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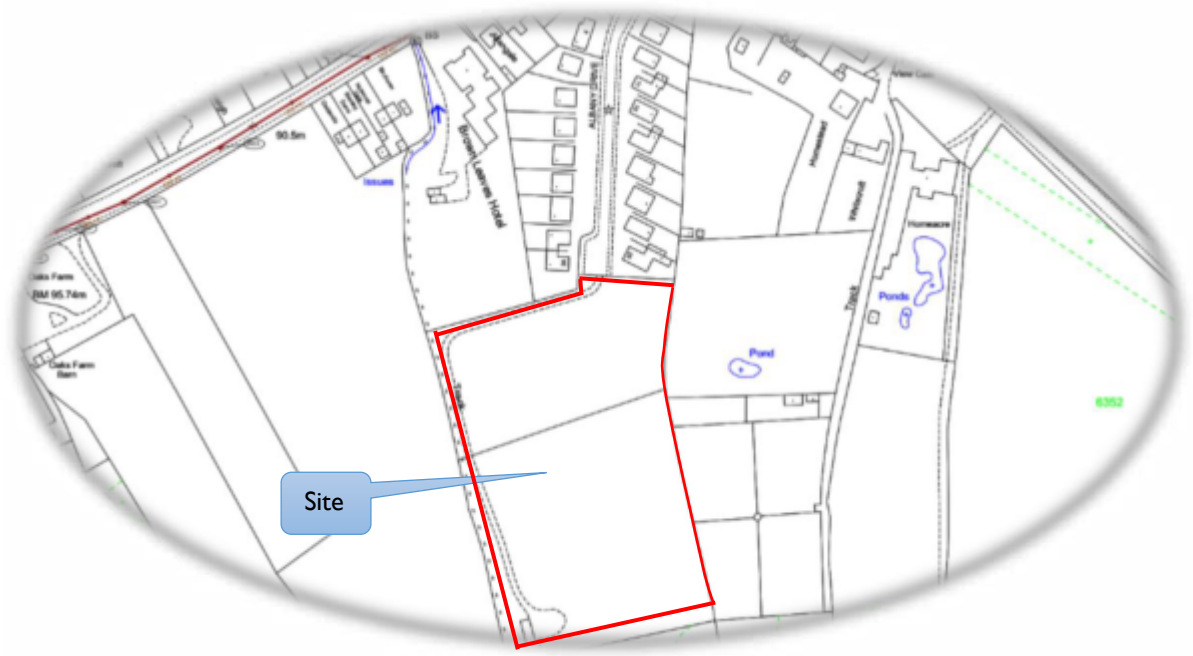
FLOOD RISK ASSESSMENT



PROPOSED DEVELOPMENT AT
ALBANY DRIVE, COPSTER GREEN, RIBBLE VALLEY, BB1 9ET

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Limitations

All findings, recommendations and conclusions contained in this report are based on information provided to us during investigations. Flood Flow Ltd has created the report based on the assumption that all the information is accurate and accepts no liability should additional information exist or become available.

Unless otherwise requested by the client, Flood Flow Ltd is not obliged to and disclaims any obligation to update the report for events taking place after the date noted on the report.

Flood Flow Ltd makes no representation whatsoever concerning the legal significance of its findings or the legal matters referred to in the report. The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against the flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates, and associated probabilities.

This report has been prepared for the sole use of the client is based on the understanding that the site lies within Flood Zone 1 as defined by the Environment Agency flood mapping. Any changes to this designation would require reassessment. No other third parties may rely upon or reproduce the contents of this report without the written permission of Flood Flow Ltd.

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SECTION 1 EXECUTIVE SUMMARY

1.1. Flood Flow Ltd has been instructed to prepare a Flood Risk Assessment in support of a planning application for the proposed development at Albany Drive, Copster Green, Ribble Valley, BB1 9ET.

1.2. The subject site location is illustrated in Appendix A with a site grid reference NGR E 367359 and N 433368.

1.3. The site is located within the semi-rural settlement of Copster Green, accessed from the A59 Longsight Road. It is bounded to the north by existing residential properties on Albany Drive and Brown Leaves Grove, to the east and south by agricultural land and scattered development, and to the west by fields and low-lying vegetation.

1.4. The proposal involves the redevelopment of land to deliver a residential scheme with associated landscaping, internal estate roads, access, and drainage infrastructure.

1.5. The Flood Risk Assessment has been undertaken with information compiled from Environment Agency sources. This assessment has concluded that the proposed development is located within Flood Zone 1. This means the land is assessed as having a low probability of flooding, which is less than 1 in 1000 (<0.1%).

1.6. The review of Environment Agency surface-water flood mapping identifies small areas of low to medium surface-water flood risk in the wider area, particularly around the Albany Drive / Longsight Road junction, where local highway drainage constraints exist. However, the development site itself is predominantly within very low to low surface-water risk zones and is not crossed by any identified deep overland flow paths.

1.7. The assessment has determined that the site constitutes a "More Vulnerable" land use under the National Planning Policy Framework (NPPF) vulnerability classification. As it lies within Flood Zone 1, this vulnerability class is fully appropriate, and no Sequential or Exception Test is required.

1.8. The proposed development and drainage works will provide an improvement to local drainage conditions by introducing a formal SuDS-based system, attenuating runoff and replicating the natural west–south-west drainage catchment. This avoids

discharging toward the constrained A59 junction and therefore reduces off-site flood risk.

SECTION 2 POLICY AND GUIDANCE CONTEXT

NATIONAL PLANNING POLICY FRAMEWORK & TECHNICAL GUIDANCE

2.1. The National Planning Policy Framework (NPPF) was published in England in December 2024. As a result, all previous Planning Policy Guidance (PPG) and Planning Policy Statements (PPS) were superseded. This included PPS25: Development and Flood Risk. One of the key aims of the NPPF is to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding and directing development away from areas of high risk. It advises that where development is necessary in areas of higher risk, it should be safe and that flood resilience should also be incorporated into the design. It also advises of the fact that new developments should not increase flood risk elsewhere and new development should aid in mitigating flood risk to the wide area.

PLANNING PRACTICE GUIDANCE – CLIMATE CHANGE, FLOOD RISK & COASTAL CHANGE

2.2. The NPPF is also accompanied by a Technical Guidance document which borrows heavily from the superseded PPS 25 document with regards to:

- Climate change uplift usage classification
- Flood zone categories
- Flood zone / Usage Compatibility
- The sequential test
- The exception test

LANCASHIRE COUNTY COUNCIL STRATEGIC FLOOD RISK ASSESSMENT (SFRA)

2.3. Local Planning Authorities are required to produce Local Development Frameworks, which are portfolios of Local Development Documents that collectively deliver the spatial planning strategy.

2.4. The Lancashire County Council Strategic Flood Risk Assessment (SFRA) provides local information on flood mechanisms including fluvial, pluvial, groundwater, sewer exceedance, and infrastructure failure. It also identifies areas of known local flooding issues, including surface-water ponding along the A59 corridor, which is relevant to the northern approach to the site.

2.5. Flooding from rivers occurs when channel capacity is exceeded. The site lies wholly within Flood Zone 1, far from any main river, and is at very low fluvial flood risk.

2.6. Surface-water flooding occurs when rainfall cannot infiltrate or be conveyed by drainage systems. National mapping shows low risk across most of the site with isolated pockets of medium risk near the western boundary. No deep or high-velocity exceedance routes cross the developable area.

2.7. Sources of flooding considered within the SFRA include:

2.8. Flooding occurs when flows exceed channel capacity. As above, the site is in Flood Zone 1 and the probability of such flooding is very low.

2.9. The sea (tidal): Flooding at low-lying coastal areas and tidal estuaries is caused by storm surges and high tides, with overtopping and breach failure of sea defences possible during extreme storm events. The site is inland, far from any tidal influence, and tidal flood risk is not a mechanism affecting this development.

2.10. Pluvial (surface water or overland flows): Heavy rainfall unable to infiltrate or enter drainage systems may generate overland flow and shallow ponding. This can occur locally along the A59 and at the existing Albany Drive junction. Site-specific topography influences depth and routing of these flows.

2.11. Groundwater: Groundwater flooding occurs when the water table rises to the surface. The EA long-term flood risk dataset confirms the site is not within a groundwater flood alert area and groundwater risk is low.

2.12. Sewers and drains: Localised flooding can occur where existing drainage systems are under capacity or blocked. Historic issues are known north of the site near the A59, where highway drainage is constrained. The proposed drainage strategy directs flows away from this area, ensuring the development does not increase risk.

2.13. Artificial sources (reservoirs, canals, lakes and ponds): Reservoir and canal flooding may occur as a result of capacity exceedance or structural failure.

