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FLOOD RISK ASSESSMENT REPORT FOR 210687 – SALESBURY VIEW, WILPSHIRE

31 March 2026

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1 EXECUTIVE SUMMARY

EDGE have been instructed by Persimmon Homes & Charles Church Lancashire to prepare a Flood Risk Assessment to support a full planning application which seeks permission for the erection of 80 residential dwellings together with associated infrastructure on land East of Salesbury View in Wilpshire, a village in Lancashire.

The site is located approximately 3.8km North of the town of Blackburn between the villages of Ramsgreave and Wilpshire and is bounded to the South by woodland and Knotts Brook, beyond which are existing residential dwellings. To the West are existing residential dwellings and the A666 Whalley Road. On the Northern boundary of the site is Holyhead Road beyond which is Wilpshire Golf Club. On the Eastern extents of the site is further greenfield agricultural land and Parsonage reservoir (approximately 1km away).

The site area extends to 6.21ha, is an irregular shape and is classified as greenfield agricultural land. A copy of the architect's development proposals can be found in Appendix C.

The purpose of this report is to assess the risk of flooding to the site from fluvial, tidal, pluvial (overland) surface water and ground water sources as well as from reservoirs, canals and adjacent sewers.

The topographic survey, in Appendix B, shows the site has a steeply sloping gradient to the West and South, falling towards Salesbury View Road and Knotts Brook. Site levels range from roughly 177mAOD on the northern extents of the site to around 148mAOD to the South of the site. Beyond the Southern boundary the land falls steeply towards Knotts Brook, banking down from 148mAOD to 142mAOD. The brook bank then slopes down to around 136m AOD.

The site is located wholly within flood zone 1.

Surface water must discharge from the site in the most sustainable manor and drainage proposals should adhere to the SUDs hierarchy.

New drainage proposals consist of traditional gravity sewers for both foul and surface water.

The surface water discharge rate is restricted to 14.6 litres per second, which is below the peak greenfield QBAR rate. Runoff rates and volumes are in accordance with Lancashire County Council guidelines and the Defra Technical Standards for Sustainable Drainage Systems. Attenuation storage is required within the on-site drainage network.

An attenuation pond is proposed to store all surface water volumes up to and including the 1 in 30-year storm events in line with United Utilities requirements with further volume provided in the pond to store the 1 in 100 year + climate change storm events, along with an additional allowance for urban creep.

Infiltration of surface water to the ground via soakaways will not be viable due the underlying strata being made up of superficial clay deposits to the West over sandstone and rock to the East. An existing ordinary watercourse runs from West to East 40m outside the southern boundary of the site. A direct connection to this watercourse is the preferred means of surface water discharge and the highest up the SUDs hierarchy that is possible.

Existing public foul and surface water sewers are present at the South-eastern boundary of the site within Salesbury View. The existing surface water sewer discharges to Knotts Brook approximately 115m downstream.

All sewers, will be offered to United Utilities for adoption under a section 104 agreement and drainage proposals are shown in Appendix E.

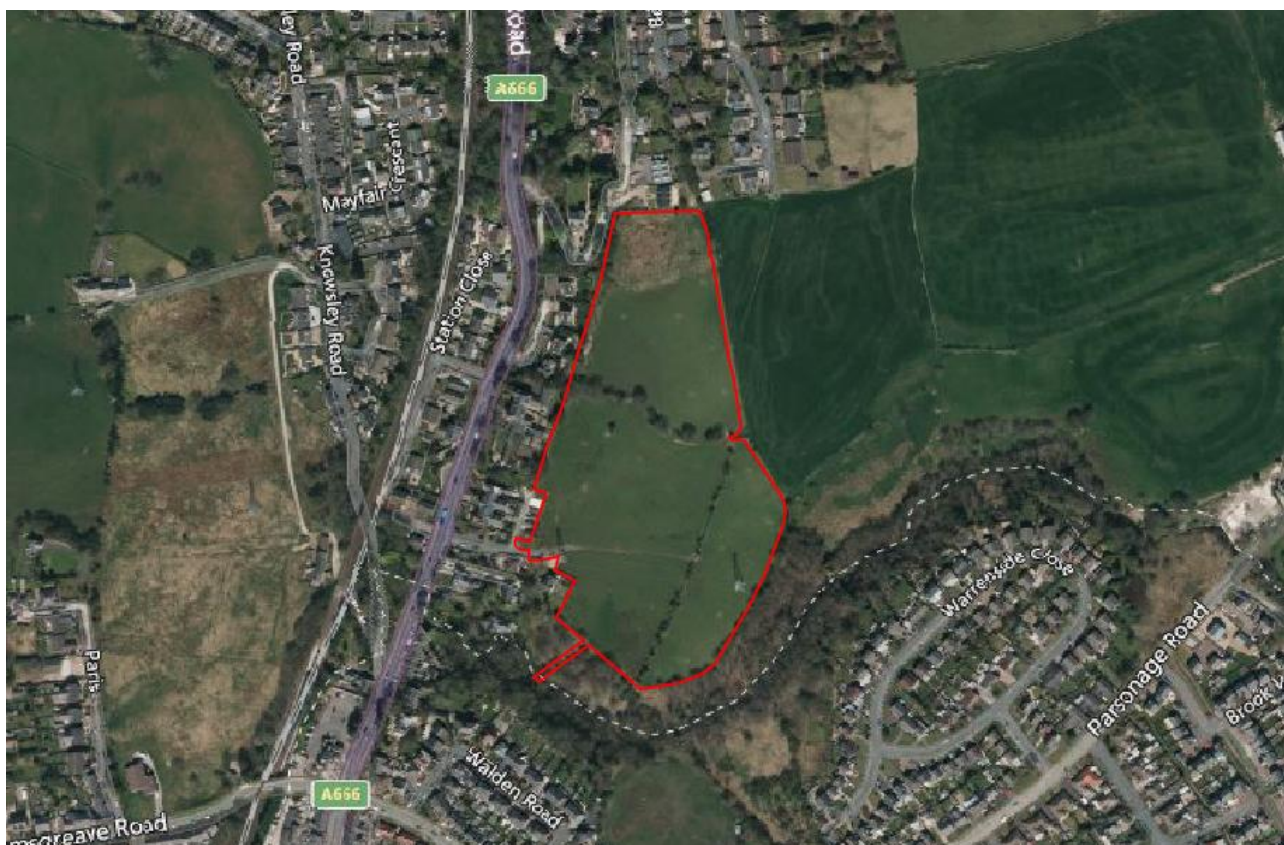
2 INTRODUCTION

EDGE Consulting Engineers have undertaken a Flood Risk Assessment in line with National Planning Policy framework and the main aims of this report are:

- To determine whether the proposed development is likely to be affected by current or future flooding from any source.
- To determine whether it will increase flood risk elsewhere.
- To determine whether the measures proposed to deal with these effects and risks are appropriate.
- To assess under SUDS Guidance the best way of reducing the flow rates from site to an acceptable rate of discharge.

The site and surrounding boundary conditions are shown on the Aerial Image in Figure 2.1.

FIGURE 2.1 – SITE LOCATION



3 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

The National Planning Policy Framework (NPPF) clearly identifies flood risk as a specific material consideration in the Planning Process and in the allocation and release of sites for development or re-development.

NPPF seeks to further strengthen the co-ordination between land use planning and development planning and the operational delivery of flood and coastal defence strategy. NPPF encourages local planning authorities to use their existing powers to guide, regulate and control development in relation to flooding and flood risk. The framework expects local authorities to adopt a risk-based approach at all levels of planning, through the application of the Sequential Test detailed in Table 1 and 2, of the Technical Guidance to NPPF document, a copy of which is attached in Appendix A.

The aim of the sequential test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. The Strategic Flood Risk Assessment (SFRA) will provide the basis for applying this test. A sequential approach should be used in areas known to be at risk from any form of flooding.

The Water Resources Act 1991 [Section 105] also requires the Environment Agency to exercise a general supervision over all flood defence matters, including flood plains and wash lands which accommodate waters during periods of flood. In discharging their functions, the Agency from time to time carries out comprehensive surveys and flood studies, largely of 'main rivers' within its jurisdiction.

A Section 105 Study involves the Agency topographically surveying the subject watercourse (or parts of it) and obtaining details of the flow mechanics within the watercourse. This data then enables them to generate a comprehensive hydraulic computer model for the watercourse.

From this hydraulic model the EA can define the approximate extent of fluvial flood-plain associated with the 1 in 100-year (1% annual probability) flooding event or the extent of tidal floodplain associated with the 1 in 200-year (0.5% annual probability) flooding event.

The extents of the modelled floodplain are then provided to Local Planning Authorities, to enable them to make more informed decisions when considering proposed development in flood susceptible areas. If development is proposed in a flood susceptible area, or in an area where there is a history of flooding, the EA, as a statutory consultee in the Planning Process, will generally recommend that the risk of flooding be formally assessed, in accordance with the NPPF, and that a Flood Risk Assessment report be produced to support the Planning Application.

The broader modelled flood extents are also indicated on the EA's Flood Zone Maps, available through their website (Figure 5.1).

Local planning authorities are required to produce local development frameworks, which are a portfolio of local development documents [LDDs] that collectively deliver the spatial planning strategy for the authority area. The LDD's undergo a sustainability appraisal which assists planning authorities in ensuring their policies fulfil the principles of sustainability.

Strategic Flood Risk Assessments [SFRA] are one of the documents to be used as the evidence base for planning decisions and are a component of the Sustainability Appraisal process. Therefore, SFRAs should be used in the review or production of LDD's.

To assist Local Planning Authorities in their strategic land-use planning, SFRA's should present enough information to enable Local Authorities to apply the Sequential Test to their proposed development sites:

"Decision makers should use the SFRA to inform their knowledge of flooding, refine the information on the Flood Map and determine the variations in flood risk from all sources of flooding across and from their area. These should form the basis for preparing appropriate policies for flood risk management for these areas."

In May 2010 Ribble Valley borough council produced a level 1 Strategic Flood Risk Assessment.

The SFRA along with the EA flood risk maps indicate that the proposed development site lies within Flood Zone 1 (less than 1 in 1000 probability of flooding from river or sea) and therefore is unlikely to be at risk of fluvial flooding.

The SFRA has been developed with the assistance of the Environment Agency, United Utilities and key landowners to provide a robust assessment of current and future levels of flood risk, ensuring that future development takes full account of flood risk and sustainability at the outset.

