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FLOOD RISK ASSESSMENT

56 Fairway Avenue

56 Fairway Avenue, West Drayton, UB7 7AN

CLIENT	DOCUMENT REF	REVISION	DATE	FLOOD ZONE	GRID REF
Mann Associates	FA-FRA-0182	P01	3 September 2026	Zone 2	505549 180057

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Document control

PROJECT	56 Fairway Avenue
REPORT	Flood Risk Assessment & Drainage Strategy
SITE	56 Fairway Avenue, West Drayton, UB7 7AN
CLIENT	Mann Associates
DOCUMENT REF	FA-FRA-0182
REVISION	P01
DATE	3 September 2026
PLANNING STAGE	Householder application
PREPARED BY	Fortress Associates
AUTHOR	M Nagani - CEng MSc

This report has been prepared for the sole use of the named client for the purposes of the planning application described. Flood risk information reflects the datasets listed in the Data Sources section as at the date of access; conditions may change. No liability is accepted to third parties.

Executive summary

This Flood Risk Assessment and surface water drainage statement accompanies householder planning application 80148/APP/2026/1557 for the erection of a two-storey front, side and rear extension and a part single-storey rear extension to the dwellinghouse at 56 Fairway Avenue, West Drayton, UB7 7AN.

Part of the site lies within Flood Zone 2 on the Environment Agency Flood Map for Planning. The zone boundary crosses the plot: the frontage onto Fairway Avenue and the front of the existing dwelling are in Flood Zone 2, and the remainder of the house, the rear of the plot and the whole rear garden are in Flood Zone 1. The two-storey front extension therefore falls within the Flood Zone 2 part of the site, and the part single-storey rear extension does not. The governing watercourses are the Fray's River, approximately 215 m east, and the River Colne beyond it; Flood Zone 3 is mapped within approximately 120 m. The development is classified as More Vulnerable under Annex 3 of the NPPF and is appropriate development in Flood Zone 2 under Table 2 of the Planning Practice Guidance; the Exception Test is not engaged and, as householder development within the curtilage of an existing dwelling, the Sequential Test is not required.

The proposal reduces the vulnerability of the dwelling to flooding. The existing ground floor contains a bedroom at the front of the house, within the Flood Zone 2 part of the site; the proposed ground floor contains no bedroom, and all five bedrooms are at first floor and above. Sleeping accommodation is therefore removed from the part of the site at flood risk.

Surface water is mapped at the site in the medium risk band. The site falls within the mapped maximum reservoir inundation extent, which is a low-probability residual risk. The Environment Agency Historic Flood Map and Recorded Flood Outlines hold no record of flooding at the site. All sources of flood risk have been assessed using Environment Agency data retrieved for this site at the date of this report.

The extension is built against and internally continuous with the existing dwelling, so its finished floor level matches the existing ground floor. The existing building is the binding constraint on floor level, and safety is secured by flood-resistant and flood-resilient construction, by sleeping accommodation at first floor and above, and by warning and evacuation arrangements, rather than by raised floor levels. Where a numerical freeboard is required, the modelled 1% annual probability plus climate change level should be obtained from the Environment Agency.

Surface water is managed by sustainable drainage taken from the first step of the London Plan drainage hierarchy, as the London Sustainable Drainage Proforma adopted by Hillingdon requires. Rainwater from the 105 m2 of new roof is stored for re-use in two 1,000 litre slow-release water butts and received by two shallow rain gardens formed in the rear garden, providing 8.0 m3 of storage for the 1 in 100 year event including a 40% climate change allowance. No surface water is discharged to a watercourse or to any sewer, so the discharge rate is nil and below the greenfield rate at every return period. The first 5 mm of rainfall is intercepted at source and a maintenance regime runs for the lifetime of the development.

With the avoidance, control, mitigation and management measures set out in this report, the development is safe for its lifetime and does not increase flood risk elsewhere.

Key flood risk information

Item	Value
Site address	56 Fairway Avenue, West Drayton, UB7 7AN
OS grid reference	505549 180057
Local planning authority	Hillingdon
Lead Local Flood Authority	Hillingdon
Development	Erection of a two-storey front, side and rear extension and a part single-storey rear extension to the dwellinghouse
Vulnerability classification (NPPF Annex 3)	More vulnerable
Flood zone (EA Flood Map for Planning)	Zone 2 (part of site only)
PPG Table 2 compatibility	Appropriate development
Surface water risk at site (RoFSW)	Medium risk band - managed by design
Historic flooding recorded	No record
Reservoir flood extent	Within mapped extent (residual risk)
Site ground level	~ 27.6 m AOD (EU-DEM)
Finished floor level	Matches the existing dwelling floor - see Control
EA flood warning coverage	Available - occupants to register
Surface water discharge destination	Retained on site (no discharge)
Discharge rate off site	None - no discharge off site
Attenuation storage provided	8 m³ (1 in 100 yr + 40% CC)
Lifetime assessed	100 years

Site and development description

The application site is located at 56 Fairway Avenue, West Drayton, UB7 7AN, National Grid Reference 505549 180057, within the administrative area of Hillingdon.