SOURCES OF FLOODING

2.14. Rivers (fluvial): Flooding occurs when flow within river channels exceeds capacity; and the type of flood event experienced e.g. flash flooding; depends upon the characteristics of the river catchment.

2.15. The Sea (tidal): Flooding at low lying coastline and tidal estuaries is caused by storm surges and high tides; with overtopping and breach failure of sea defences possible during extreme storm events.

2.16. Pluvial (surface flooding or overland flows): Heavy rainfall, which is unable to soak away via infiltration or enter drainage systems can flow overland, resulting in localised flooding. Topography generally influences the direction and depth of flooding caused by this mechanism.

2.17. Groundwater: Caused when ground water levels rise to the surface; and is most likely to occur in low lying areas underlain by aquifers.

2.18. Sewers and drains: Generally, occur in more urban areas; where sewers and drains are overwhelmed by heavy rainfall or blocked pipes and gullies.

2.19. Artificial Sources (reservoirs, canals, lakes and ponds): Reservoir and canal flooding may occur as a result of capacity exceedance or structural failure.

CIRIA GUIDANCE - C624 DEVELOPMENT AND FLOOD RISK

2.20. The CIRIA Guidance publication "C624 Development and Flood Risk – Guidance for the Construction Industry" defines 3 levels of FRA, which can be undertaken:

- Level 1 – Screening Study
- Level 2 – Scoping Study
- Level 3 – Detailed Study

2.21. For this proposed development a Level 2 Scoping Study Flood Risk Assessment (FRA) is considered appropriate.

CIRIA GUIDANCE - C753 THE SUDS MANUAL

2.22. CIRIA C753 provides best-practice guidance on the planning, design and long-term management of Sustainable Drainage Systems (SuDS). It details a wide range of SuDS components and how they can be integrated to provide hydraulic control, pollution mitigation, biodiversity enhancement and amenity benefits across a residential development.

2.23. A review of the geological and soil conditions confirms that the site is underlain by Copster Green Sandstone, a permeable sandstone formation. Soilscape mapping identifies the local soils as Soilscape 6 – freely draining, slightly acid loamy soils, which exhibit good natural infiltration characteristics and a low propensity for seasonal waterlogging. These conditions indicate strong feasibility for infiltration-based SuDS, including infiltration basins, permeable paving with sub-base infiltration, and swales. Ground investigation and BRE 365 testing will be required to confirm infiltration rates and to determine the depth to bedrock or any superficial horizons that may influence infiltration performance. Appropriate SuDS pretreatment measures should be incorporated to protect groundwater quality in accordance with CIRIA C753 guidance.

2.24. Following the SuDS hierarchy, infiltration represents the preferred method for surface water disposal, subject to satisfactory infiltration testing. If infiltration is not viable or only partially effective in specific areas of the site, the next option is to discharge to a local ditch or watercourse.

2.25. The Environment Agency Main River Map confirms that no Main Rivers lie within or immediately adjacent to the site. The nearest Main River is the River Ribble, located approximately 400 metres to the west, at a significantly lower elevation and outside the site's drainage catchment.

2.26. An existing drainage ditch/watercourse is present along the western site boundary and forms part of the natural overland flow route identified on the topographical survey. This represents the most suitable outfall location for restricted surface water discharge should infiltration prove insufficient.

2.27. There are no adopted surface water sewers within the immediate vicinity of the site. Surface water features shown on mapping relate to existing watercourses which ultimately discharge downstream to Park Brook. As such, discharge to a public surface water sewer is not proposed. Surface water will be managed in accordance with the drainage hierarchy, with priority given to infiltration and, where required, controlled discharge to the existing ditch/watercourse.

2.28. To demonstrate compliance with the SuDS hierarchy, infiltration will be maximised across the site wherever feasible, with the potential for partial infiltration via permeable areas such as gardens, landscaped zones and SuDS features. Where infiltration is not viable or only partially effective, exceedance and residual flows will be conveyed to the existing western boundary ditch/watercourse. No discharge to a surface water sewer is proposed.

2.29. If infiltration is demonstrated to be unviable or only partially effective, surface water will discharge at a controlled rate to the existing western boundary ditch/watercourse. The drainage strategy will ensure that runoff is attenuated and restricted to greenfield runoff rates. Exceedance flows will be managed within the site and directed along overland flow routes that follow the natural topography toward the western and south-western boundaries, ensuring no increase in flood risk to third parties.

2.30. The above conclusions are based on published data from the Environment Agency, British Geological Survey, Cranfield University Soilscapes, and local mapping from the Statutory Main River Register.

SUSTAINABLE DRAINAGE SYSTEMS, NON-STATUTORY TECHNICAL STANDARDS

2.31. Within this document, it is defined how the surface water discharge rates from the development should be derived and provides desirable discharge rates based on storm events. Peak flow rates and volume controls are discussed, and consideration needs to be given within the design of the surface water system to ensure that both peak flows and volumes do not exceed that of the predevelopment case.

RESERVOIR ACT 1975

2.32. The site will be limited to and will not exceed the existing discharge rate and will therefore require attenuation. The attenuation proposals will limit storage volumes to below 10000 cubic metres so as to ensure that the requirement of the Reservoir Act 1975 and subsequent amendments are not applicable.

EXISTING SITE DESCRIPTION & LOCATION

2.33. The site for which the FRA has been commissioned is located at Albany Drive, Copster Green, Ribble Valley, BB1 9ET. The proposed development comprises residential housing with associated access, landscaping, and drainage infrastructure on land currently occupied by existing buildings and open grassland.

2.34. The development site grid reference used is NGR E 367359 and N 433368 and has a site area of approximately 0.9816 ha. The site is accessed from Albany Drive, which connects to Longsight Road (A59). The setting is semi-rural, characterised by residential development to the north and agricultural land to the east, south and west.

2.35. Vehicular and pedestrian access to the site is taken from Albany Drive via the existing residential estate. The site is bordered to the north by existing dwellings on Albany Drive and Brown Leaves Grove, to the east and south by agricultural fields and scattered development and to the west by agricultural land and a low-lying drainage depression.

There are no ponds located within the development boundary, although small waterbodies exist elsewhere within the wider landscape.

2.36. Based on the supplied topographical survey, existing ground levels across the site generally fall from east to west. Levels are highest within the eastern part of the site and reduce toward the western boundary, where a shallow topographic depression is present. The site therefore exhibits an overall east–west gradient, with a secondary fall toward the south-west. The landform appears well drained, with surface water naturally conveyed by overland flow toward the western low-lying area and adjacent grassed land..

2.37. Reference to the extract of the online Gov.uk flood risk map – see below - confirms the site is within an area classified as Flood Zone 1 – This means the land is assessed as having a low probability of flooding, which is less than 1 in 1000 (<0.1%).

