessed (i.e. T5, T6, G8 and G9), ground-level tree assessment of these will also be required **prior to determination** of any future planning application.

The Bat Scoping Survey included an assessment of the three buildings on site for their potential to support roosting bats. In summary, the pavilion building (B1) and an outbuilding (B2) were considered to provide moderate and low potential for bats respectively.

As recommended in the PEA report, bat emergence surveys of B1 and B2 will be required **prior to determination** of any future planning application. Bats are protected species and Local Plan policy CS8 applies. Protected Species are a material consideration.

The survey and report are essential to determine if bats are present. If present the Local Planning Authority is required to assess the proposals against the three tests (Habitats Regulations) and determine whether an EPS licence is likely to be granted. Surveys must

follow Standing Advice and best practice guidance¹. Any deviation from these guidelines must be fully justified. The applicant should note that timing for this survey is May to August inclusive.

Retained habitats on site and habitat adjacent to the site (i.e. River Alt) may provide roosting, foraging, commuting habitat for bats. Lighting for the development may affect the use of these areas. A lighting scheme can be designed so that it protects ecology and does not result in excessive light spill onto the habitats in line with NPPF (paragraph 198c). This can be secured by a planning condition. It would be helpful for the applicant to refer to the '[Bats and Artificial Lighting at Night](#)' guidance which has been produced by the Institute of Lighting Professionals in conjunction with the Bat Conservation Trust.

The PEA report recommends the installation of bat roosting boxes on the site. This will be necessary to compensate loss of potential roosting features and to provide ecological enhancements in line with NPPF paragraph 187 and the NERC biodiversity duty. Details of these (i.e. number, type and location on an appropriately scaled plan as well as timing of installation) can be provided in support of the planning application or secured by a planning condition.

Terrestrial mammals

No evidence of badger was recorded within the application site and their potential presence was not considered to be reasonably likely. However, habitats were considered to provide opportunities for hedgehog which is a Priority Species and Local Plan policy CS8 applies.

Section 4.2.5 of the PEA report sets out Reasonable Avoidance Measures for hedgehog and these are acceptable. The undertaking of these RAMs can be secured by a planning condition or included within a CEMP.

In order to maintain habitat connectivity for hedgehogs, hedgehog highways (13cm x 13cm gaps) should be installed into any closeboard fences on site. This can be secured by a planning condition.

Amphibians

There is a single pond within a 250m radius of the application site, although habitat connectivity from the pond to the site is limited. The potential presence of great crested newt is not considered to be likely, although the site may support other species of more widespread amphibian.

Section 4.2.1 of the PEA report includes RAMs for amphibians which are acceptable and the undertaking of these can be secured by a planning condition or included within a CEMP.

¹ Collins J (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th edition, Bat Conservation Trust, London, ISBN- 978-1-7395126-6-0

Breeding birds

Both buildings and vegetation on site may provide nesting opportunities for breeding birds, which are protected and Local Plan policy CS8 applies. The following planning informative is required (alternatively it can be included within the CEMP):

No tree felling, scrub clearance, hedgerow removal, vegetation management, ground clearance and/or building works is to take place during the period 1 March to 31 August inclusive. If it is necessary to undertake works during the bird breeding season then all buildings, trees, scrub, hedgerows and vegetation are to be checked first by an appropriately experienced ecologist to ensure no breeding birds are present. If present, details of how they will be protected are required to be submitted for approval.

As with bats, compensatory nest box provision for breeding birds will be required. Details (i.e. number, type and location on an appropriately scaled plan as well as timing of installation) can be provided in support of the planning application or secured by a planning condition.

Riparian mammals

The potential presence of otter or water vole on the adjacent section of River Alt was not considered to be reasonable likely and I concur with that.

Riparian habitat

However, as recommended in the PEA report, mitigation measures should be taken during any future development to ensure that the River Alt corridor is protected from encroachment, transfer of construction-related pollutants and increased lighting. Details of the mitigation measures that will be adopting during works can be included within a CEMP that can either be submitted in support of the planning application or it can be secured by a planning condition.

Invasive species

The PEA notes that Japanese knotweed was previously recorded on the site and adds that treatment works are currently being undertaken to remove it from the site. In support of any future application, I advise that details should be provided on the current status of the knotweed and of the ongoing treatment works.

Local Nature Recovery Strategy

The Liverpool City Region Local Nature Recovery Strategy (LNRS)^[1] is currently in preparation and due to be adopted later this year. Depending on planning application timescales the LNRS may be in place at the point of planning application submission. The

^[1] [Local Nature Recovery Strategy | Liverpool City Region Combined Authority](#)

development should seek to support delivery of the LNRS priorities and measures especially where mapped opportunities for nature align with the development.

Biodiversity Net Gain

The proposed development will be required to deliver mandatory 10% Biodiversity Net Gain (BNG)² Any future application must be accompanied by minimum information set out in Article 7 of The Town and Country Planning (Development Management Procedure) (England) Order 2015. However, in order to assist the consideration of biodiversity net gain as part of the determination of the planning application the applicant should submit sufficient information to allow the Local Planning Authority to consider more broadly whether the biodiversity gain condition is capable of being successfully discharged³. Further information is provided below.

The applicant may wish to submit this in the form of a draft Biodiversity Gain Plan (this should be completed using the Defra Biodiversity Gain Plan template⁴). Further advice on Biodiversity Net Gain requirements for the Liverpool City Region can be found in the MEAS BNG Information note⁵.

To aid the development to delivery of 10% BNG, I provide the following advice:
The applicant should seek to retain as much of the existing other neutral grassland, trees and hedgerow habitat as possible in order to minimise the requirement for any offsite provision. The applicant has submitted a proposed site layout plan in support of the pre-application enquiry. However, I advise that the final site layout is informed by the results of the BNG assessment.

In this case, as the site has already been degraded, the Statutory Biodiversity Metric must be based upon the pre-degradation baseline. The recording of the pre-degradation baseline must follow the Statutory Biodiversity Metric User Guide⁶. In particular, in the absence of adequate evidence to demonstrate the condition of the habitat prior to degradation, the highest condition score must be applied.

Biodiversity Net Gain

The following information should be submitted in order to address BNG:

- UKHAB habitat survey of the current pre-development habitat;
- Completed Statutory Defra Metric showing both pre-development habitats and proposed post construction habitats. This should be submitted with macros disabled, and all sheets unhidden;

² <https://www.gov.uk/government/collections/biodiversity-net-gain>

³ Planning Practice Guidance on BNG paragraph 019

⁴ [Biodiversity gain plan - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/biodiversity-gain-plan)

⁵ <https://eas.merseysidebiobank.org.uk/biodiversity-net-gain/>

⁶

https://assets.publishing.service.gov.uk/media/65c60e0514b83c000ca715f3/The_Statutory_Biodiversity_Metric_-_User_Guide_.pdf

- Accompanying habitat condition assessments must be submitted for the existing pre-development habitats and proposed condition of newly created or enhanced habitats
- GIS layers of pre-development baseline and post-development baseline;
- Evidence that the mitigation hierarchy and biodiversity gain hierarchy have been followed;
- A river condition assessment, if the proposed development falls within 10m of the River Alt;
- Landscape masterplan showing on site habitat provision;
- Details of any proposed offsite provision (e.g. use of habitat bank, provision of own offsite, use of national credits); and
- A draft habitat management and monitoring plan for any proposed habitats that are considered significant on-site gains (this should follow the Habitat management and monitoring plan template).