In the application of the sequential test the strategic flood risk assessment has identified flood risk zones within the boroughs (1, 2 and 3) and has assessed the potential of the various possible development sites which have been identified by the councils. This has created a hierarchy of preferred development sites in line with the sequential approach required by the NPPF.

The SFRA refers to the Ribble Valley Catchment Flood Management Plan which contains high level policies to manage flood risks in the whole River Ribble catchment which includes the Ribble Valley Borough Council area over the next 50 to 100 years and an action plan laying out how its policies can be achieved. These policies consider the likely future impact of changes in climate and the effects of land management. The CFMP has been a significant source of information for the Ribble Valley Borough Council SFRA.

Appendix 4 of the Ribble Valley Borough Councils SFRA shows that, in Lower Ribble, the policy unit is P4 which is to "take further action to sustain the current level of flood risk into the future (responding to the potential increase in risk from urban development, land use change and climate change). Justification behind this policy selection is quoted below:

"This policy unit (144km²) is predominately agricultural (including some of the best and most versatile land), with isolated flood risk areas/ problems in some settlements. Flood risk management activities focus on general bank maintenance in the rural areas where required to open watercourses in the unit, to prevent any blockages and maintain the passage of flows. A 1-in-100-year fluvial flood/1-in- 200-year tidal flood (1%/0.5% AEP event) would affect about 160 properties, three sewage works, two schools, and three Scheduled Ancient Monuments, causing about £11M of damage. A 'do nothing' scenario would lead to 300 more properties at risk in 100 years, as well as two more schools and four more SAMs. it is worth noting that the policy unit is large in

area and so the damage costs per unit area are low in comparison with the urban policy units. Being near to the city of Preston does indicate that some development might be expected in the future in parts of this policy unit. Also, the presence of high-quality agricultural land in this policy unit will need suitable protection into the future. Managed coastal realignment and improved coastal sea defences to combat the significant future sea level increases predicted for this area are currently being put forward as possible future options for this policy unit, which fit with a P4 policy recommendation. There may be opportunities for some P6 policies (e.g. river restoration and floodplain reconnection), but only in localized areas between the Calder confluence and Samlesbury.”

Actions from the CFMP and SFRA for the chosen Lower Ribble policy are quoted below:

- a) Prevent inappropriate development in the floodplain. Where development goes ahead it is resilient to flooding.*
- b) People at risk receive appropriate flood warnings and take action to protect themselves and their property.*
- c) More people are protected from flooding by more and better defences, where justified.*
- d) We will plan for flood risk in all our work and adapt to change, including Climate Change.*
- e) Floods are managed as natural processes with new wetland habitats created where possible.*
- f) Work with water companies to develop and deliver affordable programmes to 54 improve the water environment, including sustainable sewerage and drainage.*

A copy of the SFRA is available from the Ribble Valley Borough Council's website.

5 FINDINGS OF A FLOOD RISK ASSESSMENT

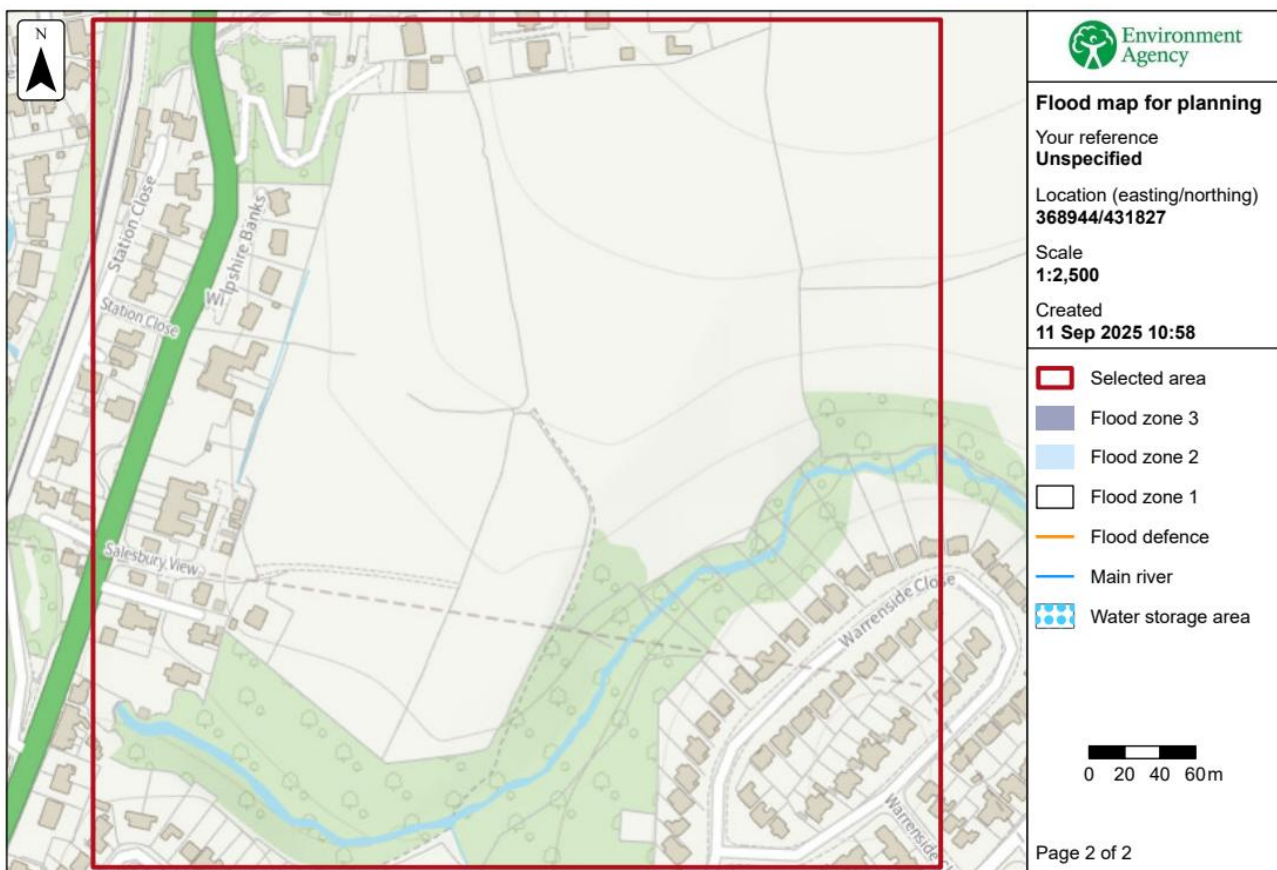
EDGE Consulting Engineers have carried out a flood risk assessment in line with National Planning Policy Framework.

The Environment Agency's flood zone maps, now available on the GOV.uk website, indicate that the site is located within Flood Zone 1 (Ref Figure 5.1).

Flood Zone 1 indicates that there is a low risk of flooding from fluvial or tidal sources and current EA guidance indicates that all proposed developments in zone 1, larger than 1 hectare, should be accompanied by a flood risk assessment. The flood risk assessment should contain:

- Information about the surface water disposal measures already in place and their state of maintenance.
- An assessment of the volume of surface water run-off likely to be generated from the proposed development.
- Information on how that surface water run-off will be disposed of (from the new development).
- Estimates of how climate change could affect the probability and intensity of flooding events in the future.

FIGURE 5.1 – FLOOD ZONE MAP (RIVERS AND SEAS)



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CLIMATE CHANGE

Climate change requires careful consideration in all aspects of development, including the construction of new residential areas and it is crucial to analyse the potential impact of climate change on proposed developments. One significant aspect to consider is the increase in rainfall events. With climate change, there is a growing trend of more intense and frequent rainfall, leading to an increased risk of flooding.

Incorporating climate change allowances into the development proposals will mitigate flood risk and ensure the long-term sustainability and resilience of the development. By implementing measures such as effective drainage systems, green infrastructure, and flood-resistant construction techniques, developments can better withstand the potential impacts of climate change, safeguarding residents and properties.

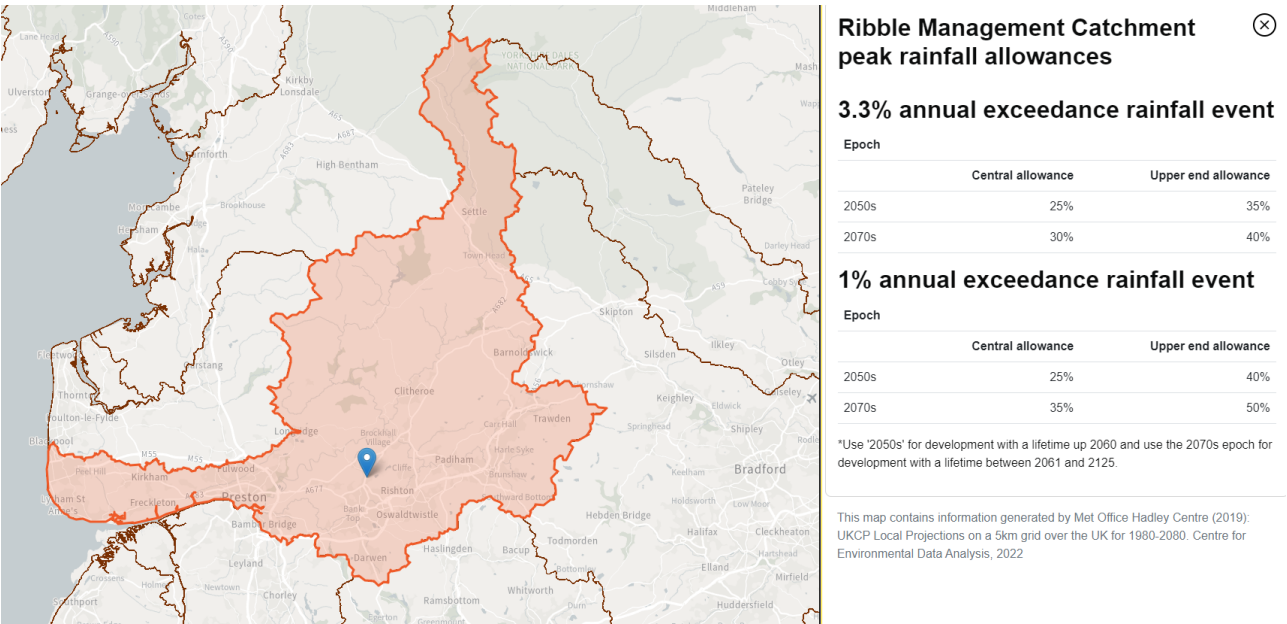
Taking proactive steps within development proposals will not only protect the investment in the development but also contribute to a more sustainable and climate-resilient future.