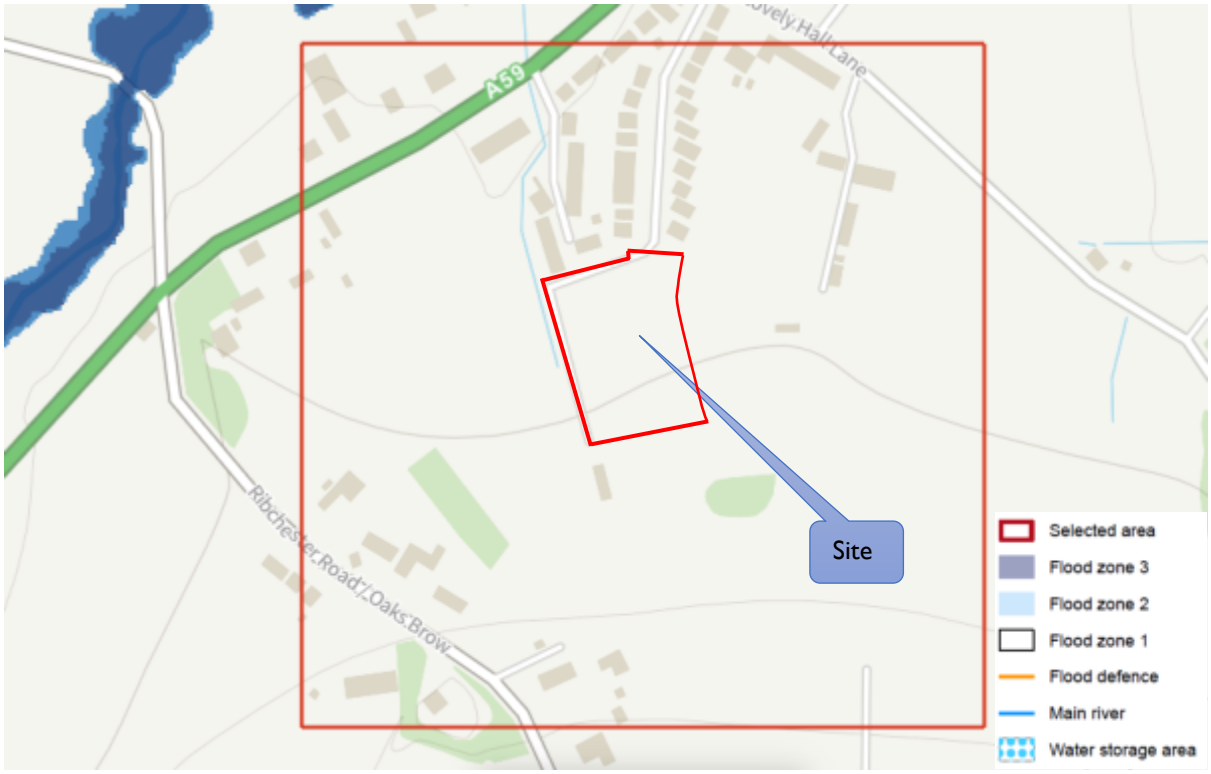


Figure 2.1 EA Flood Map for Planning

2.38. Reference to the British Geological Survey (BGS) online geological viewer confirms that the site is underlain by the Copster Green Sandstone Formation, a sandstone bedrock unit of generally high permeability. The superficial deposits in the wider area comprise Devensian diamicton (till), although these deposits are variable and locally absent around the site. Where superficial deposits are thin or discontinuous, the underlying sandstone bedrock may occur relatively close to the surface.

Figure 2.2 BGS Superficial & Bedrock Geology

Figure 2.4 Cranfield University Soilscapes Map

2.39. Reference to MAGIC online mapping confirms that the site is not located within a Groundwater Source Protection Zone (SPZ). The underlying bedrock geology (Copster Green Sandstone) is designated as a Secondary A Aquifer, indicating layers of permeable sandstone capable of supporting localised groundwater flow. The overlying superficial deposits comprise Devensian Till (Diamicton), designated as a Secondary (Undifferentiated) Aquifer due to their variable and generally lower permeability.

Given these aquifer designations, infiltration to ground is feasible in principle; however, appropriate SuDS treatment stages (e.g. filter strips, permeable paving with treatment sub-base, and vegetated swales) must be incorporated in accordance with CIRIA C753 to ensure protection of groundwater quality prior to any infiltration.

2.40. A Secondary Aquifer – A are formed of moderately permeable layers capable of supporting water supplies at a local scale, and in some cases forming an important source of base flow to rivers.

Figure 2.5 Aquifer Designation Map

Figure 2.6 Groundwater Vulnerability Map

2.41. The existing impermeable drained area within the site is effectively 0 m², as the land currently comprises open, permeable grassland and agricultural fields. Surface water infiltrates naturally into the ground or drains downslope toward the western low-lying depression, consistent with the site topography. As the proposed development

will introduce impermeable surfaces, runoff rates will be restricted in accordance with the surface-water drainage hierarchy to ensure that post-development discharge does not exceed the existing greenfield runoff rate.

PUBLIC SEWERS

2.42. Public sewer records obtained from United Utilities indicate the presence of a public foul sewer within the vicinity of Albany Drive and the wider Longsight Road (A59) corridor. Subsequent topographical survey information has identified a nearby manhole within Lovely Hall Lane, confirming an available point of connection at a suitable invert level.

2.43. On this basis, foul drainage from the proposed development is intended to connect to the existing public foul sewer network via a gravity connection, subject to detailed design, capacity assessment and formal approval by United Utilities.

2.44. There are no adopted surface water sewers within the immediate vicinity of the site. Surface water features shown on mapping relate to existing watercourses, which ultimately discharge downstream to Park Brook. Surface water will therefore be managed in accordance with the drainage hierarchy, with preference given to infiltration where feasible, or discharge to the existing watercourse along the western boundary of the site.

PRIVATE DRAINAGE

2.45. There is no evidence of any existing private drainage network within the development site. Surface water currently drains naturally toward the western low-lying depression, consistent with the on-site topography. No direct connections to the public sewer system are known to exist.

INFILTRATION EXPECTATIONS

2.46. There are five bands of soil classes in England which roughly describe the infiltration potential of an area. It is derived from factors such as soil permeability, topography and the likelihood of impermeable layers.

2.47. Infiltration potential is controlled primarily by soil type, permeability and groundwater depth. British Geological Survey (BGS) mapping identifies the bedrock as Copster Green Sandstone (Sandstone), a permeable Secondary-A Aquifer with

moderate fracture and intergranular permeability. The superficial geology comprises Till, Devensian – Diamicton, a variable glacial deposit that may locally restrict infiltration where clay content is higher, but which is often discontinuous on sloping sites such as this.

2.48. The Cranfield University Soilscape dataset identifies the soils as Soilscape 6 – freely draining slightly acid loamy soils. These soils have good natural infiltration capability, low susceptibility to seasonal waterlogging, and typically support downward percolation of rainfall. Seasonal variations in infiltration are possible but are not considered significant for this soil type.

2.49. Overall, infiltration SuDS are considered feasible in principle, given the permeable sandstone bedrock and the freely draining loamy soils. Infiltration performance may vary depending on the thickness of the superficial till, and will therefore require confirmation through on-site BRE 365 infiltration testing. Given that the site lies within a High Groundwater Vulnerability Zone, SuDS infiltration systems must incorporate appropriate pretreatment measures (e.g., permeable paving with a treatment sub-base, vegetated swales, filter strips) in accordance with CIRIA C753 to protect groundwater quality.

2.50. The generalised soil infiltration classification for the site corresponds to Soilscape 6, representing freely draining loamy soils - Type 1. Thus, the use of infiltration to discharge surface runoff is likely to be practical.

Soil	WRAP[1]	Runoff	Soil Value	Soil Characteristics
1	Very High	Very Low	0.15	Sandy, well drained
2	High	Low	0.30	Intermediate soils (sandy)
3	Moderate	Moderate	0.40	Intermediate soils (silty)
4	Low	High	0.45	Clayey, poorly drained
5	Very Low	Very High	0.50	Steep, rocky areas

Table 2.11 Soil Classification

[1] *Winter Rainfall Acceptance Potential*

2.51. The preferred surface water drainage strategy is to prioritise infiltration, subject to confirmation via BRE 365 infiltration testing. Where infiltration is not feasible or only

partially effective, the secondary option will be to discharge surface water to the existing western ditch/low-lying drainage depression, at a restricted greenfield runoff rate, subject to agreement with the Lead Local Flood Authority (LLFA).

Should neither infiltration nor discharge to the ditch be feasible, a final-resort option may involve connection to the public surface-water sewer, subject to United Utilities approval. Exceedance flows will be contained within the site boundary and directed along defined overland flow routes away from buildings, following the natural topography toward the southern and western boundaries.

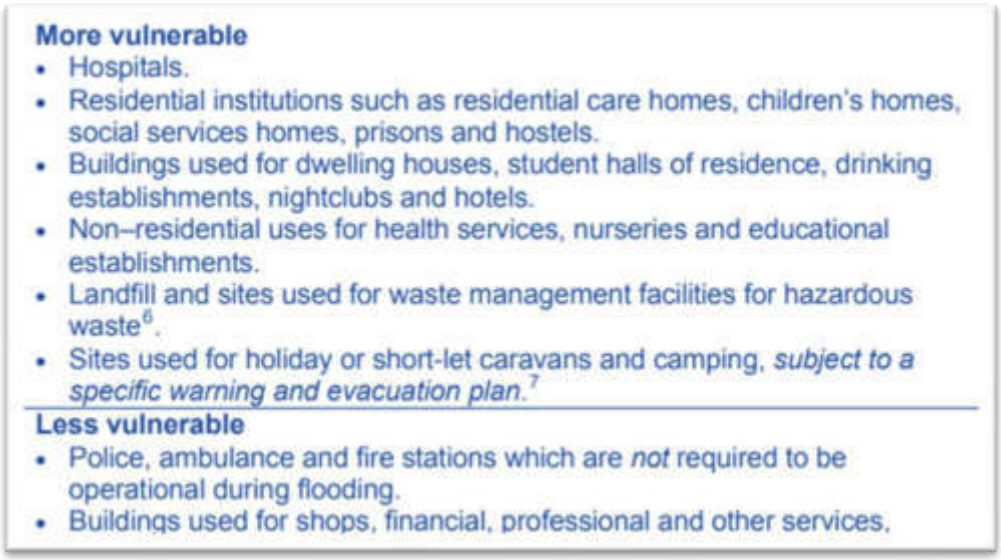
SECTION 3 DEVELOPMENT PROPOSALS

3.1. The site is located at Albany Drive, Copster Green, Ribble Valley, BB1 9ET, within a semi-rural settlement. The development proposal comprises new residential housing with associated access, landscaping, and drainage infrastructure on land that is currently open grassland with a shallow natural depression along the western boundary. Vehicular access will be taken directly from Albany Drive.