An existing two-storey detached dwellinghouse on the north side of Fairway Avenue, with a driveway to the front and a long rear garden extending north towards the railway. The applicants are Mr and Mrs M Bindra; the agent is Mann Associates.

The proposal comprises: Erection of a two-storey front, side and rear extension and a part single-storey rear extension to the dwellinghouse. The development is classified as 'More vulnerable' development under Annex 3 of the National Planning Policy Framework, with sleeping accommodation at first floor or above. The assessment covers a development lifetime of 100 years.

Area schedule

Surface	Area	Note
Total site area	754 m ²	
Existing impermeable area	95 m ²	
Proposed pitched roof (plan)	153 m ²	
Proposed hardstanding / paving	47 m ²	
Proposed garden / soft landscape	554 m ²	
Proposed impermeable total	200 m ²	+111% vs existing

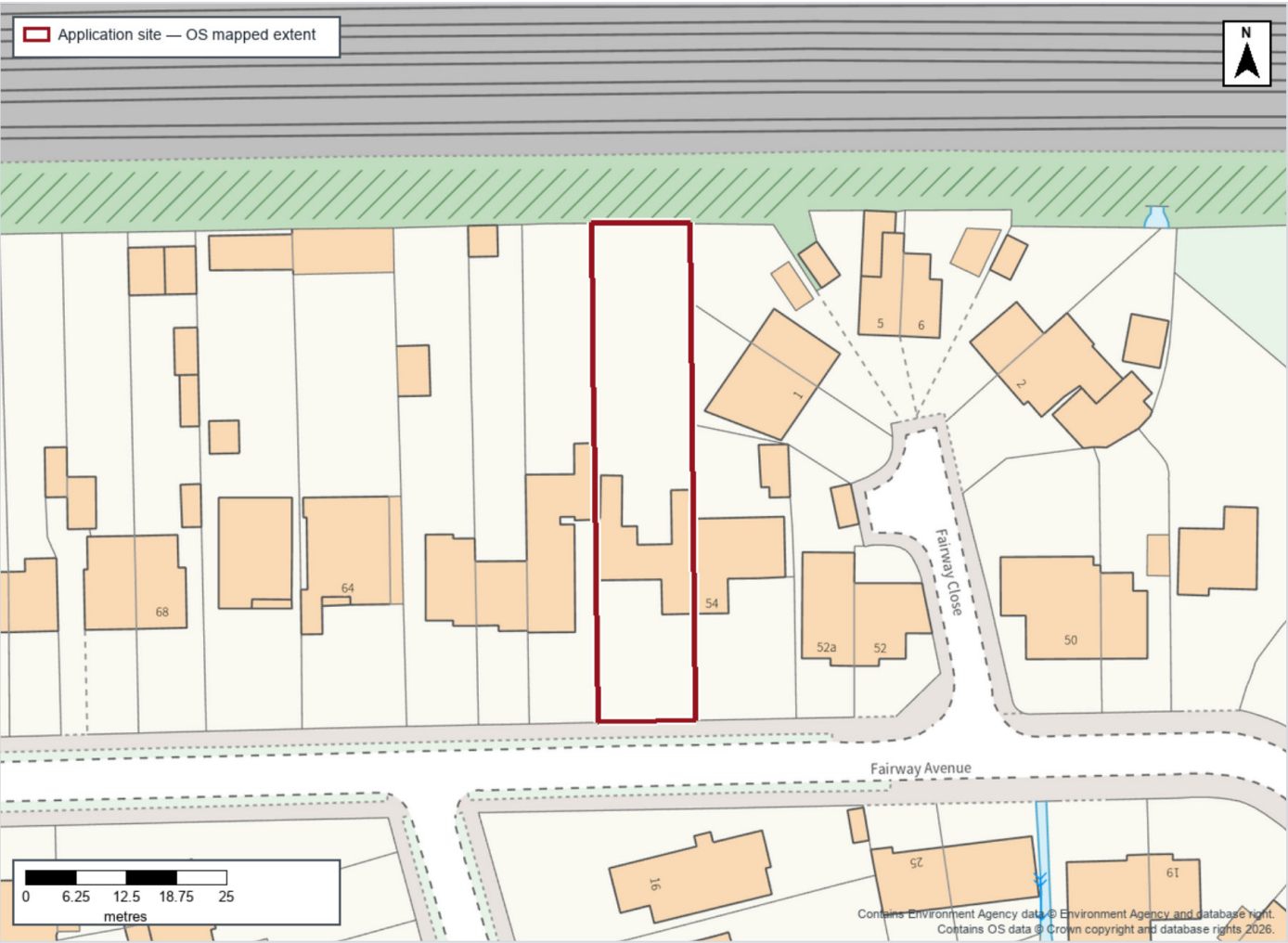


Figure 1 - Site location plan (application site outlined red)

Planning policy context

National Planning Policy Framework (NPPF): paragraphs 165 to 181 set national policy on planning and flood risk. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (the Sequential Test); where development is necessary

in such areas it must be made safe for its lifetime without increasing flood risk elsewhere, and provide wider sustainability benefits where the Exception Test applies.

Planning Practice Guidance - Flood risk and coastal change: sets out how the flood zones, vulnerability classifications (Table 2), site-specific flood risk assessment requirements, climate change allowances and the sequential approach are applied in decision making. This assessment addresses each of the matters the Environment Agency expects a site-specific flood risk assessment to cover and satisfies the PPG's site-specific assessment requirements in full.

A site-specific flood risk assessment is required for development in Flood Zones 2 and 3, for sites of 1 hectare or more in Flood Zone 1, for land identified as at risk from other sources (such as surface water), and where local requirements apply. This site is in Flood Zone 2 and a site-specific FRA is required.

Local policy: the Local Plan of Hillingdon and its Strategic Flood Risk Assessment (SFRA), together with the Lead Local Flood Authority standards, set the local requirements for flood risk and surface water drainage.

Local policy compliance