Sustainability

Waste Planning Policy

The proposal involves demolition and construction activities which are likely to generate significant volumes of waste. Policy WM8 of the Merseyside and Halton Waste Joint Local Plan (WLP), the National Planning Policy for Waste (paragraph 8) and Planning Practice Guidance (paragraph 49) apply. These policies require the minimisation of waste production and implementation of measures to achieve efficient use of resources, including designing out waste and minimisation of off-site disposal.

In accordance with policy WM8, evidence through a waste audit or a similar mechanism (e.g. a site waste management plan) demonstrating how this will be achieved must be submitted.

Policy WM9 (Sustainable Waste Management Design and Layout for New Development) of the Merseyside and Halton Joint Waste Local Plan (WLP) and the National Planning Policy for Waste (paragraph 8) apply. I advise that information relating to residential waste storage and collection is required by policy WM9 and should be included with any planning application.

Low Carbon Development

In January 2020 Knowsley Council declared a Climate Emergency to help tackle global warming at a local level. The Council has committed to embedding carbon reduction and climate action across the Council's plans, policies and services. As such the proposed development should consider the use of low carbon and/or renewable energy in line with Policy CS22 (Sustainable and Low Carbon Developments).

Land Contamination

The site has been subject to several phases of site investigation associated with previous planning application. However, any information would need to be reviewed/updated in light of the changes to the proposed end use. As a minimum a Phase 1 desk top study should

be submitted with any planning application (I note that the Pre-Application Letter Request from Lichfields dated 27th February 2025 includes this within its list of application submission documents).

FLOOD RISK AND DRAINAGE

Having considered the submitted information and reference to the publicly available databases, the LLFA has no objection in principle to the proposed development of the site as it is currently located in Flood Risk Zone 1 and low surface water flood risk. Despite the acceptance of the proposed development for the site, the proposed drainage strategy is not satisfactory and any future planning application for site should consider the following key points in developing the site drainage strategy:

- The proposed drainage strategy appears that have not allocated source control SuDS features at the property level as well as spaces for blue and green corridors. A Sustainable Drainage Design (SuDS) aims to minimise the impacts from a proposed development on water quantity and quality and maximise amenity and biodiversity. In designing an appropriate set of SuDS techniques for a development site, the LLFA will be expecting surface water runoff to be managed close to source (Source control / property level control), only conveying downstream what cannot be managed at source. Therefore, the drainage design shall be required to include source control/ property level control (e.g. permeable pavement and rain garden), green and open conveying systems / green corridors (e.g. green swale and ditch) and regional control (e.g. attenuation basin) features. The development of drainage design should therefore be planned as early as possible before the setting the property/other spaces layout in close collaboration with the landscape and biodiversity team. This becomes more important in this case where the surface water runoff is proposed to connect to a culverted watercourse, implying that there is no much flexibility on adopted discharge rate.

An explanation of existing drainage system/mechanism and flow paths on the site and that how the site is currently affected by off-site surface water runoff shall be required.

- Evidence and justification (e.g. infiltration tests and groundwater levels) shall be required to demonstrate that in choosing drainage features for post development, the surface water drainage discharge hierarchy has appropriately been followed.
- The maximum discharge rate from the development site would be expected to be restricted to QBAR greenfield runoff rate. Volume of attenuation storage required on site for the 1% (1in100) plus climate change storm.
- Where the proposals are connecting to an existing drainage system/watercourse, it is likely that the authorities responsible for maintaining those systems/watercourse will have their own design requirements. These requirements will need to be reviewed and agreed as part of any surface water drainage scheme.
- Detailed Drainage Scheme Plan showing the layout of the proposed drainage network, post development impermeable area, the location of the storage within the proposed development and how these relate to the submitted calculations, including any chamber, pipe numbers, direction of flow, invert and cover levels, gradients

diameters and dimensions. The methods of flow control must be detailed as should non-conventional elements such as pond and permeable paving.

- Sufficient information on the correct number of treatment stages in the surface water management train will also be required, for further information see the CIRIA SuDS Manual (C753).
- The mechanism for securing long-term maintenance will need to be considered and agreed between the applicant and the Local Planning Authority. This may involve discussions with those adopting and/or maintaining the proposed systems, which could include the Highway Authority, Planning Authority, Parish Councils, Water Companies and private management companies.
- Evidence that exceedance flows and runoff in excess of design criteria shall be considered - calculations and plans shall be provided to show where above ground flooding might occur and where this would pool and flow.
- An assessment of groundwater levels and its fluctuations shall be required.
- A Phase II geo-environmental assessment to identify the site physical characteristics, likely existing contamination and potential remediation strategy shall be required.
- A management and maintenance plan for the proposed drainage system, arrangements for adoption and means of access for inspection and maintenance purposes shall be considered.

LANDSCAPING AND TREES

A low hedge and tree lined boundary would be the most suitable as the boundary treatment to the River Alt corridor. (at the meeting a low hedge and railing was discussed as a suitable alternative which would in principle be acceptable to the LPA).

From the landscape perspective the opportunity to significantly enhance the tree coverage on the site should be maximised, prioritising climax species and to have as much of these trees set within the non-private streetscape (so as to protect the trees). With the existing hedgerows retained and enhanced and actively managed, new hedgerows to front the properties will also help maximise habitats for wildlife.

The existing Poplar trees adjacent to the River Alt could cause problems with future maintenance if the rear gardens to the individual dwellings are fenced at the rear boundary. Consideration would need to be given as to how these trees would be maintained. It is not likely to be such an issue with the section of the Alt adjacent to the car park/apartments where maintenance access could more easily be provided.

Proposed units appear to sit within RPAs of retained poplars on site, and off-site neighbouring trees. In order to determine the precise impact an arboriculture impact assessment would be required with any planning application.

ENVIRONMENTAL CONSIDERATIONS

Prior to the approval of the proposed development the following information would be required to be submitted upfront:

Control of Noise – Noise assessment is required to ensure a scheme for the protection of the dwellings from noise from the use of the pavilion and the padel courts, is to be submitted prior to approval.

Air Quality Assessment – An air quality assessment may be required as the proposed development would exceed the stage 1 criteria (more than 10 residential units) and stage 2 criteria (more than 500 AADT for light duty vehicles) as stated in the document, Land-Use Planning & Development Control: Planning for Air Quality. [air-quality-planning-guidance.pdf](#). If you consider an AQ assessment is not required, then justification must be provided.

If the development was to go ahead, we would look to place the following conditions on the development:

Construction Management Plan Condition – to protect the amenity of the nearby businesses and residents during the demolition and construction phases.

Contaminated Land – See comments from MEAS.

Fixed Plant Noise Condition – to protect the future residents from noise e.g. substation, air source heat pumps, extraction systems.

Lighting Assessment – to protect the future residents from glare or light pollution.

SOCIAL VALUE STRATEGY

The Council has adopted a Supplementary Planning Document 'Adding Social Value to Development' with the objective of maximising the employment and training of local people. The SPD requires applicants for major developments such as this to submit a 'Social Value Strategy' to the Council setting out how they propose to provide employment and training benefits for residents in the local area during the construction of the new development.