3.2. The total existing development site area is 0.9816 ha and the proposed impermeable area is approximately 0.6871ha, representing 70% of the site. The existing impermeable area is 0 m², indicating a net increase of 6871m² of impermeable surfacing as a result of the development.

3.3. The proposed layout location is included in Appendix A.

3.4. With development elements classified as residential use, it is considered the development falls within the 'More Vulnerable' flood risk classification as defined in Table 2 of the Guidance below.



More vulnerable

- 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]

Less vulnerable

- Police, ambulance and fire stations which are *not* required to be operational during flooding.
- Buildings used for shops, financial, professional and other services,

Figure 3.1 Flood risk vulnerability classification (NPPF Technical Guidance, Table 2)

SEQUENTIAL & EXCEPTIONS TEST

3.5. Under the requirements of PPG "Flood Risk and Coastal Change", the local authority is required to apply a risk based sequential test to new developments. This allows

the local authority to direct development to areas which are at the lowest probability of flooding.

3.6. As this development falls within Flood Zone 1, in accordance with Table 3 of the Guidance shown below, the proposed development will not require both a Sequential and Exceptions Test.

Flood Zone	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	✓	✓	✓	✓	✓
2	✓	Exception Test Required	✓	✓	✓
3a	Exception Test Required	x	Exception Test Required	✓	✓
3b	Exception Test Required	x	x	x	✓

Figure 3.2 Flood risk vulnerability and flood zone `compatibility` (NPPF Technical Guidance, Table 3)

DEVELOPMENT AND FLOOD RISK

3.7. Table 1 of the NPPF Technical Guidance states that for development proposals sited in Flood Zone 1 comprising of under one hectare, the vulnerability to flooding from other sources and the effect of the new development on surface water runoff are incorporated in the Flood Risk Assessment.

FINISHED LEVEL RESTRICTIONS

3.8. There are no restrictions on the finished floor levels in Flood Zone 1.

FLOOD COMPENSATION

3.9. Not applicable in Flood Zone 1.

FLOOD RESILIENT CONSTRUCTION

3.10. Not applicable in Flood Zone 1

EMERGENCY SAFE ACCESS AND EGRESS (FLOOD EVENT)

3.11. Not applicable in Flood Zone 1

SECTION 4 DEFINITION OF FLOOD HAZARD

4.1. Reference has been made to: -

- Environment Agency (EA) online flood mapping
- National Planning Policy Framework (NPPF, Dec 2023)
- EA Climate Change Allowances (2022 update)
- British Geological Survey (BGS) online mapping
- Cranfield University Soilscape Mapping
- EA Groundwater Vulnerability Mapping
- Environment Agency Surface Water Flood Risk Map
- EA / DEFRA SC030219 "Rainfall Runoff Management for New Development"
- Lancashire County Council (LLFA) SuDS Guidance

4.2. The site could be at risk of flooding caused by flooding from local sewers that are blocked or have insufficient capacity.

4.3. The site could be at risk of flooding from highway drainage exceedance or from surcharged local surface water networks.

4.4. The site could be at risk of flooding from surface waters flowing onto the site from other areas.

4.5. The site could be at risk of flooding because of groundwater levels reaching and exceeding existing ground levels on site.

4.6. The site could be at risk of flooding caused by failure of local infrastructure such as mains water pipes or failure of other local industrial and historical processes.

4.7. Any increase in impermeable areas within the development site may increase the risk of overland flooding. However, the proposed drainage strategy will ensure that runoff rates do not exceed existing rates, thereby managing the flood risk appropriately.

4.8. The site could be at risk of flooding caused by site drainage or failing culverts which are not properly maintained, or which are subjected to flows greater than those for which it was designed.

SECTION 5 FLOOD RISK OVERVIEW

5.1. The potential sources of flooding which could be experienced have been summarised in Table 5.1. Those posing the greatest flood risk to the site have been investigated further in Section 6 to determine possible mitigation measures.

Source of Flooding	Potential Flood Risk					Site Description
	High	Med	Low	None	Information Not Available	
Fluvial			X			Flood Zone 1 (SFRA & EA). This means the land is assessed as having a low probability of flooding, which is less than 1 in 1000 (<0.1%).
Tidal				X		The site is inland. There is no risk from tidal sources.
Canal				X		Not applicable. There are no canals in close proximity to the site.
Ground Water			X			The site is at low risk of groundwater flooding (LFRMS). SFRA indicates no results of groundwater flooding. Concluded low, see Section 6.
Artificial Waterbodies				X		There are no reservoirs close to the site and it is not likely to affect the site (Gov UK).
Pluvial Runoff			X			The Gov UK Map indicates low risk onsite from Pluvial flooding.
Critical Drainage Areas				X		The site is not within a Critical Drainage Area according to the SFRA.

Table 5.1 Potential Sources of Flooding Overview

SECTION 6 PROBABILITY OF FLOODING

6.1. A site classified within Environment Agency Flood Zone 1. This means the land is assessed as having a low probability of flooding, which is less than 1 in 1000 (<0.1%).

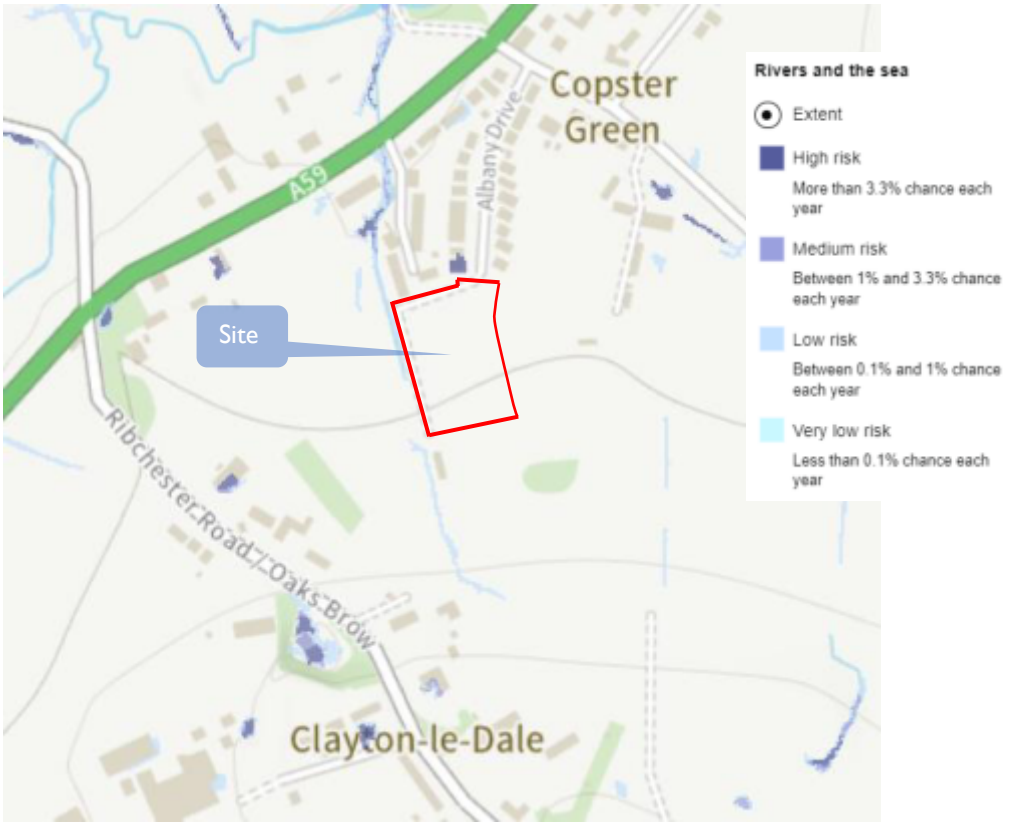


Figure 6.1 Flood Risk from Rivers or the Sea, Extent of Flooding

6.2. The relevant Strategic Flood Risk Assessment (SFRA) confirms that the site has no recorded fluvial flood events and lies outside all mapped flood storage areas, flood defences, or historical flood outlines.

6.3. The Environment Agency Surface Water Flood Risk Map confirms that the development area is within a very low surface-water flood risk zone. No mapped overland flow paths pass through the site. Some low-lying off-site areas near the A59 show medium to high-risk surface-water flooding from highway and natural drainage routes, but these do not interact with the site due to higher ground levels at Albany Drive.