London Plan (2021) Policy SI 12 - Flood risk management requires flood risk from all sources to be managed and residual risk to be designed for, with development made safe without increasing flood risk elsewhere. London Plan Policy SI 13 - Sustainable drainage requires development to follow the London Plan drainage hierarchy and to aim for greenfield run-off rates. The London Borough of Hillingdon Local Plan Part One Policy EM 6 and Local Plan Part Two Policy DMEI 10 are the local flood risk and water management policies, and are the policies the Council's own SuDS proforma cites. Hillingdon adopts the London Sustainable Drainage Proforma (v2019.01), which requires the drainage strategy to follow the London Plan hierarchy in order, to state the proposed discharge arrangement and rate, and to limit post-development discharge to greenfield run-off rates unless clear evidence is provided showing why greenfield rates cannot be achieved. The strategy in this report follows that hierarchy from its first step and discharges no surface water from the site, so the greenfield test is met at every return period. A completed London Sustainable Drainage Proforma should accompany this report where the Lead Local Flood Authority requires one.

Assessment of flood risk - all sources

All potential sources of flooding are assessed: rivers and the sea, surface water, groundwater, sewers, reservoirs and artificial sources, together with the effects of climate change over the development lifetime. Data: Environment Agency datasets accessed 03/09/2026.

Rivers and the sea (fluvial & tidal)

Flood zone classification & compatibility

Part of the site lies within Flood Zone 2 on the Environment Agency Flood Map for Planning. The zone boundary crosses the plot: the frontage onto Fairway Avenue and the front part of the existing dwelling are within Flood Zone 2, while the remainder of the house, the rear of the plot and the whole of the

rear garden are within Flood Zone 1. This has been established by querying the Flood Map for Planning at points along the length of the plot rather than at a single point. It matters to this application because the proposal includes a two-storey front extension, which falls within the Flood Zone 2 part of the site; the part single-storey rear extension is in Flood Zone 1. Flood Zone 2 is land assessed as having between a 1% and 0.1% annual probability of river flooding. The proposed development is classified as 'More vulnerable' development under Annex 3 of the NPPF. In accordance with Table 2 of the Planning Practice Guidance, 'More vulnerable' development is appropriate in Flood Zone 2 and the Exception Test is not engaged. A site-specific flood risk assessment is required because part of the site is in Flood Zone 2 and because the site is affected by mapped surface water flood risk.