Fusion 21 who are the Council's partner in helping to deliver Social Value have requested a sum of £11,600 towards the production of and monitoring of the Social Value Strategy and this is to be secured through the applicant entering into a S106 agreement, should members be minded to grant planning permission.

Fusion 21 can assist in the preparation and submission of a Social Value Strategy. Please contact Sarah Maguire using the following details:-

 **Sarah Maguire**
Head of Social Value

T: 0845 308 2321
DL: 0151 481 3008

M: 07713477472

E. sarah.maguire@fusion21.co.uk

AFFORDABLE HOUSING

- Policy CS15 of the Knowsley Core Strategy would require a minimum of 10% of homes to be delivered as affordable housing with the site being in the existing urban area, which this site falls within. Affordable housing tenures should be in line with the Policy CS15 with 75% of rent and 25% as intermediate housing. As per the next paragraph Strategic Housing understand that the applicant has been in discussions with Registered Providers about the site and in particular the over 55s accommodation and if this progresses the site would deliver affordable housing above the requirement of policy CS15
- Strategic Housing are aware the applicant has been in discussions with Registered Providers about the site, including the provision of the 71 units for over 55s accommodation. Strategic Housing are generally supportive of the inclusion of over 55s accommodation within the development as this would meet the needs of Knowsley's ageing population. The over 55s offer would also contribute to meeting the requirement for an additional 1022 specialist older persons units in the borough by 2036 identified in the Knowsley Housing Needs Assessment 2021. Strategic Housing understand the proposed over 55s housing scheme would be a general retirement living offer, not an extra care scheme. Strategic Housing would be supportive of a general retirement living offer.
- Strategic Housing are working closely with our colleagues in Commissioning, and there could also be other opportunities to deliver supported housing on the site if the over 55s accommodation is not progressed.
- The proposal which include houses, apartments and bungalows - the accommodation schedule is generally satisfactory. Depending on the scheme coming forward- whether these properties are for market sale or for affordable housing and their tenure- will influence the housing need they meet.
- All housing across the development should be built to support reducing carbon emissions and include the use of low carbon technologies to support this.

LAYOUT/DESIGN

During the course of the pre app several comments have been made on the site layout and these appear to have been addressed in a revised layout Rev B submitted 13.05.2025.

I can provide the following comments on Rev B.

- The footpath link in between the apartments to Huyton Lane should be removed as it does not appear to serve any particular purpose and would result in the removal in a section of hedge.
- Plot 74 and 89 should be dual aspect as these are prominent corner plots.

- Further consideration needs to be given to the type of materials for the parking court serving plots 75-89 as this would look very harsh if all bitmac. The use of alternative materials should be explored.
- The pedestrian link at the rear of the site to provide access to 50 Adswood Road has been drawn incorrectly as confirmed in the email from Andy Garnett , dated 21.05.2025.(see additional comments from highways on this point)

A drawing entitled Huyton Lane – Draft typical elevations has been submitted for comment, although in the meeting on 2nd May it was confirmed that these will are not the final elevations and are for indicative purposes only.

For completeness I will re-iterate the initial comments on these elevations made at the meeting :-

- The elevations should as stated in the draft heritage statement take cues from the pavilion and the arts and crafts revival style present in St Micheal's conservation area.
- The elevations would benefit from a more bespoke design with additional detail e.g. stone cills, decorative brickwork (e.g arched brickwork pattern) above windows.
- Use of bay/projecting windows should be considered to add detail/ depth to the elevations.
- Eaves detailing should be considered .
- Buff brick is not prominent in the area and would be unacceptable.. Red / Brown brick would be preferred.
- Rendered properties should be sited near to pavilion with brick properties located adjacent to Huyton Lane

VALIDATION REQUIREMENTS

Planning Law requires the submission of certain information with a planning application dependent upon its type, scale and location. More detail including the Council's validation checklist can be found [here](#). Additionally, in this case the following documents would be required should you decide to submit a planning application.

1. EXISTING AND PROPOSED PLANS AND ELEVATIONS.
2. AFFORDABLE HOUSING STATEMENT.
3. AIR QUALITY ASSESSMENT
4. ECOLOGICAL ASSESSMENT/BNG (SEE DETAILED COMMENTS).
5. ENERGY AND SUSTAINABILITY STATEMENT.
6. FLOOD RISK ASSESSMENT/SUSTAINABLE URBAN DRAINAGE/SURFACE WATER MANAGEMENT.(SEE VALIDATION CHECKLIST/COMMENTS ABOVE)
7. FLUES AND VENTILATION EXTRACTION DETAILS. (IF APPLICABLE – SEE VALIDATION CHECKLIST)
8. S106 HEADS OF TERMS PROPOSALS
9. HEALTH IMPACT ASSESSMENT (please use HIA Template [Planning Application Local Validation Requirements | Knowsley Council](#))
10. HERITAGE ASSESSMENT.

11. LEVELS SURVEY INFORMATION AND CROSS SECTIONS (INC LAYOUT PLAN SHOWING EXISTING & PROPOSED SPOT LEVELS)
12. MATERIAL DETAILS FOR LISTED BUILDING.
13. SCHEDULE OF WORKS FOR LISTED BUILDING INCLUDING EXISTING AND PROPOSED ELEVATIONS/FLOOR PLANS/ SECTIONS AS APPLICABLE.
14. NOISE IMPACT ASSESSMENT
15. STRUCTURAL SURVEY FOR LISTED BUILDING
16. LAND CONTAMINATION PHASE 1 DESK STUDY.
17. EXTERNAL LIGHTING/FLOODLIGHTING ASSESSMENT
18. PARKING/ ACCESS/SERVICING DETAILS
19. PHOTOGRAPHS /PHOTOMONTAGES (APPLICABLE TO LISTED BUILDING)
20. PLANNING STATEMENT & STATEMENT OF COMMUNITY INVOLVEMENT.
21. SCHEME FOR SITE TREATMENT AND MANAGEMENT PLAN.
22. TRANSPORT ASSESSMENT/TRAVEL PLAN
23. TREE SURVEY, METHOD STATEMENT/ARBORICULTURAL IMACT ASSESSMENT.
24. SOCIAL VALUE STRATEGY (CONTACT FUSION 21 – SEE DETAILS ABOVE)

LINKS TO THE LOCAL PLAN CORE STRATEGY AND SPD'S

[Adopted documents | Knowsley Council](#)

If you require any further information please contact me on 0151 443 2223 or e mail mark.quinn@knowsley.gov.uk

Yours faithfully

Mark Quinn

Mark Quinn
Principal Planner



Knowsley Metropolitan Borough Council
PO Box 21 Archway Road Huyton Knowsley Merseyside L36 9YU
www.knowsley.gov.uk



Appendix E: Sewer Map

IGE Consulting

Office 11, Bartle House
Oxford Court,
Manchester,
M2 3WQ

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: 4334
Our Ref: UUPS-ORD-626709
Date: 24/01/2025

Dear Sirs**Location: Huyton Cricket Club 4334 Huyton Lane, Liverpool, L36 7XD**

I acknowledge with thanks your request dated 17/01/2025 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

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LEGEND

Abandoned	Foul	Surface Water	Combined	Public Sewer
				Private Sewer
				Section 104
				Rising Main
				Sludge Main
				Overflow
				Water Course
				Highway Drain