6.4. Groundwater flood risk mapping indicates a low probability of groundwater emergence on-site. No evidence of groundwater issues has been recorded and infiltration SuDS are considered feasible, subject to BRE 365 infiltration testing and incorporation of SuDS treatment measures due to the site's High Groundwater Vulnerability designation.

6.5. The surrounding highways, including the A59 and Albany Drive, are served by conventional gully and pipe drainage, helping to manage rainfall and runoff during storm events.

6.6. There are no other local industry activities or reservoirs identified whose infrastructure failure could cause flooding on site and therefore the risk of consequential flooding on site is low.

6.7. The site area (0.9816 ha) will have a potential gross drained area of approximately 0.687 ha of new impermeable surfaces. The discharge from the development will be restricted to greenfield runoff rates, ensuring that post-development runoff does not increase flood risk downstream. Therefore, no mitigation is required for fluvial or tidal flooding.

6.8. A properly designed and maintained surface-water drainage system will ensure that the on-site piped network is not exceeded during the 1 in 30-year (3.33%) event, in accordance with NPPF and SuDS requirements. Exceedance flows will be directed along safe overland routes following the natural fall toward the southern and western boundaries, avoiding buildings and access routes.

6.9. The EA surface-water flood map shows the site to be at very low risk of surface-water flooding. Low-lying areas off-site show isolated medium and high-risk patches, but none of these influence the site's drainage or runoff regime.

GROUNDWATER FLOODING

6.10. Groundwater flooding has been assessed with reference to EA groundwater flood risk mapping, BGS hydrogeological datasets, and the DEFRA/EA guidance on groundwater risk. These datasets indicate that the site has low susceptibility to groundwater flooding, although it lies within a High Groundwater Vulnerability zone, reflecting the permeable sandstone aquifer beneath the site.

6.11. Groundwater flooding typically occurs when groundwater levels rise to, or above, the surface following prolonged periods of rainfall. This risk is greatest in areas underlain by highly productive aquifers or low-lying valley floors. The Albany Drive site does not fall into such categories.

6.12. The site is underlain by Copster Green Sandstone, a Secondary A Aquifer, overlain by variable Devensian Till (Diamicton). This combination can result in variable infiltration characteristics; however, EA mapping confirms that the risk of groundwater emergence is low, and the typical groundwater levels are well below existing ground levels at the site.

6.13. It is common for groundwater flooding from water-bearing superficial deposits to occur within the vicinity of watercourses, as the water table is generally in hydraulic continuity with the water levels in the watercourse. Therefore, if the watercourse floodplain is flat and low-lying, the water table is likely to have a low hydraulic gradient and will rise to the equivalent water level within the watercourse (Figure 6.4). This, in turn, can cause the water table to breach the ground surface. This is more prominent in winter during which groundwater flooding often precedes fluvial flooding.

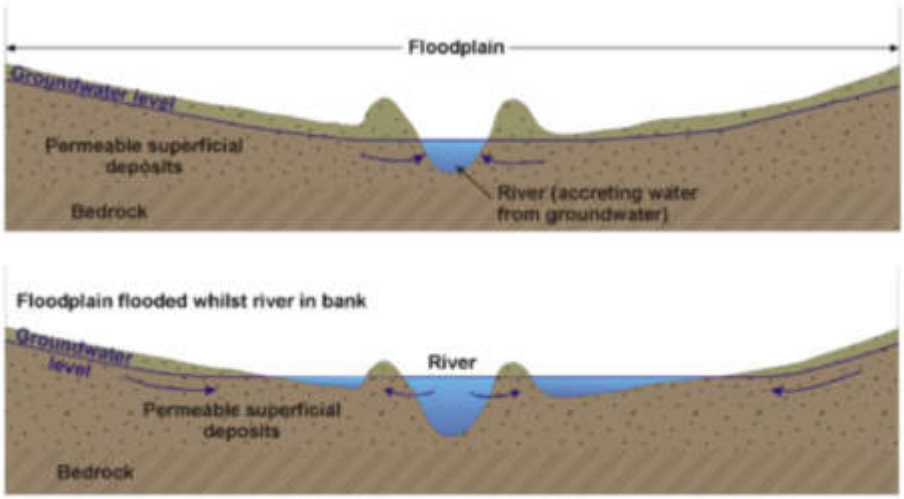


Figure 6.4 Schematic showing mechanisms of groundwater flooding from high in-bank water levels

6.14. It is anticipated that this level will rise over time and during the winter months, however the proposed development is not located within a topographical valley, this

combined with the implementation of mitigation measures i.e. raising finished levels will reduce the risk of flooding from this mechanism.

6.15. In conclusion, the risk of groundwater flooding at the site is assessed as low, consistent with EA mapping and BGS datasets. No groundwater-specific mitigation is required beyond standard SuDS treatment measures and confirmation of infiltration performance through BRE 365 testing.

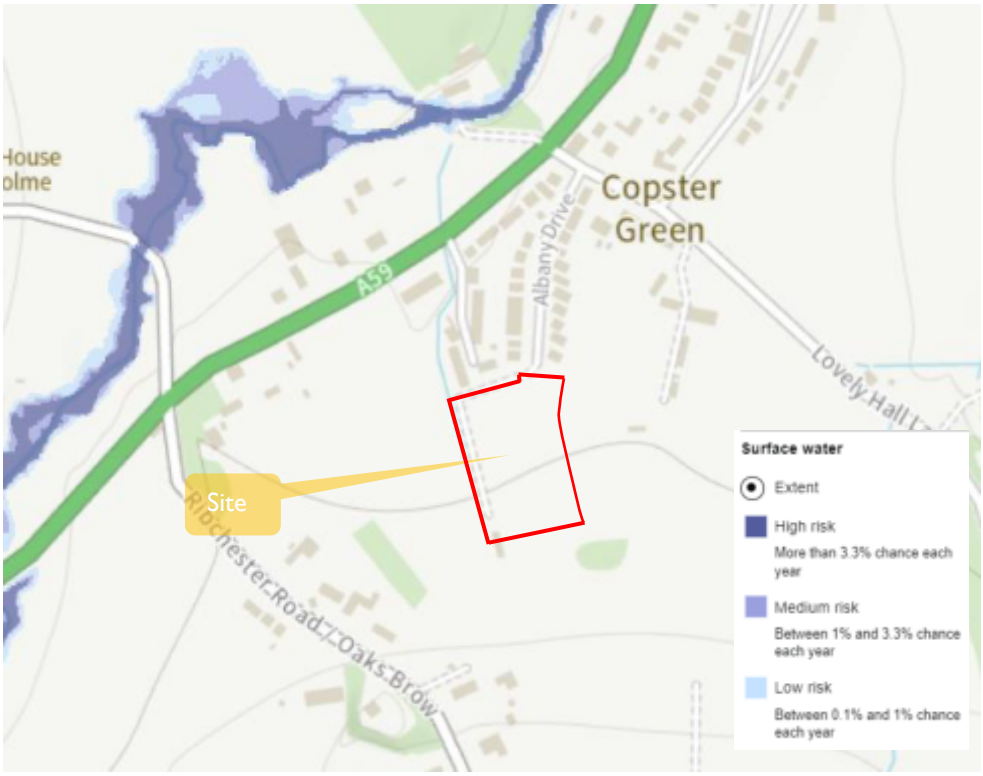


Figure 6.5 Flood Risk from Surface Water - Extent

SECTION 7 CLIMATE CHANGE

7.1. An allowance for climate change should be included to help minimize vulnerability and provide resilience to flooding. According to the 'Flood Risk Assessments: Climate Change Allowances' guidance, both the "Upper End" and "Central" allowances should be applied to Rainfall Intensity.

7.2. The "Central" allowance should be applied to the surface water drainage network/design to assess its performance and ability to contain critical events. The "Upper End" allowance should be applied to assess the potential flood risk implications to the site and to ensure that flooding is wholly contained onsite.

7.3. For the proposed developments, the following climate change allowances should be;

- Residential development +50% rainfall intensity allowance (Upper End, 2070s epoch)

Applies across all of England	Potential Change anticipated for the 2050s	Potential Change anticipated for the 2070s
Upper End	+40%	+50%
Central	+25%	+35%

Table 8.1 Recommended Climate Change Guidance (EA)

7.4. Climate change for this development has been assessed in accordance with current Environment Agency guidance for the Ribble management catchment. Given the expected lifetime of the development beyond 2070, the 2070s Upper End allowance of 50% has been applied to the 1 in 100-year rainfall event to ensure a robust assessment of future flood risk and to demonstrate that the development will remain safe over its lifetime.