An increase to peak rainfall allowances should be accommodated in drainage proposals and the Environment Agency/DEFRA website provides online mapping services indicating central and upper end allowances for climate change in specific management catchments. The development lifetime (100 years) means a requirement to assess the upper end allowance should be considered.

The Ribble management catchment (extracted below) indicates an additional, upper end, allowance for the 1 in 100-year (1% annual exceedance rainfall) event is 50% so this has been considered within the development’s drainage calculations.

The 1% annual exceedance rainfall event also includes an additional 10% rainfall allowance for urban creep.

FIGURE 5.2 – CLIMATE CHANGE ALLOWANCES FOR RIBBLE MANAGEMENT CATCHMENT



RUNOFF CONTROL

Standard S2 of the Defra Technical Standards for Sustainable Drainage Systems states:

“For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100-year rainfall event should never exceed the peak greenfield runoff rate for the same event.”

The greenfield runoff rate for the site has been calculated using the greenfield runoff tool from HR Wallingfords UKSuDs website. The developments contributing areas, totalling 1.722Ha, are used to calculate this rate and the remaining areas of the site, gardens and POS will not contribute to the drainage system. The output from the Greenfield runoff tool can be found in Appendix F Drainage calculations. It shows that peak greenfield runoff rates are:

➤ 1 year	13.00 litres per second
➤ QBAR	14.98 litres per second
➤ 30 year	25.50 litres per second
➤ 100 year	31.20 litres per second

A runoff rate of 14.98 litres per second is proposed for the development. Appendix G provides MicroDrainage storage volume estimates for the 30-year and 100-year + 60% (50% climate change and 10% urban creep) return periods, showing the required attenuation volumes for the proposed development. These attenuation volumes aim to ensure that post-development runoff rates do not exceed peak greenfield runoff rates for the corresponding pre-development events. Overall, the drainage proposals demonstrate a betterment in runoff rates across all return periods.

TABLE 5.1 – ATTENUATION VOLUMES

STORM PEAK EVENT	ATTENUATION VOLUME REQUIRED
30-YEAR + 10% URBAN CREEP	560m ³
100-YEAR + 10% URBAN CREEP + 50% CLIMATE CHANGE	1300m ³

Proposals are therefore in accordance with standard S2 of the Defra Technical Standards for Sustainable Drainage Systems.

VOLUME CONTROL

Standard S4 of the Defra Technical Standards for Sustainable Drainage Systems states:

“Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100-year, 6-hour rainfall event should never exceed the greenfield runoff volume for the same event.”

The greenfield runoff volume for the 1 in 100-year 6-hour event has been calculated in Micro drainage using the proposed development area of 1.722Ha, as shown in appendix F. The total greenfield volume is 589.748m³. When factoring in climate change and urban creep allowances, the required storage volume increases to 943.597 m³.

The proposed drainage layout for the development includes an attenuation pond with a storage capacity of 1,300 m³, which exceeds the calculated greenfield runoff volumes.

The proposals are therefore in accordance with Standard S4 of the Defra Technical Standards for Sustainable Drainage Systems.

DRAINAGE STRATEGY

Existing Foul Drainage

There is an existing public foul water sewer running below Salesbury View to the West then South along Whalley Road before heading further West below the Ribble Valley railway line. United Utilities asset search maps are shown in Appendix D.

Proposed Foul Drainage

It is proposed that the foul flows generated from the development will utilise a traditional gravity system and connect to the existing foul sewer in Salesbury View via an existing manhole which will be in accordance with consent being obtained from United Utilities. The depth of the existing sewer should be confirmed prior to detailed design works commencing to ensure its suitability for a gravity connection.

The proposed foul water drainage network will be offered to United Utilities for adoption under a section 104 agreement and will be designed in accordance with industry standard Design Construction Guidance (DCG) and United Utilities guidelines and standard details. Foul water drainage proposals are shown in Appendix E.

Existing Storm Water Drainage

There is an existing watercourse, Knotts Brook running East to West along the southern boundary of the low point of the site. There is an existing 225mm diameter existing public surface water sewer running below Salesbury View to the West then South discharging to Knotts Brook. United Utilities asset search maps are shown in Appendix D.

Proposed Storm Water Drainage

Due to the cohesive nature of the underlying strata, as described in section 7 SUDs evaluation part of this report and in line with the grounds drainage characteristics and test findings provided in GEOL Consulting's phase 2 ground investigation report GEOL19-9938, discharging surface water flows via infiltration is not viable.

An existing ordinary watercourse runs along the southern boundary and a connection to this brook in the low point is preferred. The line, level and condition of the existing watercourse has been surveyed and confirmed and proposed levels ensure a gravity connection will be possible.

The construction of the proposed development will result in an increase of impermeable areas and therefore a corresponding increase in surface water run-off. To ensure that the site poses no flood risk to proposed or existing properties a restriction of surface water run-off to a rate of 14.98 litres per second is proposed.

The surface water connection to the watercourse will be limited to a maximum rate of 14.98 litres per second. The restriction will result in storage being required. An attenuation pond is proposed to hold surface water within the site for all return periods up to the 100-year plus climate change and urban creep storm events. An additional 10% rainfall has been included in the micro drainage calculations to account for urban creep.

The proposed surface water drainage network will connect to the existing watercourse via a new headwall constructed on the Brooks bank and the proposed sewers up to the outfall point will be offered to United Utilities for adoption under a section 104 agreement.

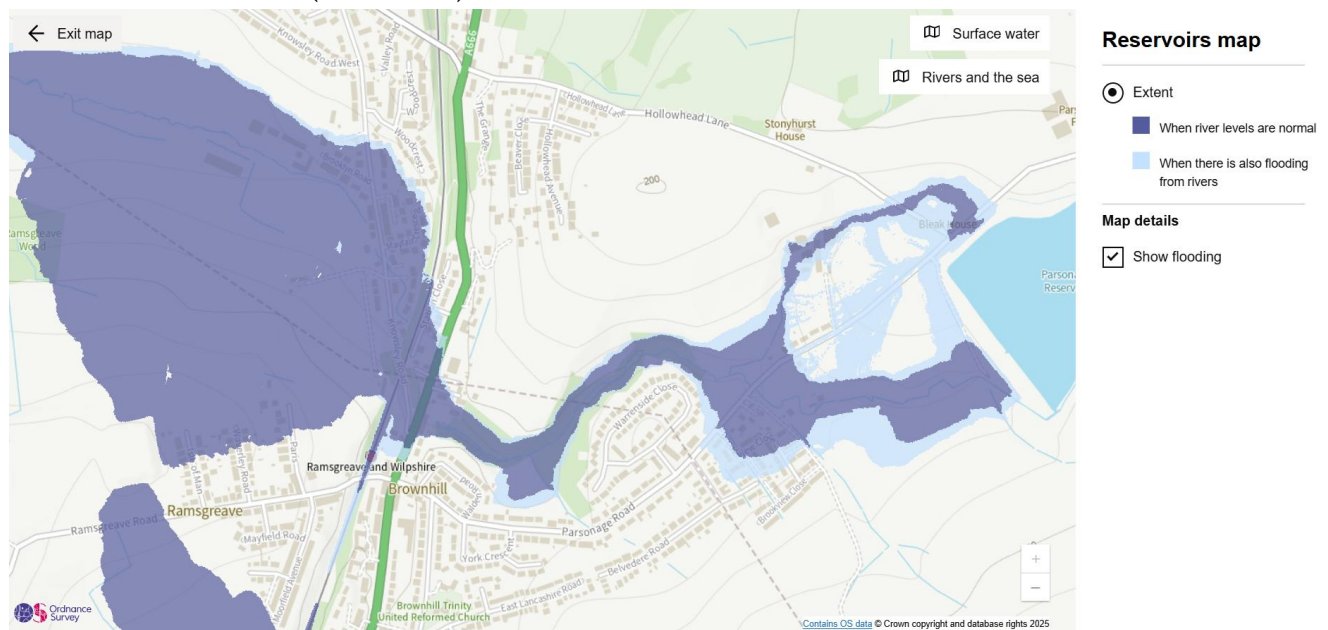
The proposed surface water network will be designed in accordance with industry standard Design Construction Guidance and United Utilities guidelines and standard details.

A detailed drainage layout outlining the drainage proposals including contributing areas plans (catchment analysis) are shown within Appendix E.

FLOOD RISK

- Reservoirs, canals – Flooding can occur from the release of large volumes of water from reservoirs and canals. The image below (Figure 5.3) is taken from the Environment Agencies flood risk section of the website indicating the extent of flooding from reservoirs. The risk is considered to be low with any flows emptying from the nearby (1km away) Parsonage reservoir shown to drain down Knotts Brook some 8m lower than the development site. There are no canals in the vicinity of the site and so flooding from this source is also considered to be low.