All point assets follow the standard colour convention:
brown - foul
blue - surface water
purple - overflow

Manhole	Side Entry Manhole
Head of System	Outfall
Extending Survey	Screen Chamber
Roading Eye	Inspection Chamber
Discharge	Bifurcation Chamber
Inject	Lamp Hole
Check Point	T Junction / Saddle
Vortex	Catchpit
Penstock	Valve Chamber
Washout Chamber	Valve Column
Valve	Vortex Chamber
Air Valve	Penstock Chamber
Non Return Valve	Network Storage Tank
Soakaway	Sewer Overflow
Gully	Ww Treatment Works
Cascade	Ww Pumping Station
Flow Meter	Septic Tank
Hatch Box	Control Kiosk
Oil Interceptor	DNM Network Monitoring Point
Summit	Change of Characteristic
Drift Shaft	
Orifice Plate	

MANHOLE FUNCTION	
FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE	
CI	Circular
EG	EG
OV	Oval
RE	Rectangular
SQ	Square

SEWER MATERIAL	
AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitritified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

Huyton Cricket Club 4334 Huyton Lane,
Liverpool,
L36 7XD

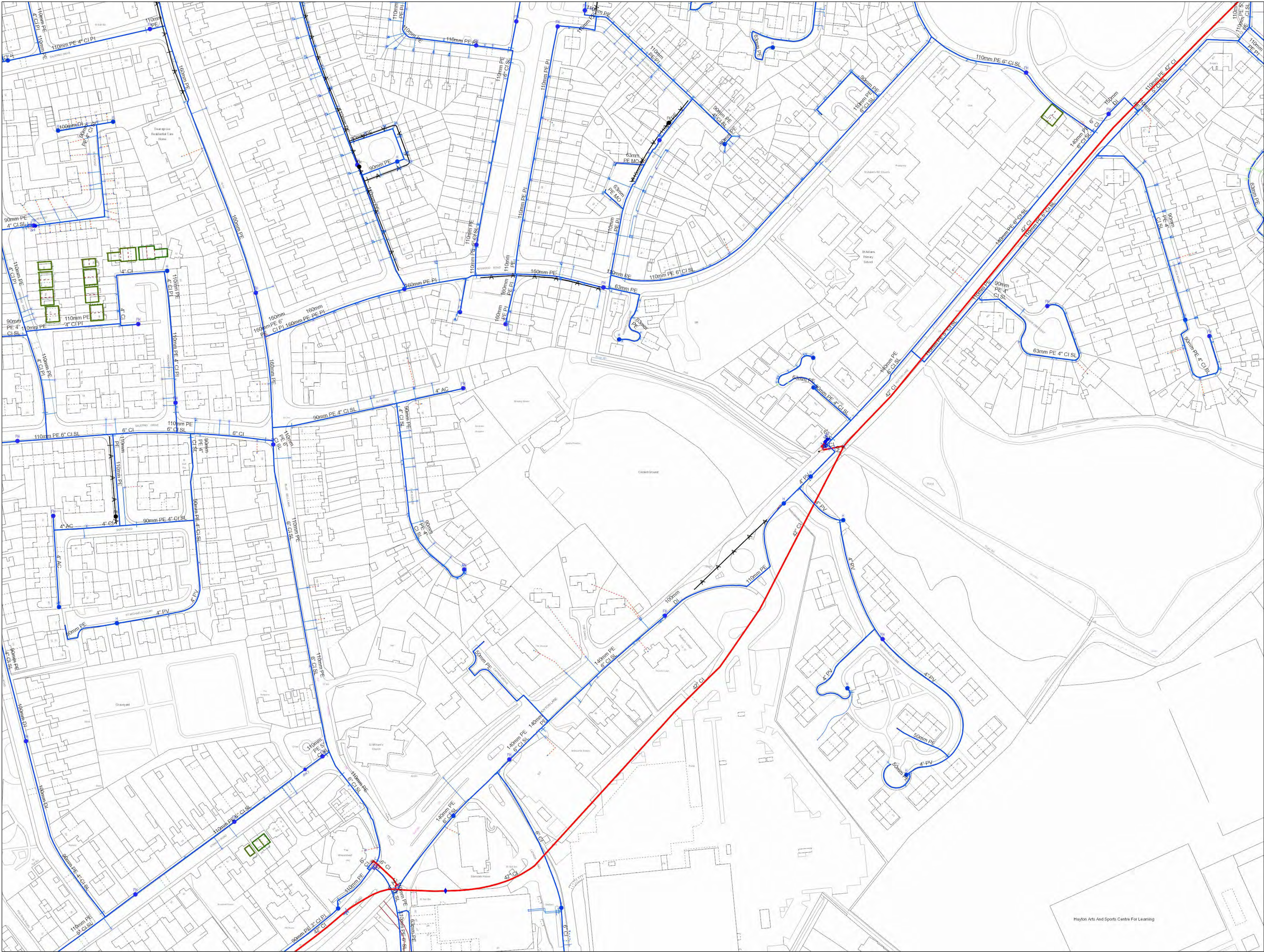
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Sheet: 1 of 1

Printed by: Property Searches

**SEWER
RECORDS**

 **United
Utilities**
Water for the North West



LEGEND		
Proposed	Abandoned	Live

Appendix F: Site Layout



Housetype	m ²	Ft ²	Total No.	Total m ²	Total Ft ²
Type B - 2B3P Bungalow (NDSS)	61	657	4	244	2626
Type C - 2B3P House Type (NDSS & M4(2))	74	797	9	666	7169
Type CC - 2B3P House Type (NDSS & M4(2))	74	797	1	74	797
Type F - 3B4P House Type (NDSS)	86	926	13	1118	12034
Type G - 3b4P U/P House Type (NDSS)	90	969	1	90	969
Type I - 3b5P Corner Turner HT (NDSS & M4(2))	106	1141	2	212	2282
Type J - 4b6P House Type (NDSS & M4(2))	114	1227	6	684	7363
Type L1 - 1B2P Maisonette GF M4(3)	65	700	6	390	4198
Type L2 - 2B3P Maisonette FF (NDSS)	72	775	6	432	4650
Type M - 2b3P Apartments (NDSS)	61	657	12	732	7879
Type N1 - 1b2p Apartment (NDSS)	50	538	6	300	3229
Type N2 - 2b3p Apartment (NDSS)	61	657	6	366	3940
Type N3 - 2b3p Apartment (NDSS)	50	538	6	300	3229
Type N4 - 2b3p Apartment (NDSS)	61	657	3	183	1970
TOTAL	81		5791	62334	

	Site Area		Density		Footage			
	Ha	Ac	Un/Ha	Un/Ac	m ² /Ha	m ² /Ac	Ft ² /Ha	Ft ² /Ac
Gross	2.21	5.46	36.65	14.83	2620.36	1060.42	28205.31	11414.30
Nett	1.80	4.45	45.00	18.21	3217.22	1301.97	3217.22	14014.23

HOUSE TYPE KEY:

- TYPE B 2B3P BUNGALOW 61**
- TYPE C 2B3P HOUSE TYPE 74**
- TYPE F 3B4P HOUSE TYPE 86**
- TYPE G 3B4P FLYOVER HOUSE TYPE 90**
- TYPE I 3B6P CORNER HOUSE TYPE 106**
- TYPE J 4B6P HOUSE TYPE 114**
- TYPE L1 1B2P 65 (GF)**
TYPE L2 2B3P 72 (FF)
- TYPE M1 2B3P 61 (GF)**
TYPE M2 2B3P 61 (FF)
- TYPE N1 1B2P 50**
TYPE N2 2B3P 61
TYPE N3 1B2P 50
TYPE N4 2B3P 61