Assessment of fluvial / tidal risk

The Flood Map for Planning shows the frontage of the site within Flood Zone 2, with the principal source identified as river flooding from modelled data. The watercourses that govern that classification are the Fray's River, approximately 215 m to the east, and the River Colne beyond it; both are designated statutory main rivers and both are named in the Environment Agency flood defence and flood warning records for this location. Flood Zone 3 is mapped within approximately 120 m of the site, to the east and south-east along the river corridor. The design event for this assessment is the 1% annual probability fluvial flood including the climate change allowance set out in the Climate Change section. The two-storey front extension lies within the Flood Zone 2 part of the site and is the element to which the flood risk measures in this report principally apply. Fluvial risk to the development is MEDIUM before mitigation and is managed to an acceptable level by the measures set out in this report.

Flood defences & areas benefiting

Environment Agency spatial flood defence data records five defence assets within approximately 250 m of the site. All five are classified as Natural High Ground - three on the Fray's River and two on the River Colne - and all are recorded as maintained by a private individual, company or charity. These are not engineered flood defences: they are natural features that the Environment Agency has recorded as performing a defence function, they carry no designed standard of protection, and no maintenance regime is guaranteed. The development therefore does not rely on any defence asset for its safety, and the residual risk of the natural high ground being overtopped is addressed through the resilience and management measures in this report.