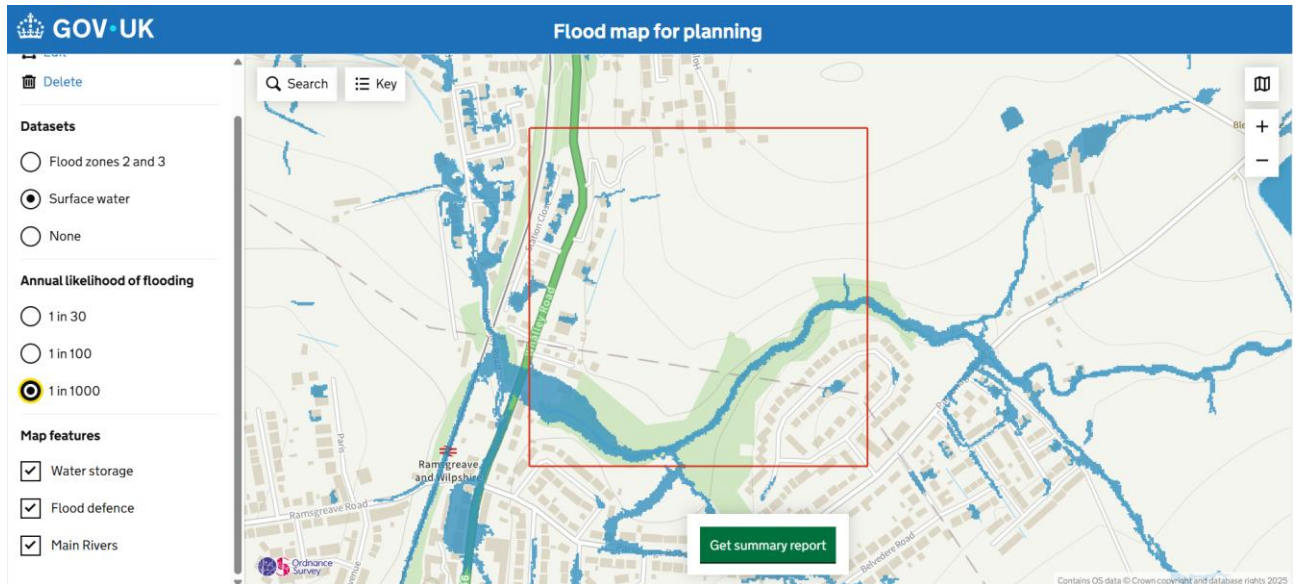
FIGURE 5.3 – FLOOD MAP (RESERVOIRS)



- Fluvial – As mentioned in previous sections of this report the site is located within flood zone 1 and as such has a low probability of flooding from fluvial sources. An ordinary watercourse runs along the southern boundary of the site some 6–8m lower than the site itself and is not thought to pose a flood risk to the existing site.
- Tidal – The site is located far enough inland to be considered at very low risk of flooding from the sea. Climate change is not thought to provide an increased risk to the site from tidal flooding during the lifetime of the development and so tidal flood risk is deemed to be low.
- Ground water – GEOL Consultants Phase II Ground Investigation report “GEOL19–9938” contained monitoring of groundwater and section 3.0 of the report summarised “When considering the ground conditions encountered, it is felt that a continuous groundwater surface (water table) is not present below the site”. It is thought that this is due to the steeply sloping nature of the site and therefore the risk of flooding from this source is low.
- Surface Water – Surface water flooding may occur when intense rainfall causes the ground to be saturated and its capacity is exceeded. Excess surface water flows from the site are believed to drain naturally to the low point in the south and to the watercourse itself by overland flow. The surface water flood map available on the EAs website (Figure 5.4 below) shows that the site is at very low risk of flooding from pluvial sources. This is thought to be due to the steeply sloping nature of the site and natural flow direction towards Knotts Brook which will convey such flows away from the site. The development of the site and introduction of impermeable areas (roofs, drives and roads etc) will further mitigate any overland flows away from houses to soft landscaped areas and to gullies and drainage channels which connect to the proposed drainage network via adoptable and private roads. Finished

floor levels of proposed dwellings should be set a minimum of 150mm above surrounding ground levels to further minimise the risk of flooding from this source. The online mapping indicates a spring to the Northeast of the site just outside the boundary. This will cause a flow of water across the development for the 1 in 1000-year storm event, although due to the steeply sloping nature of the existing site does not pose a flood risk. To ensure any flood risk is mitigated post development it is recommended that a channel or land drain along the Eastern boundary should be provided to divert the spring water around the development and to Knotts Brook.

FIGURE 5.4 – FLOOD MAP (SURFACE WATER)



- Adjacent sewers – There are existing public sewers outside the site boundary within Salesbury View which is at a level lower than the development site. The only risk of flooding from this source would be failure or surcharge during periods of high flow. Assuming the existing public sewers have sufficient capacity for the catchments they are serving, and they are regularly maintained and inspected the risk of flooding from sewers is low.
- Proposed sewers – Drainage infrastructure is designed to ensure that rainwater drains off site at a restricted rate. An attenuation pond will hold all volumes up to and including the 1 in 100 year + climate change storm events + 10% UC. This will minimise the risk of flooding from proposed surface water sources. The proposed drainage system is shown in Appendix E.

6 RESIDUAL RISKS

The table below outlines the initial qualitative assessment of risk posed by each potential source of flooding, the mechanisms for flooding and the likely consequences. The Table also includes a review of possible mitigation measures and what effect, if any, the mitigation measures are likely to have on the residual risk posed by each potential flood source. Categories of risk have been qualitatively defined as:

- **High Risk:** Flooding is likely to result in significant damage to property and pose a significant risk to life.
- **Medium Risk:** Flooding is likely to result in possible minor damage to property, but flood progress would allow adequate time for residents to be warned and safely evacuated to higher ground or appropriate places of safety.
- **Low' Risk:** Flooding is unlikely to result in any damage to property and pose little or no risk to life.

Source	Flood Mechanism & Consequences	Assessment of Risk	Recommended Mitigation Measures	Residual Risk
Fluvial flooding	Risk of fluvial flooding at the site from adjacent Watercourses, Drains and other Water Bodies.	Very Low	• Fluvial flooding of the site is not expected during the 1 in 100-year event + climate change.	Very Low
Pluvial flooding	Risk of flooding from overland flows in extreme events. Ponding of surface water due to ground being saturated and capacity being exceeded.	Very Low	• FFLs to be set 150mm above surrounding levels. • Perimeter channel/ land drain to divert spring water	Very Low
Surcharging of artificial drainage systems	Drainage systems operating above design capacity, resulting in: • surcharging of manholes / drainage systems. • over-land flow through development. • ponding in low-lying areas of site. • no over-land flow route for flood waters accumulating in low-lying areas.	Low	• Appropriate design of SW drainage system to provide sufficient storage. • Provision of overland flood flow routes through proposed development.	Low
Infrastructure failure	Water main burst resulting in: • Possible over-land flows through /	Low	• Safe access/egress available to adjacent highway.	Low

	adjacent to the site and possible inundation of property. • Possible ponding in low-lying areas.		• Flood flow route through development.	
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Development of the site will result in an increase of impermeable areas and therefore a corresponding increase in run-off volumes. The use of SUDs techniques to discharge the additional surface water will be evaluated in this section of the report. The storm water drainage system for the proposed development will be designed in accordance with the DCG, which requires that any surface water drainage system, should not surcharge during the 1 in 2-year storm event, and should not flood during a 1 in 30-year storm event (i.e., all run-off contained wholly within the sewerage system during the 1 in 30-year event).

Whilst the DCG requires there be no surface flooding during the 1 in 30-year storm event. It is generally accepted that a degree of surface flooding can be permitted during extreme storm events i.e., 1 in 100 year + climate change. This will be subject to specific areas being designated as flood susceptible and subject to flooding of these areas posing little or no risk to human life and damage to property. Examples of surface areas which might be permitted to flood in such events are:

- Agricultural land
- Recreational land (playing fields etc.)
- Landscaped areas
- Highways
- Car parks
- Other non-inhabited, designated areas

In all cases where surface flooding might be permitted or designed into a scheme, due diligence needs to be given to the NPPF and the need to make potential users of such areas aware of their functionality and purpose, and the requirement to always maintain safe egress and access.

The Building Regulations Approved Document H (2015) outlines a hierarchy of potential methods of disposing surface water from a site:

- A soakaway: or where that is not practicable.
- A watercourse or river; or where that is not practicable,
- A sewer.

The viability of each has been assessed below:

- Soakaway: Regarding the consideration of soakaway infiltration methods for the disposal of surface water, infiltration testing has not been undertaken however is it anticipated, based on GEOL Phase II Site investigation report that soakaways will not be a viable means of surface water discharge and have been discounted. The description of the sub strata is described as follows: Variable superficial deposits have been recorded across the site area. A mixture of very soft, soft, firm, and stiff sandy, gravelly and cobbly CLAYS, variable compositions of very loose, loose, medium dense, dense, and very dense clayey, silty, gravelly and cobbly SANDS, and sandy, gravelly COBBLES & BOULDERS of sandstone were encountered. At the location of BH18 only PEAT deposits were recorded from a depth of 0.20m to 1.25m.
- Watercourse's waterbodies: Knotts Brook runs along the southern boundary of the site. Connection to the watercourse in the low portion of the site is the preferred method of discharge. Runoff rates should be restricted to mimic the greenfield run off rate.
- Sewers: United Utilities foul and surface water sewer are located within Salesbury View. United Utilities will not allow surface water to discharge to the sewer if a connection higher up the SUDs hierarchy is viable.

- EDGE have been instructed by Persimmon Homes & Charles Church Lancashire to prepare a Flood risk assessment which will support a full planning application seeking permission for the construction of 80 residential dwellings together with associated infrastructure.
- The site is located within Wilpshire 3.8km north of Blackburn.
- The site area is 6.21 hectares, is irregular in shape and is greenfield land.
- There is an existing watercourse running along the southern boundary of the site.
- There are existing public sewers within Salesbury View.
- EDGE Consulting Engineers have been instructed to formally assess the risk of flooding through a flood risk assessment.
- The site lies within Flood Zone 1 and is therefore unlikely to be affected by fluvial flooding.
- The development of the site will result in an increase in impermeable area resulting in a corresponding increase in surface water run-off.
- Surface water flows will be restricted to 14.98 litres per second.
- Surface water volumes will be stored within an online pond.
- 50% Climate change has been factored into the drainage calculations.
- A 10% allowance for urban creep has been factored into the drainage calculations.
- Construction of the proposed development will not increase flood risk on or off the site.
- No mitigation measures are considered necessary to mitigate the risk from infrastructure failure.
- A drainage design (Appendix E) has been submitted in support of this flood risk assessment.
- Development of the site will not increase the flood risk to any other property.
- Based on the information provided to EDGE Consulting Engineers in support of this flood risk assessment, the development of the site would be considered sustainable in terms of flood risk, subject to the various recommendations in line with National and Local Planning Policy.

APPENDICES

Appendix A – Extract from chapter 14 of NPPF December 2024

14. Meeting the challenge of climate change, flooding and coastal change

161. The planning system should support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Planning for climate change

162. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures⁶¹. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.
163. The need to mitigate and adapt to climate change should also be considered in preparing and assessing planning applications, taking into account the full range of potential climate change impacts.
164. New development should be planned for in ways that:
- a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through incorporating green infrastructure and sustainable drainage systems; and
 - b) help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings in plans should reflect the Government's policy for national technical standards.
165. To help increase the use and supply of renewable and low carbon energy and heat, plans should:
- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

⁶¹ In line with the objectives and provisions of the Climate Change Act 2008.

- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
 - c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.
166. In determining planning applications, local planning authorities should expect new development to:
- a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
 - b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.
167. Local planning authorities should also give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic (including through installation of heat pumps and solar panels where these do not already benefit from permitted development rights). Where the proposals would affect conservation areas, listed buildings or other relevant designated heritage assets, local planning authorities should also apply the policies set out in chapter 16 of this Framework.
168. When determining planning applications for all forms of renewable and low carbon energy developments and their associated infrastructure, local planning authorities should:
- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal's contribution to a net zero future;
 - b) recognise that small-scale and community-led projects provide a valuable contribution to cutting greenhouse gas emissions;
 - c) in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site.
169. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Planning and flood risk

170. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where

development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

171. Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.
172. All plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:
 - a) applying the sequential test and then, if necessary, the exception test as set out below;
 - b) safeguarding land from development that is required, or likely to be required, for current or future flood management;
 - c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and
 - d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.
173. A sequential risk-based approach should also be taken to individual applications in areas known to be at risk now or in future from any form of flooding, by following the steps set out below.
174. Within this context the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test.
175. The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).
176. Applications for some minor development and changes of use⁶² should also not be subject to the sequential test, nor the exception test set out below, but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.

⁶² This includes householder development, small non-residential extensions (with a footprint of less than 250m²) and changes of use; except for changes of use to a caravan, camping or chalet site, or to a mobile home or park

177. Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.
178. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:
- a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
 - b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
179. Both elements of the exception test should be satisfied for development to be allocated or permitted.
180. Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.
181. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment⁶³. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:
- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
 - b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;
 - c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

home site, where the sequential and exception tests should be applied as appropriate.

⁶³ A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

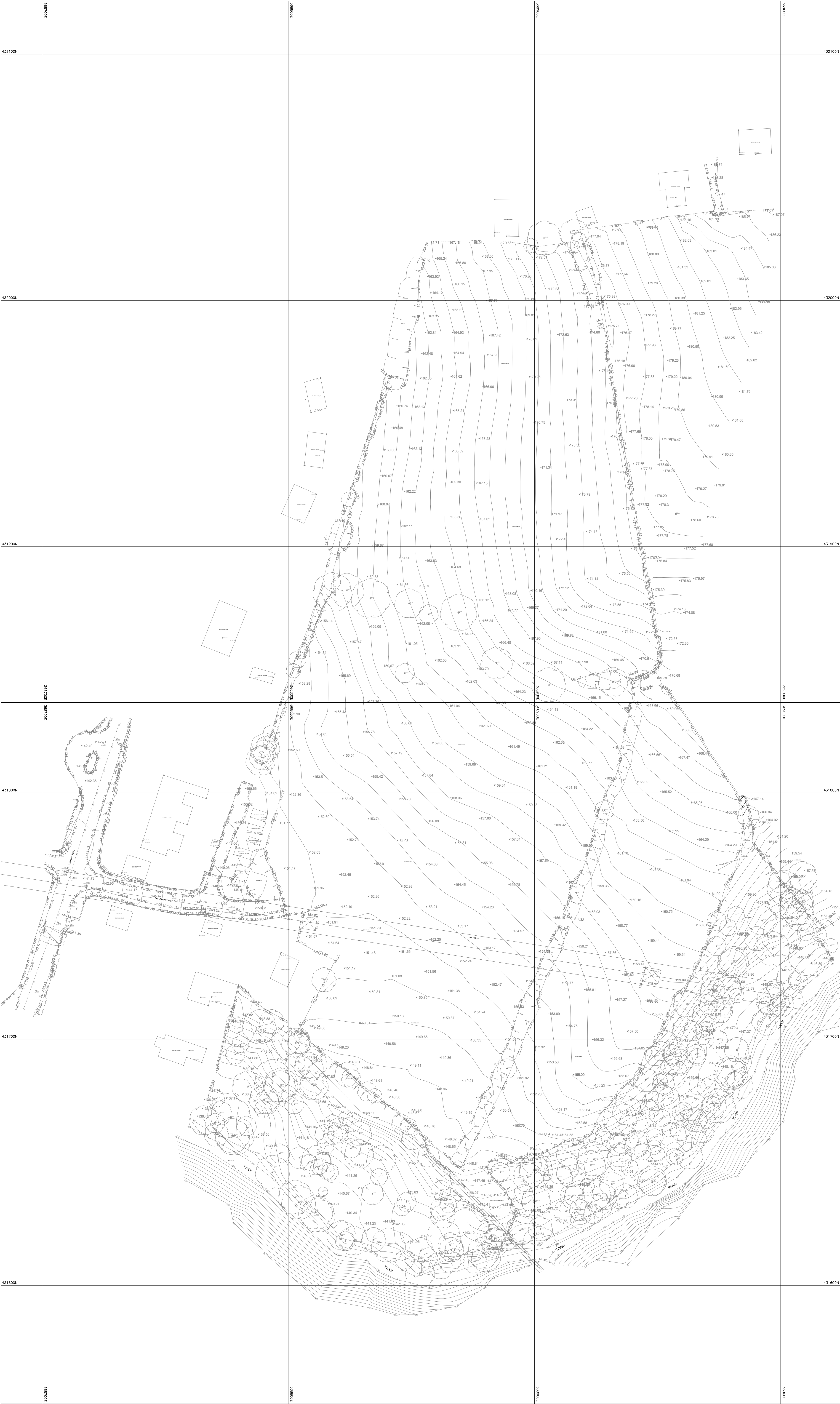
- d) any residual risk can be safely managed; and
 - e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.
182. Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:
- a) take account of advice from the Lead Local Flood Authority;
 - b) have appropriate proposed minimum operational standards; and
 - c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.

Coastal change

183. In coastal areas, planning policies and decisions should take account of the UK Marine Policy Statement and marine plans. Integrated Coastal Zone Management should be pursued across local authority and land/sea boundaries, to ensure effective alignment of the terrestrial and marine planning regimes.
184. Plans should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas and not exacerbating the impacts of physical changes to the coast. They should identify as a Coastal Change Management Area any area likely to be affected by physical changes to the coast, and:
- a) be clear as to what development will be appropriate in such areas and in what circumstances; and
 - b) make provision for development and infrastructure that needs to be relocated away from Coastal Change Management Areas.
185. Development in a Coastal Change Management Area will be appropriate only where it is demonstrated that:
- a) it will be safe over its planned lifetime and not have an unacceptable impact on coastal change;
 - b) the character of the coast including designations is not compromised;
 - c) the development provides wider sustainability benefits; and
 - d) the development does not hinder the creation and maintenance of a continuous signed and managed route around the coast⁶⁴.

⁶⁴ As required by the Marine and Coastal Access Act 2009.

186. Local planning authorities should limit the planned lifetime of development in a Coastal Change Management Area through temporary permission and restoration conditions, where this is necessary to reduce a potentially unacceptable level of future risk to people and the development.



COORDINATED STATIONS			
STATION	EASTING	NORTHING	LEVEL (m)
A	368705.576	431764.866	141.593
B	368731.082	431811.730	142.692
C	368691.666	431721.332	140.528
D	368766.331	431751.787	148.266

ABBREVIATIONS

AV	AIR VALVE/VENT	IC	INSPECT CHAMBER
BOL	BOLLARD	IL	INVERT LEVEL
BR	BELONG BEACON	JW	JAPANESE KNIGHT WEED
BM	BENCH MARK	LH	LAMP HOLE
RL	RED LEVEL	LP	LAMP POST
BS	BUS STOP	NP	NAME PLATE
BT	BRITISH TELECOM	MH	MANHOLE
CL	COVER LEVEL	PS	POST/SIGN POST
DI	DISBURSED	PB	POST BOX
DL	DOWN LEVEL	PK	UNKNOWN SERVICE
ELE	ELECTRIC JUNCT. BOX	RE	ROOFTOP EYE
EP	ELECTRICITY POLE	RL	ROD LEVEL
FI	FIRE HYDRANT	RS	ROAD SIGN
FL	FLOOR LEVEL	ST	STOP TAP
POS	FULL OF SEDIMENT	TH	TRAIL HOLE
FP	FLAG POLE	TL	TRAFFIC LIGHT
G	GULLY	TP	TELEGRAPH POLE
QM	GAS METER	TV	CABLE TV BOX
OV	GAS VALVE	UN	UNABLE TO LIFT
		WM	WATER METER

SYMBOLS

	SURVEY STATION		TREE
	O/H ELEC. CABLE		BENCH MARK
	O/H PHONE LINE		TRIAL PIT
	CANYON/HEDGE		BOREHOLE

NOTES

- A) ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN
- B) O/S USED AND ORIENTATED TO TRUE NORTH
- C) LEVELS IN METRES RELATED TO G.P.S.
- D) DRAINAGE INFORMATION TAKEN FROM LOCAL AUTHORITY RECORDS. INFORMATION MUST BE CHECKED PRIOR TO WORK COMMENCING

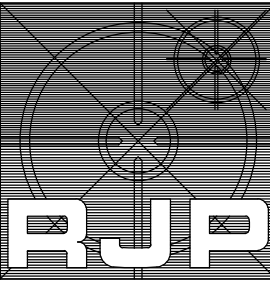
Rev	Description	Date
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PROPOSED DEVELOPMENT AT
WHALLEY NEW ROAD, WILPSHIRE

PERSIMMON HOMES

TOPOGRAPHICAL SURVEY

PH290/TOO	Surveyed	A. BAYBUTT
	Drawn	I. GREEN
	Date	SEPTEMBER 2019
	Scale	1:500 @ A1



RJP Surveying Consultants Ltd
LAND SURVEYORS & SITE ENGINEERS
AYREFIELD COTTAGE
AYREFIELD ROAD
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MOBILE: 07710 308709
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E-MAIL: mail@rjpsurveyors.co.uk



COORDINATED STATIONS			
STATION	EASTING	NORTHING	LEVEL (m)
A	368705.576	431764.866	141.593
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QM	GAS METER	TV	CABLE TV BOX
OV	GAS VALVE	UN	UNABLE TO LIFT
		WM	WATER METER

SYMBOLS

	SURVEY STATION		TREE
	O/H ELEC. CABLE		BENCH MARK
	O/H PHONE LINE		TRIAL PIT
	CANYON/HEDGE		BOREHOLE

NOTES

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- D) DRAINAGE INFORMATION TAKEN FROM LOCAL AUTHORITY RECORDS. INFORMATION MUST BE CHECKED PRIOR TO WORK COMMENCING