INDICATES CIRCULATION SPACE

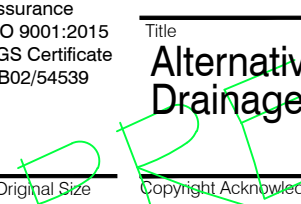
0 5 10 15 20 25
SCALE BAR

D	JUNE 24	SHW	PLOTS 40-45 MOVED OUT OF FLOOD RISK AREA
C	MAY 25	SHW	PLANNERS COMMENTS ENDORSED
R	MAY 25	SHW	REAR GARDEN AREAS UPDATED FOR PLOTS 01-45
A	MAY 25	SHW	PLOTS 64-65 & 66 UPDATED
REV	DATE	DRAWN	DESCRIPTION
TITLE: PROPOSED SITE LAYOUT			
Breck Homes 20 Sceptre Court Bamber Bridge Preston PR5 5AW Tel: 01535 587 000 Email: hello@breck.co.uk www.breck.co.uk/homes			
PROJECT: HUYTON LANE, KNOWSLEY			
DATE:	SCALE:	JOB REF:	DRAWING NUMBER:
MARCH 25	1:500 @ A1	-	Huyton Lane / Proposed Site Layout - Option A
REV:	D		

Appendix G: Ironside Farrar Drainage Strategy and Calculations

Current Drainage Drainage Hierarchy Considerations:

1. Site investigation / infiltration testing required to confirm infiltration will not be suitable.
2. River Alt on the northern boundary of development is the appropriate location for discharge of surface water (IF site investigation confirms infiltration is not suitable).

A	03/07/25	KF	Revised to suit clients comments	
Rev	Date	Initials	Details	
Drawing Revisions				
North Point 		Project Huyton Cricket Club, Huyton		
Quality Ass. UKAS 005 Quality Assurance ISO 9001:2015 SGS Certificate GB02/54539		Client Breck Homes		
Original Site 		Title Alternative Preliminary Drainage Layout		
Copyright Acknowledgement Ordnance Survey © © Crown Copyright. All rights reserved. Licence No. AL100017966.		Drawn KF	Checked By RDE	Date 25/07/25
A1		30692/103		Revision A

Simulation Settings

Rainfall Methodology	FEH-22	Drain Down Time (mins)	240	30 year (l/s)	23.8
Rainfall Events	Singular	Additional Storage (m³/ha)	20.0	100 year (l/s)	29.1
Summer CV	0.750	Starting Level (m)		Check Discharge Volume	✓
Winter CV	0.840	Check Discharge Rate(s)	✓	100 year 360 minute (m³)	458
Analysis Speed	Detailed	1 year (l/s)	12.2		
Skip Steady State	✓	2 year (l/s)	13.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	40	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.70
Greenfield Method	FEH	Growth Factor 100 year	2.08
Positively Drained Area (ha)	1.773	Betterment (%)	0
SAAR (mm)	871	QMed	13.0
Host	1	QBar	14.0
BFIHost	0.351	Q 1 year (l/s)	12.2
Region	10	Q 2 year (l/s)	13.0
QBar/QMed conversion factor	1.075	Q 30 year (l/s)	23.8
Growth Factor 1 year	0.87	Q 100 year (l/s)	29.1
Growth Factor 2 year	0.93		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	1.773	Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.650
CV	0.750	Preferred Cover Depth (m)	1.350
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	100.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
10	0.048	4.00	33.600	2400	344359.134	391279.958	3.538
11	0.061	4.00	33.500	2400	344352.057	391312.104	3.403
9	0.000		33.200	2400	344370.825	391289.735	3.176
8	0.036	4.00	32.900	2400	344376.859	391294.795	2.896
7	0.058	4.00	32.700	2400	344386.963	391309.360	2.740
6	0.043	4.00	32.450	2400	344405.174	391323.825	2.548
16	0.095	4.00	32.600	2400	344488.864	391279.044	2.467
15	0.447	4.00	33.200	2400	344474.023	391295.236	3.122
14	0.045	4.00	32.800	2400	344451.884	391319.022	2.803
13	0.023	4.00	32.700	2400	344443.328	391323.487	2.727
12	0.117	4.00	32.550	2400	344419.426	391326.135	2.637
5	0.000	4.00	32.400	2400	344409.894	391326.075	2.511
4			31.500	1500	344402.675	391360.969	1.766
2			31.300	1500	344418.348	391379.587	1.672
1			31.000		344417.241	391385.985	1.400

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	10	9	15.240	0.600	30.062	30.024	0.038	400.0	1200	4.14	55.2
2.000	11	9	29.199	0.600	30.097	30.024	0.073	400.0	1200	4.26	55.2
1.001	9	8	7.875	0.600	30.024	30.004	0.020	400.0	1200	4.33	55.2
1.002	8	7	17.727	0.600	30.004	29.960	0.044	400.0	1200	4.49	55.2
1.003	7	6	23.257	0.600	29.960	29.902	0.058	400.0	1200	4.70	55.2
1.004	6	5	5.229	0.600	29.902	29.889	0.013	400.0	1200	4.74	55.2
3.000	16	15	21.964	0.600	30.133	30.078	0.055	400.0	1200	4.20	55.2
3.001	15	14	32.495	0.600	30.078	29.997	0.081	400.0	1200	4.49	55.2
3.002	14	13	9.651	0.600	29.997	29.973	0.024	400.0	1200	4.57	55.2
3.003	13	12	24.048	0.600	29.973	29.913	0.060	400.0	1200	4.79	55.2
3.004	12	5	9.532	0.600	29.913	29.889	0.024	400.0	1200	4.87	55.2
1.005	5	4	35.633	0.600	29.889	29.734	0.155	230.0	300	5.45	0.0
1.006	4	2	24.337	0.600	29.734	29.628	0.106	230.0	300	5.84	0.0
1.008	2	1	6.493	0.600	29.628	29.600	0.028	230.0	300	5.95	0.0

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)
1.000	15.240	400.0	1200	Circular_Default Sewer Type	33.600	30.062	2.338	33.200	30.024	1.976
2.000	29.199	400.0	1200	Circular_Default Sewer Type	33.500	30.097	2.203	33.200	30.024	1.976
1.001	7.875	400.0	1200	Circular_Default Sewer Type	33.200	30.024	1.976	32.900	30.004	1.696
1.002	17.727	400.0	1200	Circular_Default Sewer Type	32.900	30.004	1.696	32.700	29.960	1.540
1.003	23.257	400.0	1200	Circular_Default Sewer Type	32.700	29.960	1.540	32.450	29.902	1.348
1.004	5.229	400.0	1200	Circular_Default Sewer Type	32.450	29.902	1.348	32.400	29.889	1.311
3.000	21.964	400.0	1200	Circular_Default Sewer Type	32.600	30.133	1.267	33.200	30.078	1.922
3.001	32.495	400.0	1200	Circular_Default Sewer Type	33.200	30.078	1.922	32.800	29.997	1.603
3.002	9.651	400.0	1200	Circular_Default Sewer Type	32.800	29.997	1.603	32.700	29.973	1.527
3.003	24.048	400.0	1200	Circular_Default Sewer Type	32.700	29.973	1.527	32.550	29.913	1.437
3.004	9.532	400.0	1200	Circular_Default Sewer Type	32.550	29.913	1.437	32.400	29.889	1.311
1.005	35.633	230.0	300	Circular_Default Sewer Type	32.400	29.889	2.211	31.500	29.734	1.466
1.006	24.337	230.0	300	Circular_Default Sewer Type	31.500	29.734	1.466	31.300	29.628	1.372
1.008	6.493	230.0	300	Circular_Default Sewer Type	31.300	29.628	1.372	31.000	29.600	1.100