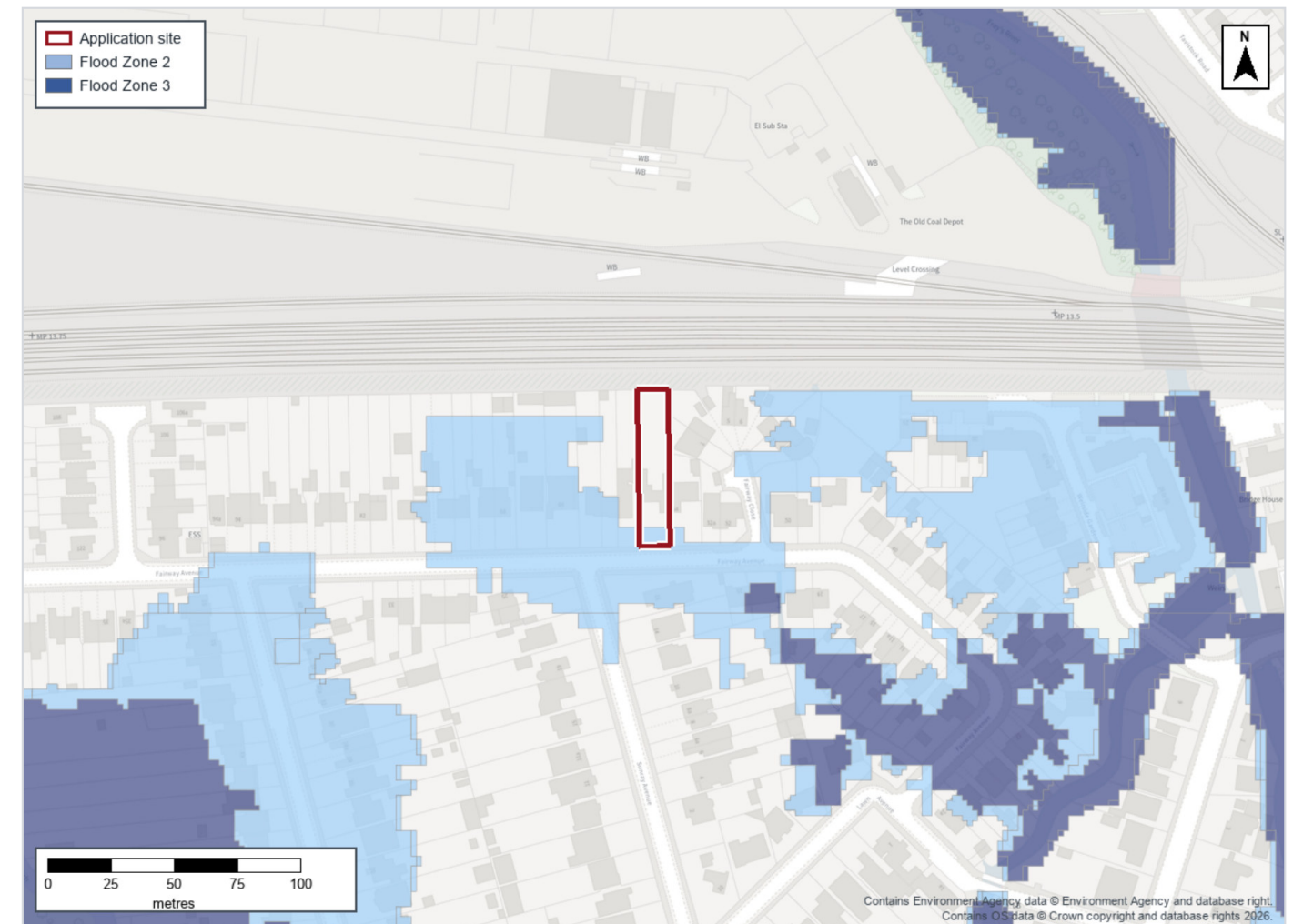


Figure 2 - Flood Map for Planning - Flood Zones 2 and 3 (application site outlined red)

Surface water

Risk of flooding from surface water (RoFSW)

The Environment Agency Risk of Flooding from Surface Water (RoFSW) mapping shows surface water flood risk affecting the site. Surface water flooding takes the form of short-duration ponding and overland flow during intense rainfall. The raised thresholds, graded external levels and exceedance routing in this report, together with the sustainable drainage strategy, manage this risk for the lifetime of the development.

Overland flow routes & low spots

Overland flow paths shown by the RoFSW mapping in the vicinity of the site are preserved: external levels are graded so that exceedance flows pass around the building envelope, following the natural fall of the land towards the south-east, and door thresholds are set as high as the existing structure permits and detailed as water-entry-resistant. The long rear garden is retained as soft landscaping and continues to accept and convey overland flow as it does at present.