CLIMATE CHANGE RECOMMENDATION

7.5. Flood Flow Ltd recommend that the surface water drainage strategy for the proposed development is designed to accommodate the 1 in 100-year rainfall event plus 50% climate change allowance (Upper End), ensuring no surface flooding occurs within the site and no increase in flood risk elsewhere.

SECTION 8 SURFACE WATER MANAGEMENT STRATEGY

8.1. This section provides an overview of the approach to surface water management in the context of flood risk only. A separate, detailed drainage strategy has been prepared by others and should be referred to for discharge rates, attenuation volumes, and network design.

SURFACE WATER DISCHARGE HIERARCHY

8.2. The National Standards for Sustainable Drainage Systems (NSSDS) and National Planning Practice Guidance set out the following hierarchy of surface water runoff destinations;

- 1st Choice Discharge into the ground (infiltration)
- 2nd Choice Discharge to a surface water body
- 3rd Choice Discharge to a surface water sewer
- 4th Choice Discharge to a combined sewer

8.3. Runoff from impermeable areas will be managed to ensure compliance with greenfield runoff rates, with discharge restricted to the equivalent 1 in 2-year (50% AEP) greenfield runoff rate of 9.0 l/s, in accordance with the SuDS hierarchy.

8.4. Ground investigations are required to confirm the suitability of infiltration SuDS; however, based on the verified datasets:

- Superficial deposits: Till, Devensian, Diamicton (variable permeability)
- Bedrock: Copster Green Sandstone (Secondary A Aquifer)
- Soils: Soilscape 6, freely draining slightly acid loamy soils

These conditions indicate that infiltration is feasible in principle, particularly on the higher eastern areas where till is likely to be thinner. The site's High Groundwater Vulnerability classification means SuDS must include appropriate treatment stages prior to infiltration, in accordance with CIRIA C753. Groundwater depth monitoring may also be beneficial.

8.5. Sustainable Drainage Systems (SuDS) will be incorporated wherever practicable to limit runoff rates and improve water quality. Measures may include permeable paving, filter strips, vegetated swales, rain gardens, hydroplanters (bioretention features),

rainwater harvesting systems, and attenuation storage. These features will provide treatment, support water quality objectives and reduce hydrocarbon and sediment loading before infiltration or controlled discharge. The final drainage strategy will incorporate SuDS components to maximise infiltration and ensure runoff is managed at greenfield runoff rates.

8.6. A SuDS treatment train approach will be implemented to manage runoff close to source. Roof runoff will be directed to rainwater harvesting systems for reuse, while hydroplanters and landscaped SuDS features will provide interception, storage, treatment and infiltration of surface water. The drainage design will ensure that, for the majority of rainfall events, the first 5mm of rainfall is intercepted and managed on site through a combination of reuse, infiltration, evapotranspiration and storage, in accordance with the National Standards for Sustainable Drainage Systems.

8.7. An existing ordinary watercourse / drainage ditch is present along the western boundary of the site. This feature forms part of the natural drainage regime and conveys flows downstream toward Park Brook. The ditch/watercourse provides a suitable outfall for surface water discharge, subject to appropriate flow control and agreement with the Lead Local Flood Authority. Field drains may exist within wider agricultural land; any proposed discharge to such drains would require consent from Lancashire County Council (Lead Local Flood Authority).

8.8. A review of the Lancashire County Council Strategic Flood Risk Assessment and local drainage guidance identifies the following responsible authorities:

- Lancashire County Council (Lead Local Flood Authority)
- Environment Agency (Main Rivers)
- United Utilities (Public Sewers)
- Riparian Owners / Landowners (ordinary watercourses, where applicable)

8.9. These authorities are responsible for maintaining drainage infrastructure within their jurisdiction. United Utilities maintain public sewers, the LLFA oversee surface-water drainage and consenting for ordinary watercourse works, and the Environment Agency regulate Main Rivers.

8.10. These authorities are responsible for maintaining drainage infrastructure within their jurisdiction. United Utilities maintain public sewers, the LLFA oversee surface-water

drainage and consenting for ordinary watercourse works, and the Environment Agency regulate Main Rivers. Surface water drainage proposals will be designed in accordance with the Non-Statutory Technical Standards for SuDS, including appropriate control of peak discharge rates and runoff volumes.

8.11. Foul and surface water drainage systems will be designed as separate systems, with no interconnection between the two, in accordance with standard drainage practice and statutory requirements.

8.12. Surface water drainage proposals will be designed in accordance with the Non-Statutory Technical Standards for SuDS, including appropriate control of peak discharge rates and runoff volumes.

DRAINAGE APPROVAL

8.13. The proposed drainage strategy will be submitted to Lancashire County Council (LLFA) for approval. United Utilities will be consulted as the statutory undertaker for foul sewerage, with connection to the existing public foul sewer network subject to their approval. Surface water drainage will be managed via sustainable drainage measures, with discharge to the existing western boundary watercourse in accordance with the drainage hierarchy. Surface water discharge will be restricted to the equivalent greenfield runoff rate (1 in 2-year event) of 9.0 l/s, with attenuation provided up to and including the 1 in 100-year rainfall event plus 50% climate change allowance. The proposed system provides a total attenuation storage volume of 297 m^3, comprising 100 m^3 within the swale and 197 m^3 within geocellular storage crates, in accordance with MicroDrainage storage estimates. Foul and surface water systems will remain separate with no interconnection.

SECTION 9 FLOOD RISK MANAGEMENT MEASURES

9.1. The Environment Agency is the lead organisation for flood forecasting and flood warning in England and Wales. The EA currently offers a 3-stage warning service to properties at risk of flooding.

9.2. The Environment Agency currently only issues direct flood warnings to properties at risk of flooding. The "Floodline Warnings Direct" (FWD) system automatically telephones the occupants of properties where flood forecasts predict flooding is likely.

9.3. The site is not located within a Flood Warning Area or the adjacent Flood Alert Area associated with the brook. The Flood Warning and Alert areas are shown below in a magenta/black.

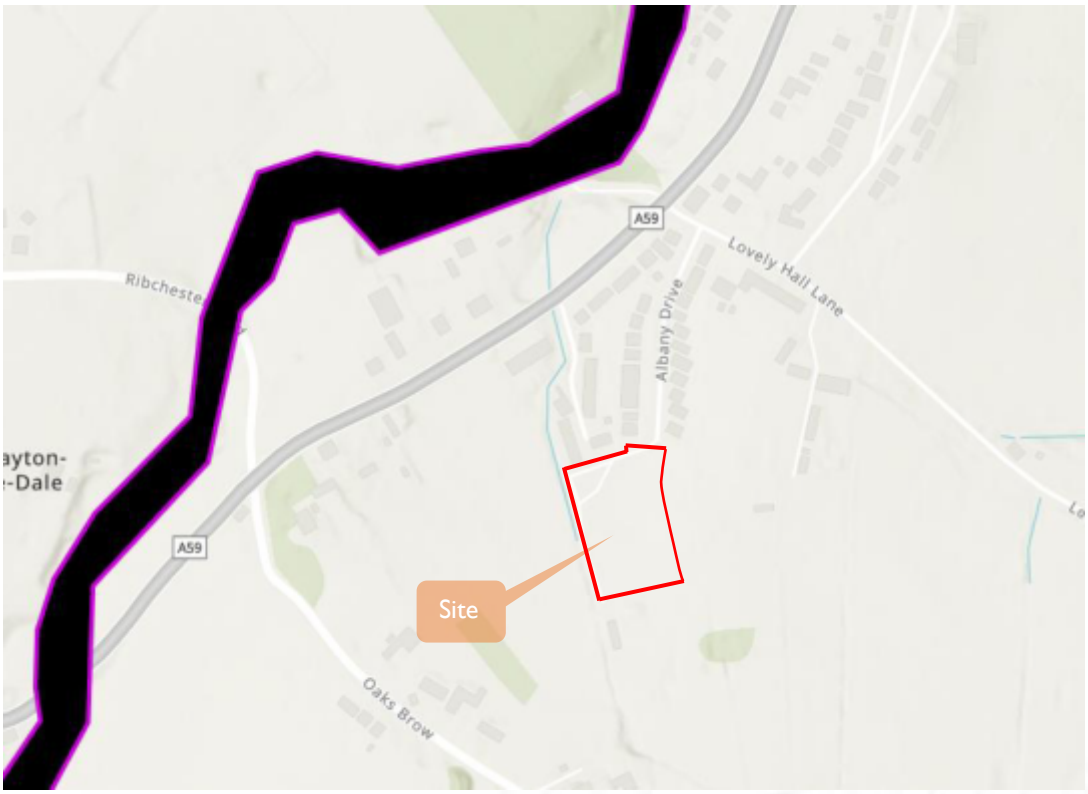


Figure 12.1 – Environment Agency, Flood Alert Map

9.4. In the event of extreme emergency, the local authority and other emergency services also have contingency plans for dealing with the consequences of flooding.