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	10	2400	Manhole	Adoptable	9	2400	Manhole	Adoptable
2.000	11	2400	Manhole	Adoptable	9	2400	Manhole	Adoptable
1.001	9	2400	Manhole	Adoptable	8	2400	Manhole	Adoptable
1.002	8	2400	Manhole	Adoptable	7	2400	Manhole	Adoptable
1.003	7	2400	Manhole	Adoptable	6	2400	Manhole	Adoptable
1.004	6	2400	Manhole	Adoptable	5	2400	Manhole	Adoptable
3.000	16	2400	Manhole	Adoptable	15	2400	Manhole	Adoptable
3.001	15	2400	Manhole	Adoptable	14	2400	Manhole	Adoptable
3.002	14	2400	Manhole	Adoptable	13	2400	Manhole	Adoptable
3.003	13	2400	Manhole	Adoptable	12	2400	Manhole	Adoptable
3.004	12	2400	Manhole	Adoptable	5	2400	Manhole	Adoptable
1.005	5	2400	Manhole	Adoptable	4	1500	Manhole	Adoptable
1.006	4	1500	Manhole	Adoptable	2	1500	Manhole	Adoptable
1.008	2	1500	Manhole	Adoptable	1		Junction	

Simulation Settings

Rainfall Methodology	FEH-22	Drain Down Time (mins)	240	30 year (l/s)	23.8
Rainfall Events	Singular	Additional Storage (m³/ha)	20.0	100 year (l/s)	29.1
Summer CV	0.750	Starting Level (m)		Check Discharge Volume	✓
Winter CV	0.840	Check Discharge Rate(s)	✓	100 year 360 minute (m³)	458
Analysis Speed	Detailed	1 year (l/s)	12.2		
Skip Steady State	✓	2 year (l/s)	13.0		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	40	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.70
Greenfield Method	FEH	Growth Factor 100 year	2.08
Positively Drained Area (ha)	1.773	Betterment (%)	0
SAAR (mm)	871	QMed	13.0
Host	1	QBar	14.0
BFIHost	0.351	Q 1 year (l/s)	12.2
Region	10	Q 2 year (l/s)	13.0
QBar/QMed conversion factor	1.075	Q 30 year (l/s)	23.8
Growth Factor 1 year	0.87	Q 100 year (l/s)	29.1
Growth Factor 2 year	0.93		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	1.773	Storm Duration (mins)	360
Soil Index	4	Betterment (%)	0
SPR	0.49	PR	0.512
CWI	124.678	Runoff Volume (m ³)	458

Node 5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	29.889	Product Number	CTL-SHE-0155-1400-2000-1400
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	14.0	Min Node Diameter (mm)	1800

Node 11 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.500	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	48	Depth (m)	0.400
Safety Factor	2.0	Width (m)	13.000	Inf Depth (m)	
Porosity	0.95	Length (m)	12.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.37%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	10	88	30.257	0.195	1.7	0.9354	0.0000	OK
120 minute winter	11	86	30.257	0.160	2.2	0.7829	0.0000	OK
120 minute winter	9	88	30.257	0.233	3.4	1.0551	0.0000	OK
120 minute winter	8	88	30.257	0.253	4.3	1.2086	0.0000	OK
120 minute winter	7	86	30.257	0.297	5.6	1.4706	0.0000	OK
120 minute winter	6	86	30.257	0.355	5.8	1.7270	0.0000	OK
120 minute winter	16	84	30.257	0.124	3.4	0.6587	0.0000	OK
120 minute winter	15	86	30.257	0.179	18.4	1.3221	0.0000	OK
120 minute winter	14	86	30.257	0.260	18.4	1.2615	0.0000	OK
120 minute winter	13	86	30.257	0.284	17.2	1.3345	0.0000	OK
120 minute winter	12	86	30.257	0.344	19.1	1.8631	0.0000	OK
120 minute winter	5	86	30.257	0.368	16.8	1.6661	0.0000	SURCHARGED
120 minute winter	4	88	29.821	0.087	12.8	0.1542	0.0000	OK
120 minute winter	2	88	29.716	0.088	12.8	0.1554	0.0000	OK
120 minute winter	1	88	29.684	0.084	12.8	0.0000	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)
120 minute winter	10	1.000	9	1.0	0.168	0.000	2.0753	
120 minute winter	11	2.000	9	1.6	0.190	0.001	3.5421	
120 minute winter	9	1.001	8	2.8	0.212	0.001	1.2855	
120 minute winter	8	1.002	7	3.6	0.214	0.002	3.4551	
120 minute winter	7	1.003	6	4.9	0.152	0.002	5.7667	
120 minute winter	6	1.004	5	5.9	0.129	0.003	1.4952	
120 minute winter	16	3.000	15	3.2	0.170	0.001	1.8240	
120 minute winter	15	3.001	14	16.9	0.407	0.008	4.6230	
120 minute winter	14	3.002	13	16.5	0.363	0.008	1.8511	
120 minute winter	13	3.003	12	15.3	0.350	0.007	5.6594	
120 minute winter	12	3.004	5	16.8	0.253	0.008	2.6684	
120 minute winter	5	1.005	4	12.8	0.760	0.176	0.6008	
120 minute winter	4	1.006	2	12.8	0.749	0.176	0.4160	
120 minute winter	2	1.008	1	12.8	0.768	0.176	0.1084	99.1