A	SURVEY EXTENDED TO INCLUDE EMBANKMENT TO RIVER	OCT 2019
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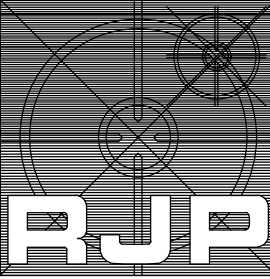
Rev	Description	Date
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PROPOSED DEVELOPMENT AT
WHALLEY NEW ROAD, WILPSHIRE

PERSIMMON HOMES (LANCASHIRE)

TOPOGRAPHICAL SURVEY

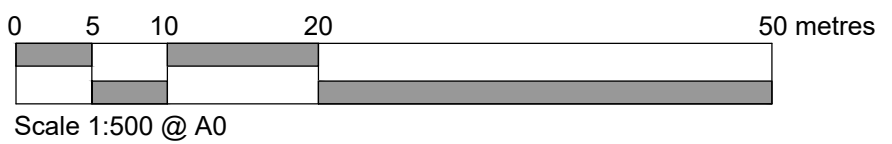
PH290/TOO	Surveyed	A. BAYBUTT
	Drawn	I. GREEN
	Date	SEPTEMBER 2019
	Scale	1:500 @ A1



RJP Surveying Consultants Ltd
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E-MAIL: mail@rjpsurveyors.co.uk

KEY

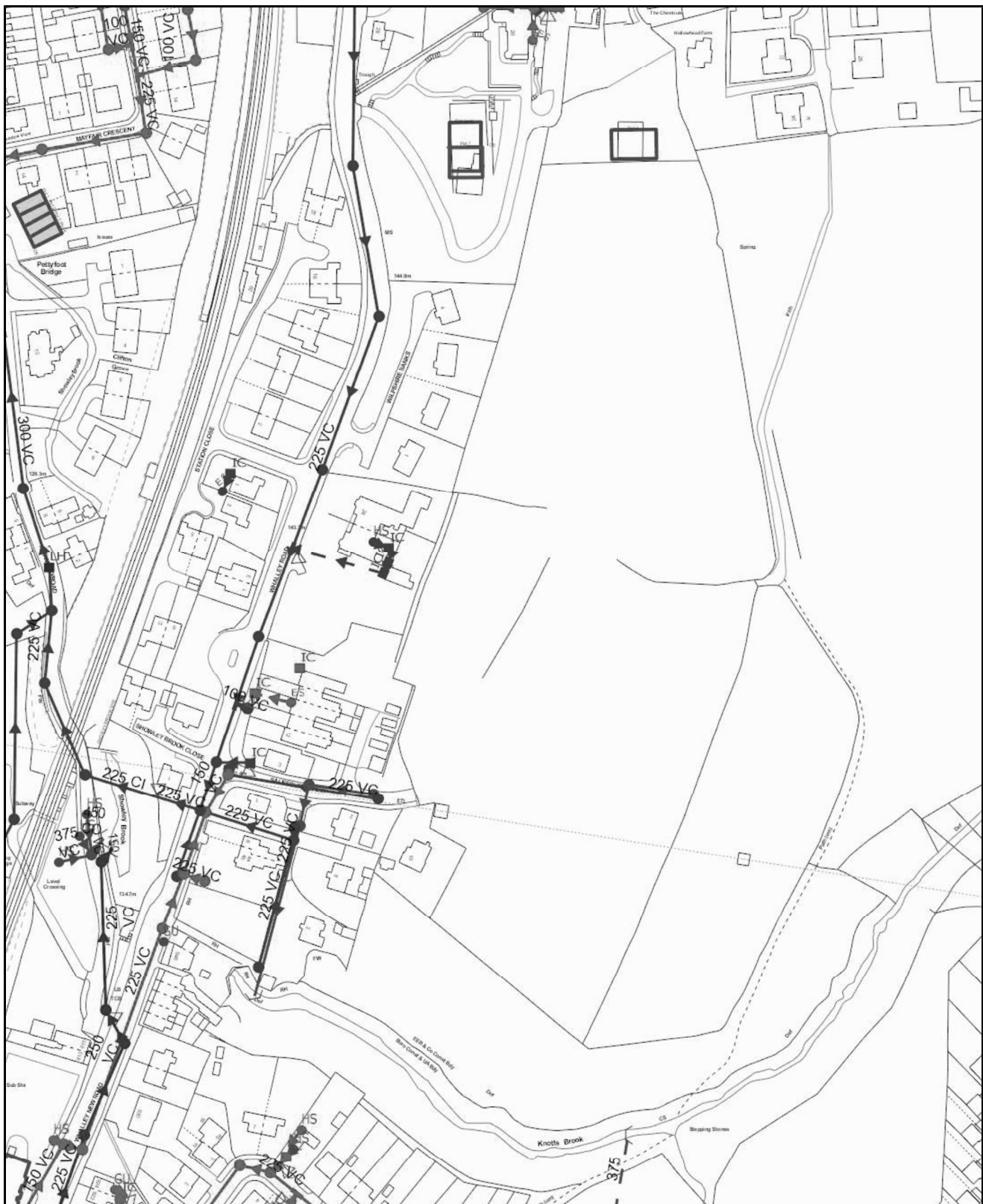
-  **SITE BOUNDARY**
This boundary is subject to confirmation by Client.
-  **RAISED TABLE - HX8 WITH RED CHIPPINGS**
-  **AFFORDABLE - RENT**
-  **AFFORDABLE - INTERMEDIATE**
-  **AFFORDABLE - FIRST HOMES / INTERMEDIATE**
-  **OVER 50 UNITS**
-  **DENOTES BIN STORAGE WITHIN GARAGE**
-  **DENOTES CYCLE STORAGE WITHIN GARAGE**
-  **INTER MARK (AND EXISTENT)**
-  **RETAINING WALL**



idp Architecture
Masterplanning
Urban Design

IDP Partnership Architects, 55 Jubin's, Barker Street, Sheffield, M4 6JY, UK. T: 0114 2614442
E: info@idppartnership-architects.com | W: idppartnership.com

Appendix D – United Utilities asset search maps



Scale: 1:2256
Date: 21/11/2019

SEWER RECORDS

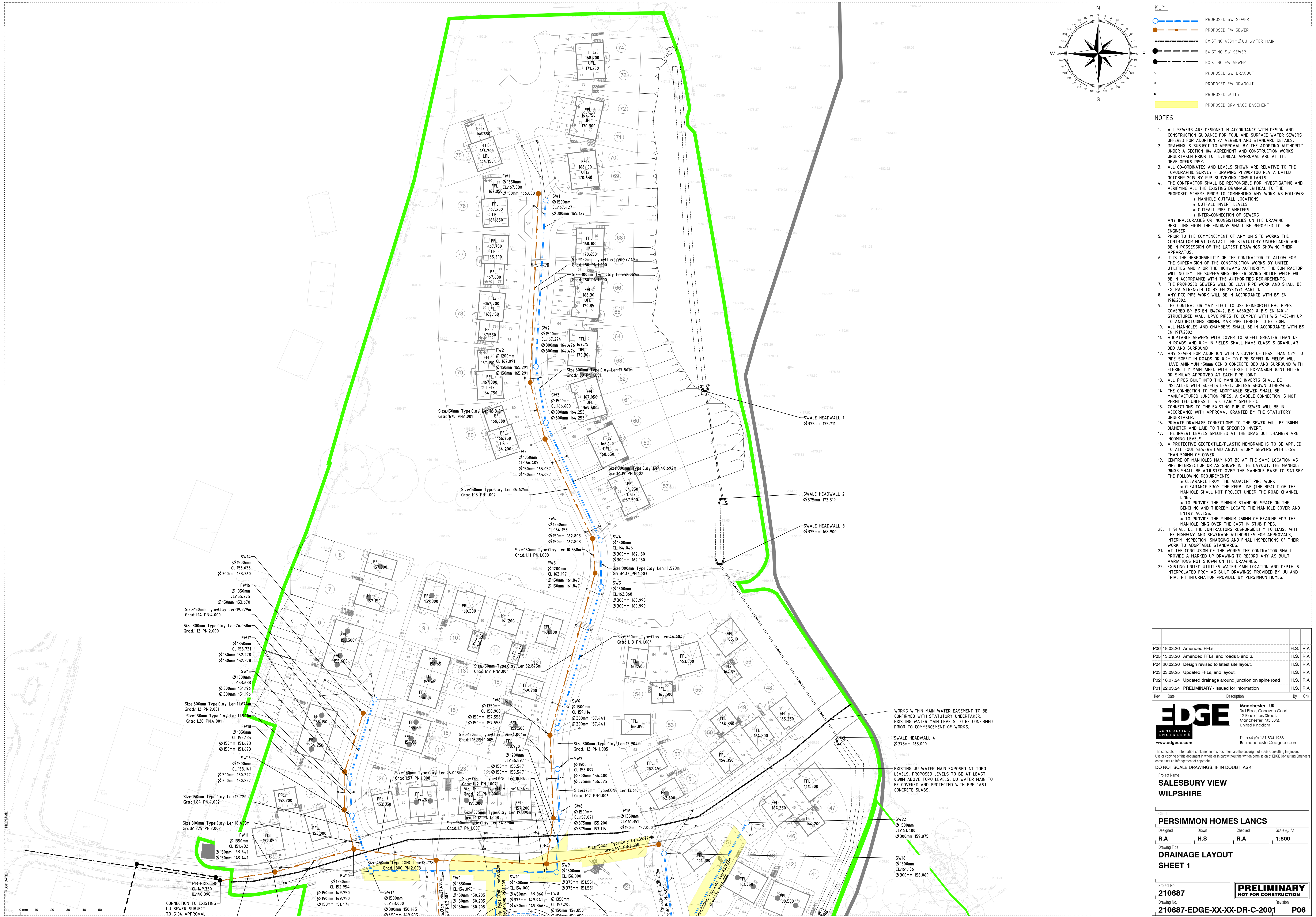
Address or Site Reference: 1 SALESBURY VIEW, WILPSHIRE, BLACKBURN, BB1 9PL
Printed by: Property Searches



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Appendix E – Proposed drainage layout



PO6 18.03.26	Amended FFLs.	H.S.	R.A
PO5 13.03.26	Amended FFLs, and roads 5 and 6.	H.S.	R.A
PO4 26.02.26	Design revised to latest site layout.	H.S.	R.A
PO3 03.09.25	Updated FFLs, and layout.	H.S.	R.A
PO2 18.07.24	Updated drainage around junction on spine road	H.S.	R.A
PO1 22.03.24	PRELIMINARY - issued for Information	H.S.	R.A
Rev	Date	Description	By

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Project Name

**SALESBURY VIEW
WILPSHIRE**

Client

PERSIMMON HOMES LANCs

Designed	Drawn	Checked	Scale @ A1
R.A	H.S	R.A	1:500

Drawing Title

**DRAINAGE LAYOUT
SHEET 1**

Project No.