9.5. The design of surface water drainage will ensure that there are no uncontrolled off-site overland flood flows created by the proposed development. Where possible, site surfaces will be modelled so that flood flows generated on site from events beyond the stipulated drainage design criteria will flow to, and be contained on site within, landscaped or filter strips such that there is no increased risk of flooding to buildings and other vulnerable areas. Such flood flows will not be allowed to flow from the site onto adjoining property or highways.

9.6. Development owners will be responsible for the maintenance of private drainage systems to ensure satisfactory performance.

9.7. Any surface water flows onto the site from adjoining property will either be retained on site safely or be encouraged to pass across the site such that there is no increased risk of flooding to buildings and other vulnerable areas.

SECTION 10 OFF-SITE IMPACTS

10.1. Surface water from the development will discharge to ground via infiltration or, where required, to the existing western boundary ditch/watercourse at controlled greenfield runoff rates. Exceedance pathways will continue to route water naturally toward the western boundary, consistent with existing pre-development drainage patterns. These measures ensure that the development will not increase runoff beyond existing rates and will not increase flood risk to neighbouring land.

10.2. Proposed on-site drainage will be designed and constructed in accordance with current best practices and The Building Regulations as appropriate.

10.3. There will be no significant adverse off-site impacts as a result of the proposed development. The surface-water strategy satisfies the requirements of the NPPF by ensuring that flood risk is not increased elsewhere, in accordance with current national planning policy.

SECTION 11 RESIDUAL RISKS

11.1. The development and its drainage system will be designed to manage rainfall events up to and including the 1 in 100-year storm plus 50% climate change allowance, in line with current Environment Agency guidance. Exceedance events beyond this threshold may result in surface water flow overland. It is therefore essential that overland flow paths are incorporated into the external levels design and that the existing western ditch/watercourse is retained in a condition that allows it to continue to convey runoff.

11.1. Any exceedance flows generated by the development will be directed safely away from buildings and toward the western boundary ditch/watercourse, following the natural site topography. Overland flow routes will be shaped such that water remains contained within areas of least vulnerability.

11.2. As with any drainage system, blockages within the network have the potential to cause flooding and disruption. It is important that any drainage system not offered for adoption has appropriate maintenance regime included within the operation and maintenance (O & M) manuals for the development.

SECTION 12 CONCLUSION

12.1. A Flood Risk Assessment is required to satisfy all requirements of the National Planning Policy Framework (NPPF), Flood Risk and Coastal Change Planning Practice Guidance (PPG).

12.2. This FRA as far as reasonably practical determines the potential flood risk associated with the site and has concluded the following:

a) The proposed development is located wholly within the "low probability" Flood Zone 1.

b) Exceedance flows from extreme rainfall may pond on hardstanding and landscaped areas but will be routed safely away from buildings.

c) Surface water is to be discharged to ground via infiltration, subject to confirmation through on-site testing in accordance with BRE 365. Infiltration systems such as soakaways, permeable paving, or infiltration basins will be incorporated where practicable to manage runoff within the site. If infiltration is shown to be unviable or only partially effective, the secondary option will be controlled discharge at greenfield runoff rates to the existing ditch/watercourse along the western site boundary, subject to agreement with the Lead Local Flood Authority.

d) The proposed drainage must not increase flood risk elsewhere. All residual risks will be managed through SuDS features and overland flow routing.

e) The development should not commence until a detailed surface water drainage design, including attenuation and flow control measures, has been submitted to and approved by the Lead Local Flood Authority.

f) Foul drainage is proposed to discharge by gravity to the existing public foul sewer network via a connection in the Albany Drive / Lovely Hall Lane area, subject to detailed design, capacity assessment and formal approval by United Utilities.

12.3. This FRA confirms that the proposed development is appropriate for Flood Zone 1 and that surface-water drainage will be managed through infiltration and/or attenuation-based systems designed to accommodate the 1 in 100-year rainfall event

plus 50% climate change allowance. The proposals will not increase flood risk on or off the site.

12.4. Flood Flow Ltd recommends that the Local Planning Authority accept this Flood Risk Assessment in support of the current planning application, based on confirmation of public sewer records received from United Utilities.

APPENDIX A

0m 10m 20m 30m 40m 50m 60m 70m 80m

1 : 500

Schedule of Accommodation

House Type	Size	Qty	Sq.Ft.
Burton	775	5	3875
Buxton	775	1	775
Hastings	807	6	4842
Marsden	868	6	5208
Bransfield	1022	7	7154
Raleigh	1029	1	1029
TOTAL		**26**	**22883**
Gross (Acres)		**2.86**	**ACRES**
Net Area (Acres)		**1.95**	**ACRES**
Coverage (Sq.Ft./Acre)		**11735**	**SQFT/ACRE**

KEY

- Application Boundary
- Existing trees to be retained
- Indicative planting
- Indicative hedging
- Existing trees to be removed
- Tree RPAs
- Shared drives
- Timber gate
- Additional paving to accommodate wheelie bins

Rev.	Date	By	Description

Client:

PRINGLE HOMES

mck associates limited
architecture | building surveying | urban design
burnaby villa ■ 48 watling street road ■ fulwood ■ preston ■ pr2 8bp
tel: 01772 774510 fax: 01772 774511 email mck@mckassociates.co.uk

Project:
ALBANY DRIVE
COPSTER GREEN
BLACKBURN

Drawing Title:
PROPOSED SITE LAYOUT

Drawn:	Checked:	Scale:	Date:
W.L		1:500	JAN 2026
Job No:		Drawing No:	Rev:
24-133		PL01	

A2

PLANNING

APPENDIX B

Flood map for planning

Your reference	Location (easting/northing)	Created
25358	**367359/433368**	**24 December 2025 13:05**

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Environment Agency

Flood map for planning

Your reference
25358

Location (easting/northing)
367359/433368

Scale
1:2,500

Created
24 Dec 2025 13:05

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m

APPENDIX C

Check your long term flood risk

Back to select an address

Flood risk summary

Your selected location: 20, Albany Drive, Salesbury, Blackburn, BB1 9EH

This information tells you the flood risk of the land around a building, not the building itself.

The highest risk of flooding at this location is from **surface water**.

- How we assess an area's flood risk
- Flood risk and climate change

Surface water

More about your surface water flood risk (/surface-water)

Yearly chance of flooding

Very low | Low | Medium | **High**

Yearly chance of flooding between 2040 and 2060

Very low | Low | Medium | **High**

What surface water is

Surface water flooding is sometimes known as flash flooding. It happens when rainwater cannot drain away through normal drainage systems.

▶ Why surface water flooding is a problem

Rivers and the sea

More about your rivers and sea flood risk (/rivers-and-sea)

Yearly chance of flooding

Very low | Low | Medium | High

Yearly chance of flooding between 2036 and 2069

Very low | Low | Medium | High

What makes rivers and sea flooding more likely

Low-lying areas that are close to rivers or the sea are more likely to flood when water levels rise.

This information takes into account any flood defences.

▶ Why flood defences cannot completely prevent flooding

Groundwater

More about your groundwater flood risk (/ground-water)

We use groundwater flood alert areas to check the risk of flooding from groundwater.

This location is outside of a groundwater flood alert area.

▶ What this means

What groundwater is

Groundwater is the water that is usually held in rocks and soil underground.

Groundwater flooding happens when this water rises and flows above the surface.

Flooding from rivers is more likely when groundwater levels are high.