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.37%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	10	90	30.339	0.277	2.2	1.3259	0.0000	OK
120 minute winter	11	88	30.339	0.242	2.8	1.1830	0.0000	OK
120 minute winter	9	90	30.339	0.315	4.0	1.4234	0.0000	OK
120 minute winter	8	90	30.339	0.335	4.6	1.5970	0.0000	OK
120 minute winter	7	90	30.339	0.379	7.0	1.8728	0.0000	OK
120 minute winter	6	90	30.339	0.437	7.0	2.1232	0.0000	OK
120 minute winter	16	90	30.338	0.205	4.4	1.0867	0.0000	OK
120 minute winter	15	90	30.338	0.260	22.9	1.9227	0.0000	OK
120 minute winter	14	88	30.339	0.342	21.3	1.6563	0.0000	OK
120 minute winter	13	88	30.339	0.366	19.5	1.7170	0.0000	OK
120 minute winter	12	90	30.339	0.426	22.2	2.3040	0.0000	OK
120 minute winter	5	90	30.339	0.450	19.1	2.0349	0.0000	SURCHARGED
120 minute winter	4	90	29.824	0.090	13.4	0.1583	0.0000	OK
120 minute winter	2	92	29.718	0.090	13.4	0.1594	0.0000	OK
120 minute winter	1	92	29.686	0.086	13.4	0.0000	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)
120 minute winter	10	1.000	9	1.1	0.169	0.001	3.2849	
120 minute winter	11	2.000	9	1.8	0.199	0.001	5.8011	
120 minute winter	9	1.001	8	3.3	0.220	0.002	1.9356	
120 minute winter	8	1.002	7	4.2	0.233	0.002	4.9720	
120 minute winter	7	1.003	6	5.6	0.173	0.003	7.8505	
120 minute winter	6	1.004	5	6.5	0.147	0.003	1.9769	
120 minute winter	16	3.000	15	3.4	0.173	0.002	3.3770	
120 minute winter	15	3.001	14	19.3	0.388	0.009	7.2120	
120 minute winter	14	3.002	13	18.5	0.388	0.009	2.6762	
120 minute winter	13	3.003	12	16.9	0.360	0.008	7.7944	
120 minute winter	12	3.004	5	19.1	0.280	0.009	3.5435	
120 minute winter	5	1.005	4	13.4	0.769	0.184	0.6230	
120 minute winter	4	1.006	2	13.4	0.759	0.184	0.4312	
120 minute winter	2	1.008	1	13.4	0.778	0.184	0.1122	128.5

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.37%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	10	118	31.165	1.103	6.3	5.2903	0.0000	OK
120 minute winter	11	118	31.166	1.069	8.4	5.2165	0.0000	OK
120 minute winter	9	118	31.165	1.141	14.5	5.1637	0.0000	OK
120 minute winter	8	118	31.165	1.161	21.3	5.5436	0.0000	OK
120 minute winter	7	118	31.166	1.206	28.0	5.9639	0.0000	SURCHARGED
120 minute winter	6	118	31.166	1.264	28.5	6.1424	0.0000	SURCHARGED
120 minute winter	16	118	31.166	1.033	12.5	5.4663	0.0000	OK
120 minute winter	15	118	31.165	1.087	64.6	8.0327	0.0000	OK
120 minute winter	14	118	31.165	1.168	55.0	5.6607	0.0000	OK
120 minute winter	13	118	31.165	1.192	45.7	5.5959	0.0000	OK
120 minute winter	12	118	31.166	1.253	51.2	6.7776	0.0000	SURCHARGED
120 minute winter	5	118	31.166	1.277	41.8	5.7753	0.0000	SURCHARGED
120 minute winter	4	314	29.826	0.092	14.0	0.1617	0.0000	OK
30 minute summer	2	120	29.720	0.092	14.0	0.1628	0.0000	OK
30 minute summer	1	120	29.688	0.088	14.0	0.0000	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)
120 minute winter	10	1.000	9	1.4	0.231	0.001	16.6977	
120 minute winter	11	2.000	9	1.7	0.261	0.001	31.6351	
120 minute winter	9	1.001	8	-13.7	0.289	-0.007	8.7538	
120 minute winter	8	1.002	7	-16.6	0.248	-0.008	19.8773	
120 minute winter	7	1.003	6	-20.4	0.191	-0.010	26.1979	
120 minute winter	6	1.004	5	-22.9	0.182	-0.011	5.8916	
120 minute winter	16	3.000	15	5.9	0.164	0.003	23.1236	
120 minute winter	15	3.001	14	49.1	0.496	0.023	35.6229	
120 minute winter	14	3.002	13	42.7	0.507	0.020	10.8290	
120 minute winter	13	3.003	12	36.0	0.452	0.017	27.0797	
120 minute winter	12	3.004	5	41.8	0.338	0.020	10.7398	
120 minute winter	5	1.005	4	14.0	0.777	0.192	0.6416	
120 minute winter	4	1.006	2	14.0	0.767	0.192	0.4441	
30 minute summer	2	1.008	1	14.0	0.786	0.192	0.1155	208.6

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.37%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	10	176	31.863	1.801	5.9	8.6371	0.0000	SURCHARGED
180 minute winter	11	176	31.864	1.767	41.1	61.7358	0.0000	SURCHARGED
180 minute winter	9	176	31.863	1.839	37.6	8.3203	0.0000	SURCHARGED
180 minute winter	8	172	31.863	1.859	34.2	8.8723	0.0000	SURCHARGED
180 minute winter	7	172	31.863	1.903	33.0	9.4159	0.0000	SURCHARGED
180 minute winter	6	172	31.864	1.962	30.2	9.5367	0.0000	SURCHARGED
180 minute winter	16	172	31.865	1.732	11.7	9.1717	0.0000	SURCHARGED
180 minute winter	15	172	31.865	1.787	60.0	13.2028	0.0000	SURCHARGED
180 minute winter	14	172	31.865	1.868	50.8	9.0494	0.0000	SURCHARGED
180 minute winter	13	172	31.865	1.892	42.5	8.8774	0.0000	SURCHARGED
180 minute winter	12	172	31.864	1.951	47.9	10.5578	0.0000	SURCHARGED
180 minute winter	5	172	31.864	1.975	41.2	8.9348	0.0000	SURCHARGED
600 minute summer	4	720	29.826	0.092	14.0	0.1617	0.0000	OK
720 minute summer	2	780	29.720	0.092	14.0	0.1628	0.0000	OK
2160 minute summer	1	1320	29.688	0.088	14.0	0.0000	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)
180 minute winter	10	1.000	9	3.1	0.186	0.001	17.1710	
180 minute winter	11	2.000	9	-37.8	0.234	-0.018	32.8988	
180 minute winter	9	1.001	8	-34.4	0.280	-0.016	8.8728	
180 minute winter	8	1.002	7	-32.6	0.257	-0.015	19.9732	
180 minute winter	7	1.003	6	-30.4	0.192	-0.014	26.2039	
180 minute winter	6	1.004	5	-28.3	0.171	-0.013	5.8916	
180 minute winter	16	3.000	15	6.6	0.154	0.003	24.7470	
180 minute winter	15	3.001	14	45.3	0.477	0.021	36.6124	
180 minute winter	14	3.002	13	39.7	0.487	0.019	10.8739	
180 minute winter	13	3.003	12	35.3	0.414	0.017	27.0951	
180 minute winter	12	3.004	5	41.2	0.290	0.020	10.7398	
180 minute winter	5	1.005	4	14.0	0.777	0.192	0.6414	
600 minute summer	4	1.006	2	14.0	0.767	0.192	0.4441	
720 minute summer	2	1.008	1	14.0	0.786	0.192	0.1155	621.5

Appendix H: Simple Pollution Index Approach

SIMPLE INDEX APPROACH: TOOL



HRW shall not be liable for any direct or indirect damage claim, loss, cost, expense or liability however arising out of the use or impossibility to use the tool, even when HRW has been informed of the possibility of the same. The user hereby releases HRW from and against any damage claim, loss, expense or liability resulting from any action taken against HRW that is related in any way to the use of the tool or any reliance made in respect of the output of such use by any person whatsoever. HRW does not guarantee that the tool's functions meet the requirements of any person, nor that the tool is free from errors.