210687

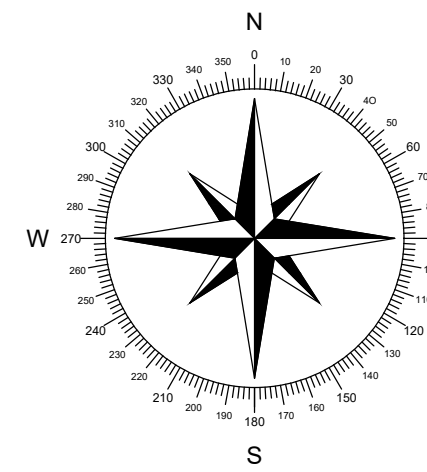
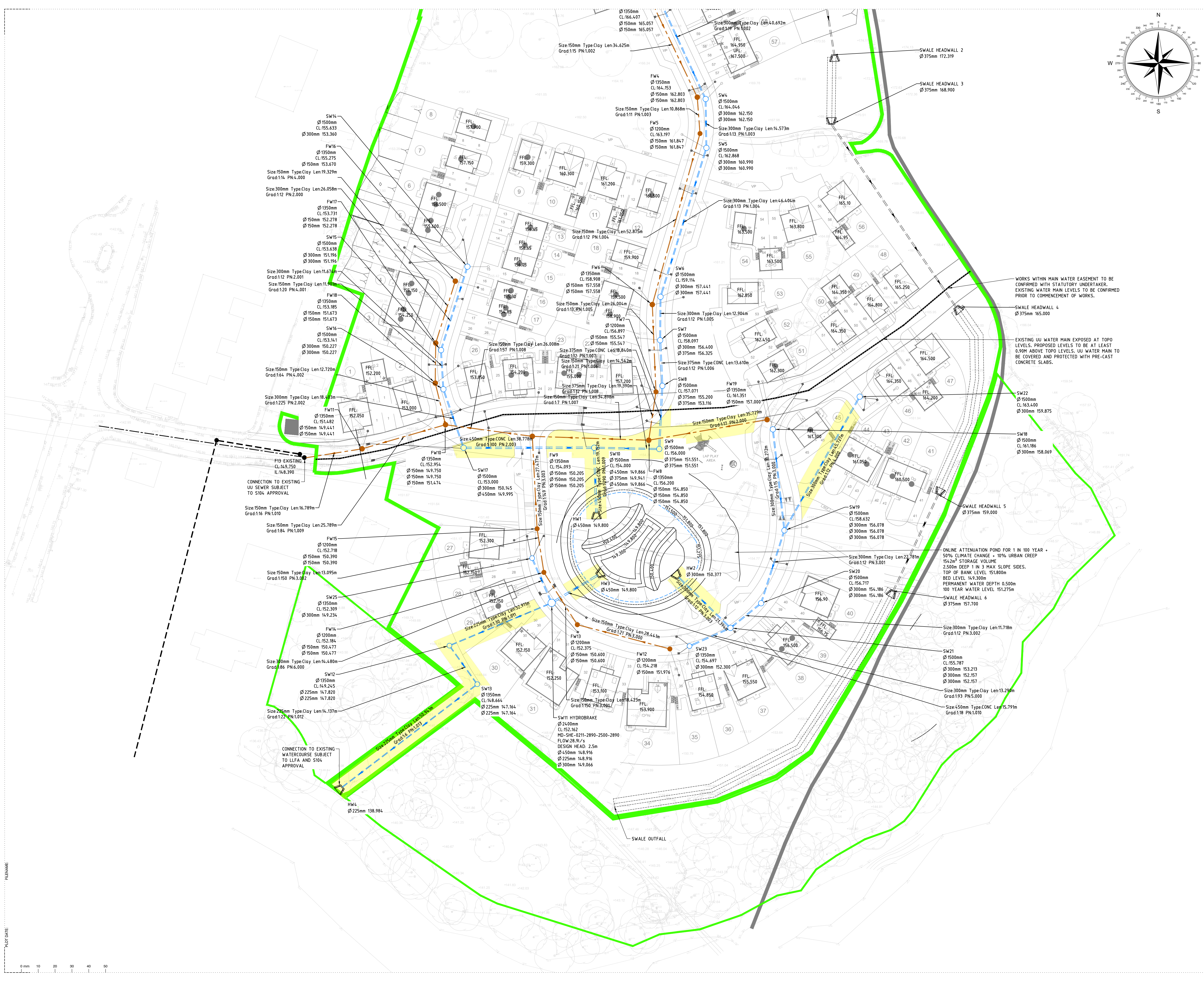
Drawing No.

210687-EDGE-XX-DR-C-2001

Revision

P06

**PRELIMINARY
NOT FOR CONSTRUCTION**



- KEY:**
- PROPOSED SW SEWER
 - PROPOSED FW SEWER
 - EXISTING 450mm Ø UU WATER MAIN
 - EXISTING SW SEWER
 - EXISTING FW SEWER
 - PROPOSED SW DRAGOUT
 - PROPOSED FW DRAGOUT
 - PROPOSED GULLY
 - PROPOSED DRAINAGE EASEMENT
- NOTES:**
- ALL SEWERS ARE DESIGNED IN ACCORDANCE WITH DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS OFFERED FOR ADOPTION 2.1 VERSION AND STANDARD DETAILS.
 - DRAWING IS SUBJECT TO APPROVAL BY THE ADOPTING AUTHORITY UNDER A SECTION 104 AGREEMENT AND CONSTRUCTION WORKS UNDERTAKEN PRIOR TO TECHNICAL APPROVAL ARE AT THE DEVELOPERS RISK.
 - ALL CO-ORDINATES AND LEVELS SHOWN ARE RELATIVE TO THE TOPOGRAPHIC SURVEY - DRAWING PH290/100 REV A DATED OCTOBER 2019 BY J.P. SURVEYING CONSULTANTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING AND VERIFYING ALL THE EXISTING DRAINAGE CRITICAL TO THE PROPOSED SCHEME PRIOR TO COMMENCING ANY WORK AS FOLLOWS:
 - MANHOLE OUTFALL LOCATIONS
 - OUTFALL INVERT LEVELS
 - OUTFALL PIPE DIAMETERS
 - INTER-CONNECTION OF SEWERS
 - ANY INACCURACIES OR INCONSISTENCIES ON THE DRAWING RESULTING FROM THE FINDINGS SHALL BE REPORTED TO THE ENGINEER.
 - PRIOR TO THE COMMENCEMENT OF ANY ON SITE WORKS THE CONTRACTOR MUST CONTACT THE STATUTORY UNDERTAKER AND BE IN POSSESSION OF THE LATEST DRAWINGS SHOWING THEIR APPARATUS.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ALLOW FOR THE SUPERVISION OF THE CONSTRUCTION WORKS BY UNITED UTILITIES AND / OR THE HIGHWAYS AUTHORITY. THE CONTRACTOR WILL NOTIFY THE SUPERVISING OFFICER GIVING NOTICE WHICH WILL BE IN ACCORDANCE WITH THE AUTHORITIES REQUIREMENTS.
 - THE PROPOSED SEWERS WILL BE CLAY PIPE WORK AND SHALL BE EXTRA STRENGTH TO BS EN 295:1991 PART 1.
 - ANY PCC PIPE WORK WILL BE IN ACCORDANCE WITH BS EN 1916:2002.
 - THE CONTRACTOR MAY ELECT TO USE REINFORCED PVC PIPES COVERED BY BS EN 13476-2, B.S 4600:200 & B.S EN 1401-1. STRUCTURED WALL UPVC PIPES TO COMPLY WITH WS 4-35-01 UP TO AND INCLUDING 300mm MAX PIPE LENGTH TO BE 3.0m.
 - ALL MANHOLES AND CHAMBERS SHALL BE IN ACCORDANCE WITH BS EN 1917:2002.
 - ADAPTABLE SEWERS WITH COVER TO SOFFIT GREATER THAN 1.2m IN ROADS AND 0.9m IN FIELDS SHALL HAVE CLASS 5 GRANULAR BED AND SURROUND
 - ANY SEWER FOR ADOPTION WITH A COVER OF LESS THAN 1.2m TO PIPE SOFFIT IN ROADS OR 0.9m TO PIPE SOFFIT IN FIELDS WILL HAVE AN MINIMUM 150mm GEN 3 CONCRETE BED AND SURROUND WITH FLEXICELL MAINTAINED WITH FLEXICELL EXPANSION JOINT FILLER OR SIMILAR APPROVED AT EACH PIPE JOINT
 - ALL PIPES BUILT INTO THE MANHOLE INVERTS SHALL BE INSTALLED WITH SOFFITS LEVEL UNLESS SHOWN OTHERWISE.
 - THE CONNECTION TO THE ADAPTABLE SEWER SHALL BE MANUFACTURED JUNCTION PIPES. A SADDLE CONNECTION IS NOT PERMITTED UNLESS IT IS CLEARLY SPECIFIED.
 - CONNECTIONS TO THE EXISTING PUBLIC SEWER WILL BE IN ACCORDANCE WITH APPROVAL GRANTED BY THE STATUTORY UNDERTAKER
 - PRIVATE DRAINAGE CONNECTIONS TO THE SEWER WILL BE 150mm DIAMETER AND LAID TO THE SPECIFIED INVERT.
 - THE INVERT LEVELS SPECIFIED AT THE DRAG OUT CHAMBER ARE INCOMING LEVELS.
 - A PROTECTIVE GEOTEXTILE/PLASTIC MEMBRANE IS TO BE APPLIED TO ALL FOUL SEWERS LAID ABOVE STORM SEWERS WITH LESS THAN 500mm OF COVER
 - CENTRE OF MANHOLES MAY NOT BE AT THE SAME LOCATION AS PIPE INTERSECTION OR AS SHOWN IN THE LAYOUT. THE MANHOLE RINGS SHALL BE ADJUSTED OVER THE MANHOLE BASE TO SATISFY THE FOLLOWING REQUIREMENTS:
 - CLEARANCE FROM THE ADJACENT PIPE WORK
 - CLEARANCE FROM THE KERB LINE (THE BISCUIT OF THE MANHOLE SHALL NOT PROJECT UNDER THE ROAD CHANNEL LINE).
 - TO PROVIDE THE MINIMUM STANDING SPACE ON THE BENCHING AND THEREBY LOCATE THE MANHOLE COVER AND ENTRY ACCESS.
 - TO PROVIDE THE MINIMUM 250mm OF BEARING FOR THE MANHOLE RING OVER THE CAST IN STUB PIPES.
 - IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LIAISE WITH THE HIGHWAY AND SEWERAGE AUTHORITIES FOR APPROVALS, INTERIM INSPECTION, SNAGGING AND FINAL INSPECTIONS OF THEIR WORK TO ADAPTABLE STANDARDS.
 - AT THE CONCLUSION OF THE WORKS THE CONTRACTOR SHALL PROVIDE A MARKED UP DRAWING TO RECORD ANY AS BUILT VARIATIONS NOT SHOWN ON THE DRAWINGS.
 - EXISTING UNITED UTILITIES WATER MAIN LOCATION AND DEPTH IS INTERPOLATED FROM AS BUILT DRAWINGS PROVIDED BY UU AND TRIAL PIT INFORMATION PROVIDED BY PERSIMMON HOMES.