Reservoirs

More about your reservoir flood risk (/reservoirs)

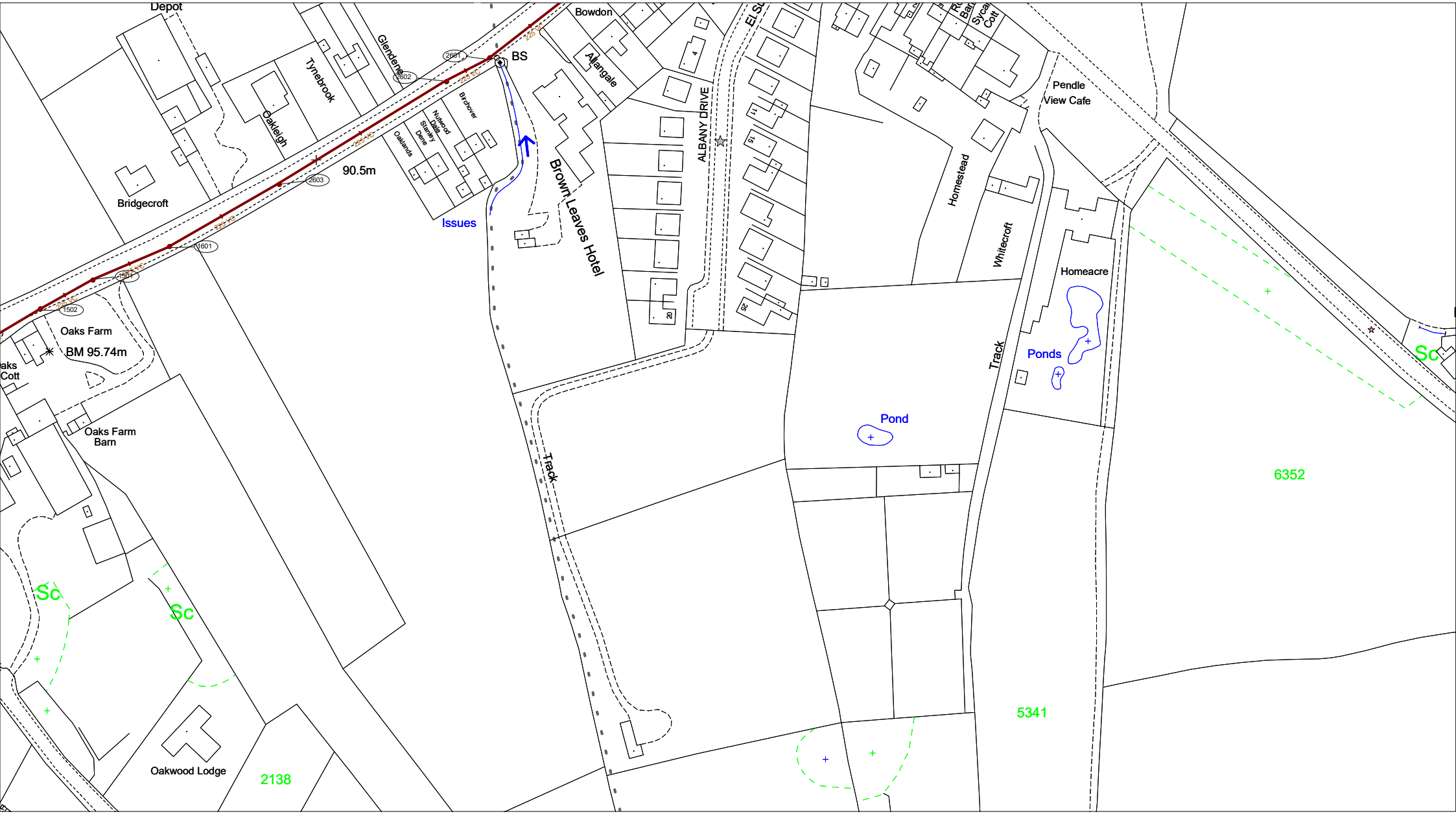
Flooding from reservoirs is unlikely in this area.

What a reservoir is

A reservoir is a large natural or artificial lake that is designed to collect and store water.

They are usually formed by building a dam across a river, or by building a large tank or surrounding embankment. If one of these dams or embankments fails, then water could escape from the reservoir. This would result in land or properties being flooded.

APPENDIX D


Depot
Bowdon
Glendene
Tynebrook
Oakleigh
Bridgecroft
90.5m
BS
Alangale
Brchover
Nuwood
Dene
Stanley
Dene
Oaklands
Issues
Brown Leaves Hotel
ALBANY DRIVE
Pendle
View Cafe
Homestead
Whitecroft
Homeacre
Ponds
Track
Pond
Track
Oaks Farm
BM 95.74m
Oaks Farm
Barn
Oakwood Lodge
2138
6352
5341
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1601
1501
1502
225 YC
225 YC
225 YC
225 YC
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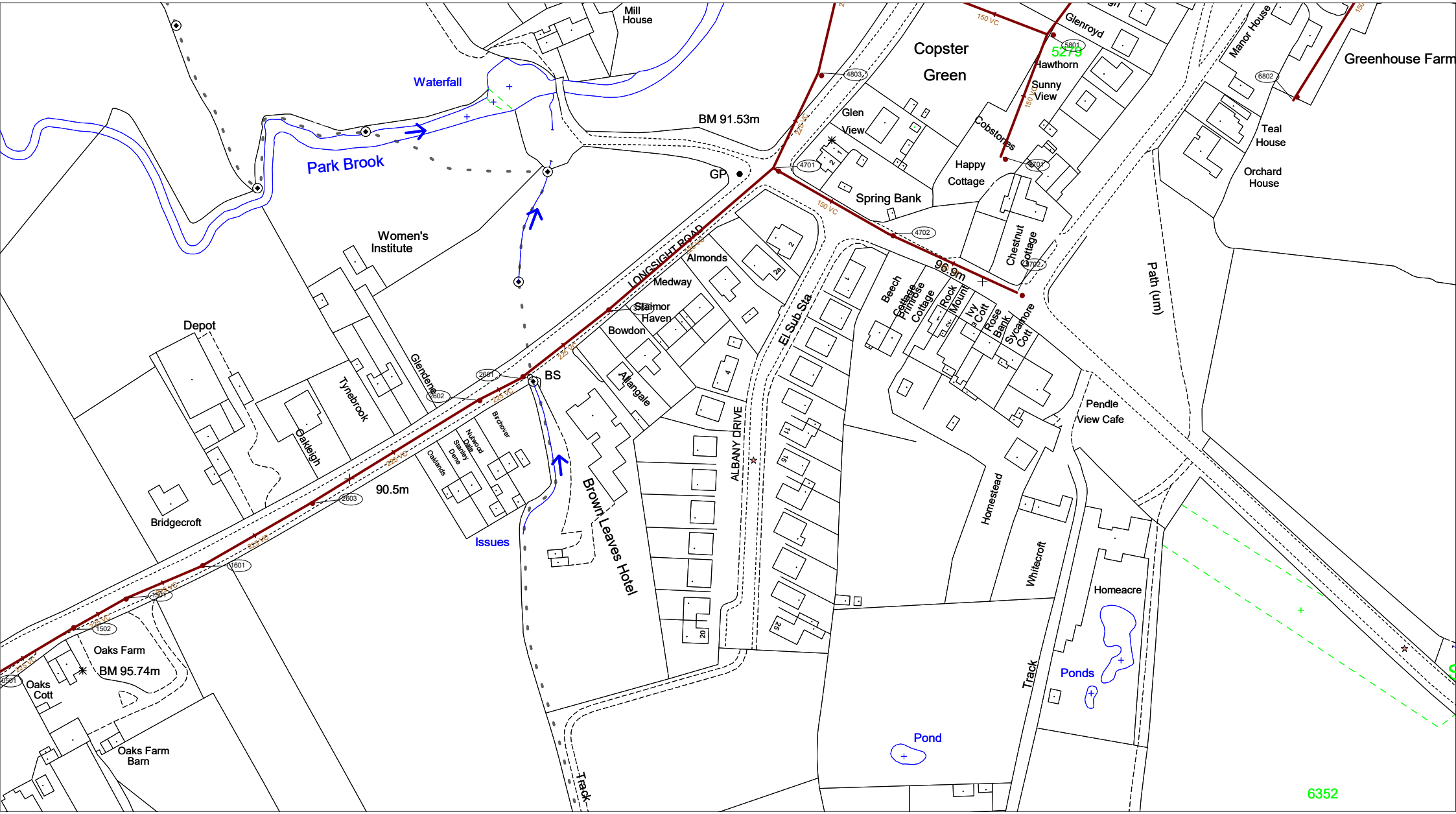
Mill House
Waterfall
Park Brook
BM 91.53m
GP
Copster Green
Glenroyd
5279
Hawthorn
Sunny View
Glen View
Cobstones
Happy Cottage
Spring Bank
Manor House
Greenhouse Farm
Teal House
Orchard House
Women's Institute
LONGSIGHT ROAD
Almonds
Medway
Stalmor Haven
Bowdon
Depot
Tynebrook
Glendene
Oakleigh
Bridgecrest
BS
Allangale
El Sub Sta
Beech Cottage
Primrose Cottage
Rock Mount
Ivy Cott
Rose Bank
Sycamore Cott
96.9m
Chestnut Cottage
Path (um)
Pendle View Cafe
Brownhover
Nutwood Dale
Stanley Dene
Oaklands
Issues
Brown Leaves Hotel
ALBANY DRIVE
90.5m
Homestead
Whitecroft
Homeacre
Ponds
Track
Pond
Oaks Farm
BM 95.74m
Oaks Cott
Oaks Farm Barn
6352

APPENDIX E