- The steps set out in the tool should be applied for each inflow or 'runoff area' (ie each impermeable surface area separately discharging to a SuDS component).
- The supporting 'Design Conditions' stated by the tool must be fully considered and implemented in all cases.
- The process that is automated in this tool is described in the SuDS Manual, Chapter 26 (Section 26.7)
- Relevant design examples are included in the SuDS Manual Appendix C.
- Each of the steps below are part of the process set out in the flowchart on Sheet 3.
- Sheet 4 summarises the selections made below and indicates the acceptability of the proposed SuDS components.
- Interception should be delivered for all upstream impermeable areas as part of the strategy for water quantity and quality control for the site. This is required in order to deliver both of the water quality criteria set out in Chapter 4 of the SuDS Manual

DROP DOWN LIST RELEVANT INPUTS NEED TO BE SELECTED FROM THESE LISTS, FOR EACH STEP

USER ENTRY USER ENTRY CELLS ARE ONLY REQUIRED WHERE INDICATED BY THE TOOL

STEP 1: Determine the Pollution Hazard Index for the runoff area discharging to the proposed SuDS scheme

This step requires the user to select the appropriate land use type for the area from which the runoff is occurring

If the land use varies across the 'runoff area', either:

- use the land use type with the highest Pollution Hazard Index
- apply the approach for each of the land use types to determine whether the proposed SuDS design is sufficient for all. If it is not, consider collecting more hazardous runoff separately and providing additional treatment

If the generic land use types suggested are not applicable, select 'Other' and enter a description of the land use of the runoff area and agreed user defined indices in the row below the drop down lists.

Runoff Area Land Use Description		Pollution Hazard Indices			DESIGN CONDITIONS	
Select land use type from the drop down list (or 'Other' if none applicable)		Hazard Level	Total Suspended	Metals	Hydrocarbons	1 2
Individual driveway		Low	0.5	0.4	0.4	
If the generic land use types in the drop down list above are not applicable, select 'Other' and enter a description of the land use of the runoff area and agreed user defined indices in this row						
Landuse Pollution Hazard Index		Low	0.5	0.4	0.4	

STEP 2A: Determine the Pollution Mitigation Index for the proposed SuDS components

This step requires the user to select the proposed SuDS components that will be used to treat runoff - before it is discharged to a receiving surface waterbody or downstream infiltration component

If the runoff is discharged directly to an infiltration component, without upstream treatment, select 'None' for each of the 3 SuDS components and move to Step 2B

This step should be applied to evaluate the water quality protection provided by proposed SuDS components for discharges to receiving surface waters or downstream infiltration components (note: in England and Wales this will include components that allow any amount of infiltration, however small, even where infiltration is not specifically accounted for in the design)

If you have fewer than 3 components, select 'None' for the components that are not required

If the proposed component is bespoke and/or a proprietary treatment product and not generally described by the suggested components, then 'Proprietary treatment system' or 'User defined index' should be selected and a description of the component and agreed user defined indices should be entered in the row below the drop down lists

SuDS Component Description		Pollution Mitigation Indices			DESIGN CONDITIONS		
Select SuDS Component 1 (i.e. the upstream SuDS component) from the drop down list		Suspended Solids	Metals	Hydrocarbons	1	2	3
Permeable pavement (where the pavement is not designed as an infiltration component)		0.7	0.6	0.7			
Select SuDS Component 2 (i.e. the second SuDS component in a series) from the drop down list							
Sewer		0.5	0.6	0.6			
Select SuDS Component 3 (i.e. the third SuDS component in a series) from the drop down list							
None		0	0	0			
If the proposed SuDS components are bespoke/proprietary and/or the generic indices above are not considered appropriate, select 'Proprietary treatment system' or 'User defined index' and enter component descriptions and agreed user defined indices in these rows:							
Aggregated Surface Water Pollution Mitigation Index		0.95	0.9	>0.95			

Note: If the total aggregated mitigation index is > 1 (which is not a realistic outcome), then the outcome is fixed at ">0.95". In this scenario, the proposed components are likely to have a very high mitigation potential for reducing pollutant levels in the runoff and should be sufficient for any proposed land use (note: where risk assessment is required, this outcome would need more detailed verification)

Is the runoff now discharged to an infiltration component?

Yes? [Go to Step 2B](#)
No? [Go to Step 2C](#)

STEP 2B: Determine the Pollution Mitigation Index for the proposed Groundwater Protection

This step requires the user to select the type of groundwater protection that is either part of the SuDS component or that lies between the component and the groundwater

This step should be applied where a SuDS component is specifically designed to infiltrate runoff (note: in England and Wales this will include components that allow any amount of infiltration, however small, even where infiltration is not specifically accounted for in the design)

'Groundwater protection' describes the proposed depth of soil or other material through which runoff will flow between the runoff surface and the underlying groundwaters.

Where the discharge is to surface waters and not to groundwater need not be considered, select 'None'

If the proposed groundwater protection is bespoke and/or a proprietary product and not generally described by the suggested measures, then a description of the protection and agreed user defined indices should be entered in the row below the drop down list

Groundwater Protection Description		Pollution Mitigation Indices			DESIGN CONDITIONS			
Select type of groundwater protection from the drop down list		Total Suspended	Metals	Hydrocarbons	1	2	3	4
None								
If the proposed groundwater protection is bespoke/proprietary and/or the generic indices above are not considered appropriate, select 'Proprietary product' or 'User defined index' and enter a description of the protection and agreed user defined indices in this row:								
Groundwater Protection Pollution Mitigation Index		0	0	0				

STEP 2C: Determine the Combined Pollution Mitigation Indices for the Runoff Area

This is an automatic step which combines the proposed SuDS Pollution Mitigation Indices with any Groundwater Protection Pollution Mitigation Indices

Combined Pollution Mitigation Indices			
Total Suspended	Metals	Hydrocarbons	
Combined Pollution Mitigation Indices for the Runoff Area	0.95	0.9	>0.95

Note: If the total aggregated mitigation index is > 1 (which is not a realistic outcome), then the outcome is fixed at ">0.95". In this scenario, the proposed components are likely to have a very high mitigation potential for reducing pollutant levels in the runoff and should be sufficient for any proposed land use (note: where risk assessment is required, this outcome would need more detailed verification)

STEP 2D: Determine Sufficiency of Pollution Mitigation Indices for Selected SuDS Components

This is an automatic step which compares the Combined Pollution Mitigation Indices with the Land Use Hazard Indices, to determine whether the proposed components are sufficient to manage each pollutant category type

When the combined mitigation index exceeds the land use pollution hazard index, then the proposed components are considered sufficient in providing pollution risk mitigation.

In England and Wales, where the discharge is to protected surface waters or groundwater, an additional treatment component (in over and above that required for standard discharges), or other equivalent protection, is required that provides environmental protection in the event of an unexpected pollution event or poor system performance. Protected surface waters are those designated for drinking water abstraction. In England and Wales, protected groundwater resources are defined as Source Protection Zone 1. In Northern Ireland, a more precautionary approach may be required and this should be checked with the environmental regulator on a site by site basis.

Sufficiency of Pollution Mitigation Indices

Sufficiency of Pollution Mitigation Indices			DESIGN CONDITIONS
Total Suspended	Metals	Hydrocarbons	1
Sufficient	Sufficient	Sufficient	Preference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to sensitive areas with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies (such as Natural England)

Note: In order to meet both Water Quality criteria set out in the SuDS Manual (Chapter 4), Interception should be delivered for all impermeable areas wherever possible. Interception delivery and treatment may be met by the same components, but Interception requires separate evaluation.