PO6 18.03.26	Amended FFLs.	H.S.	R.A
PO5 13.03.26	Amended FFLs, and roads 5 and 6.	H.S.	R.A
PO4 26.02.26	Design revised to latest site layout.	H.S.	R.A
PO3 18.07.24	Updated drainage around junction on spine road	H.S.	R.A
PO2 23.04.24	Hydrobrake updated	H.S.	R.A
PO1 22.03.24	PRELIMINARY - Issued for Information	H.S.	R.A
Rev	Date	Description	By

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Project Name:
**SALESBURY VIEW
WILPSHIRE**

Client:
PERSIMMON HOMES LANCOS

Designed: **R.A** Drawn: **H.S** Checked: **R.A** Scale @ A1:
1:500

Drawing Title:
**DRAINAGE LAYOUT
SHEET 2**

Project No:
210687

Drawing No:
210687-EDGE-XX-DR-C-2002

**PRELIMINARY
NOT FOR CONSTRUCTION**

Revision

P06

Appendix F – Greenfield runoff and volume calculations

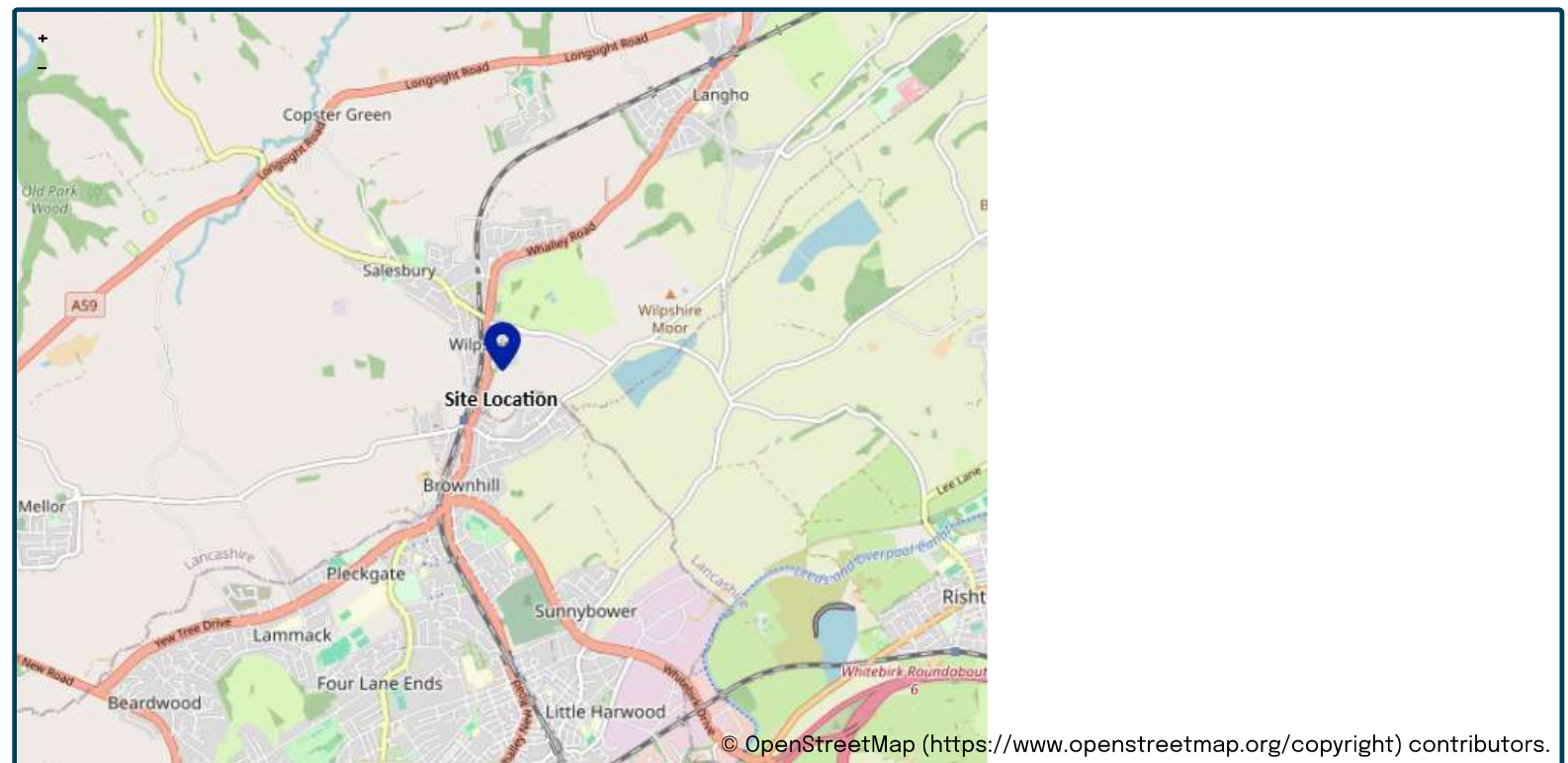
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	26/08/2025
Calculated by	
Reference	
Model version	2.1.2

Location

Site name	Salesbury View
Site location	Wilpshire



Site easting (British National Grid)	368888
Site northing (British National Grid)	431831

Site details

Total site area (ha)	1.722	ha
----------------------	------------------------------------	----

Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	1158 mm	☒	1158
How should SPR be derived?	WRAP soil type		
WRAP soil type	4	☒	4
SPR	0.47		
QBar (IH124) (l/s)	14.98 l/s		

Growth curve factors

	<u>My value</u>		<u>Map value</u>
Hydrological region	10	☒	10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	IH124	
Flow rate 1 year (l/s)	13.0	l/s
Flow rate 2 year (l/s)	13.9	l/s
Flow rate 10 years (l/s)	20.7	l/s
Flow rate 30 years (l/s)	25.5	l/s
Flow rate 100 years (l/s)	31.2	l/s
Flow rate 200 years (l/s)	35.5	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.1.2) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Edge Consulting UK		Page 1																										
Barton Arcade Manchester M3 2BH																												
Date 26/08/2025 06:42 File	Designed by phill Checked by																											
XP Solutions		Source Control 2020.1.3																										
<u>Greenfield Runoff Volume</u> FSR Data <table> <tr> <td>Return Period (years)</td> <td>100</td> </tr> <tr> <td>Storm Duration (mins)</td> <td>360</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> </tr> <tr> <td>M5-60 (mm)</td> <td>19.000</td> </tr> <tr> <td>Ratio R</td> <td>0.300</td> </tr> <tr> <td>Areal Reduction Factor</td> <td>1.00</td> </tr> <tr> <td>Area (ha)</td> <td>1.722</td> </tr> <tr> <td>SAAR (mm)</td> <td>1121</td> </tr> <tr> <td>CWI</td> <td>123.636</td> </tr> <tr> <td>Urban</td> <td>0.000</td> </tr> <tr> <td>SPR</td> <td>47.000</td> </tr> </table> Results <table> <tr> <td>Percentage Runoff (%)</td> <td>51.17</td> </tr> <tr> <td>Greenfield Runoff Volume (m³)</td> <td>589.748</td> </tr> </table>			Return Period (years)	100	Storm Duration (mins)	360	Region	England and Wales	M5-60 (mm)	19.000	Ratio R	0.300	Areal Reduction Factor	1.00	Area (ha)	1.722	SAAR (mm)	1121	CWI	123.636	Urban	0.000	SPR	47.000	Percentage Runoff (%)	51.17	Greenfield Runoff Volume (m³)	589.748
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Appendix G – MicroDrainage calculations

Quick Storage Estimate

Variables

FSR Rainfall

Return Period (years) 30

Region England and Wales

Map M5-60 (mm) 19.000

Ratio R 0.300

Cv (Summer) 0.750

Cv (Winter) 0.840

Impermeable Area (ha) 1.722

Maximum Allowable Discharge (l/s) 15.0

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 10

Analyse OK Cancel Help

Enter Safety Factor between 1.0 and 50.0

Quick Storage Estimate

Results

Global Variables require approximate storage of between 521 m³ and 847 m³.

These values are estimates only and should not be used for design purposes.

Variables

Results

Design

Overview 2D

Overview 3D

Vt

Analyse OK Cancel Help

Enter Safety Factor between 1.0 and 50.0

Quick Storage Estimate

Variables

FSR Rainfall

Return Period (years) 100

Region England and Wales

Map M5-60 (mm) 19.000

Ratio R 0.300

Cv (Summer) 0.750

Cv (Winter) 0.840

Impermeable Area (ha) 1.722

Maximum Allowable Discharge (l/s) 15.0

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 60

Analyse OK Cancel Help

Enter Climate Change between -100 and 600

Quick Storage Estimate

Results

Global Variables require approximate storage of between 1255 m³ and 1882 m³.

These values are estimates only and should not be used for design purposes.

Variables

Results

Design

Overview 2D

Overview 3D

Vt

Analyse OK Cancel Help

Enter Climate Change between -100 and 600