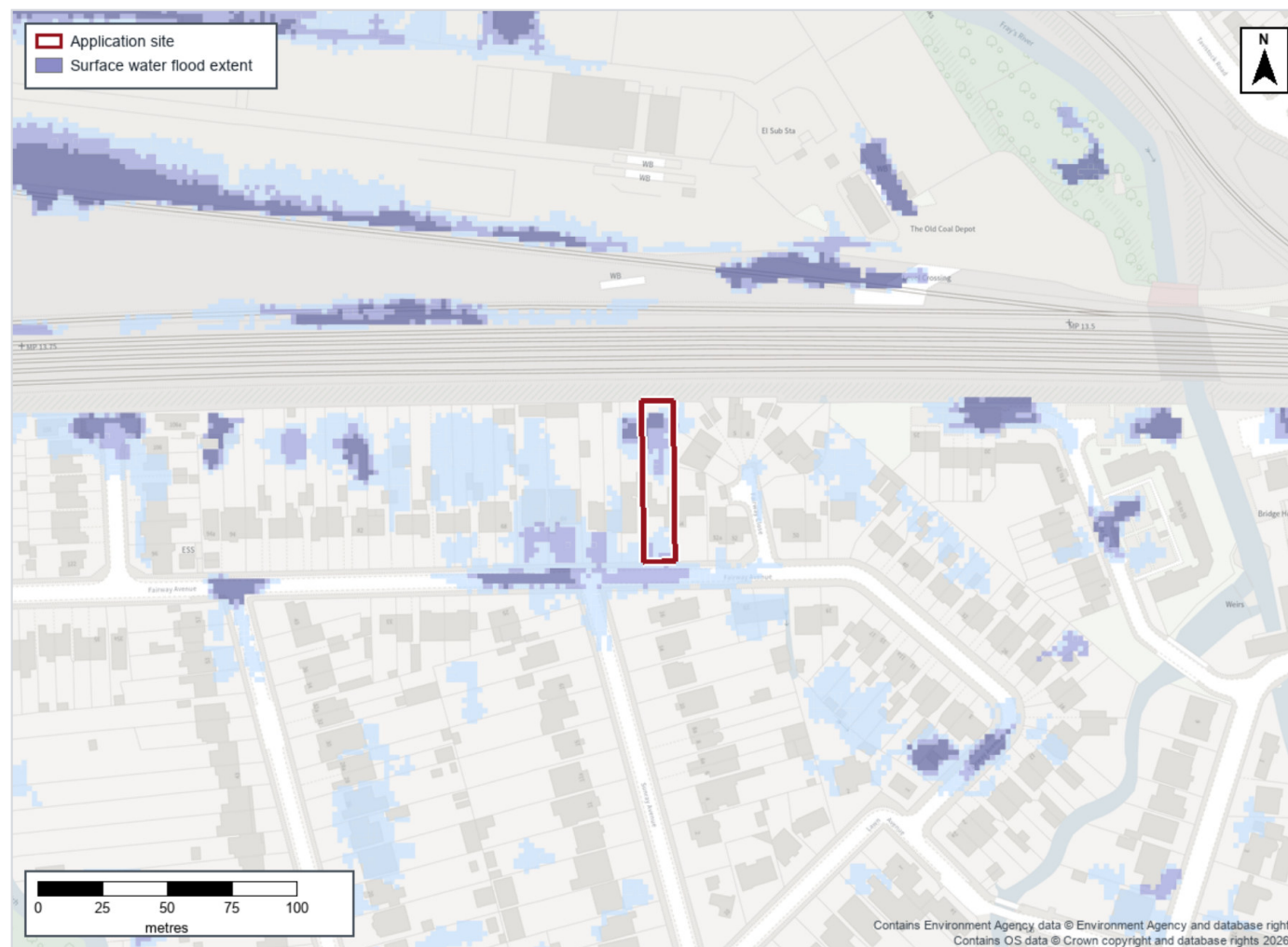


Figure 3 - Risk of Flooding from Surface Water (application site outlined red)

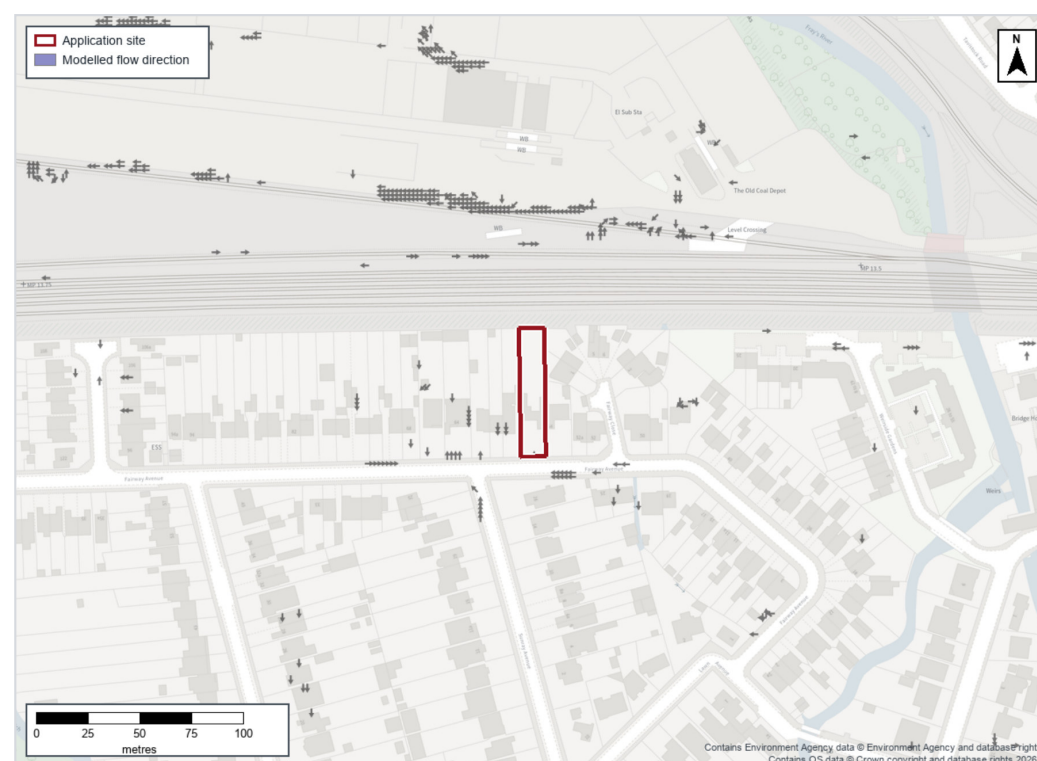


Figure 4 - Surface water exceedance flow route

Other sources

Groundwater

No below-ground accommodation is proposed and there are no records indicating that the site is susceptible to groundwater emergence. Groundwater flood risk to the development is LOW. The site does, however, lie in the floodplain of the Fray's River and River Colne, where groundwater can be shallow and is likely to be in continuity with river levels. That has no bearing on the safety of the extension, which has no basement, but it is material to the drainage strategy: any infiltration component must be confirmed by BRE Digest 365 testing with its base set at least 1 m above the seasonal high groundwater level, and the drainage strategy carries an attenuated alternative for the case where that separation cannot be achieved.

Sewers

There are no public sewer flooding records identified for the site. The existing dwelling discharges surface water without restriction. Under the proposals surface water is either infiltrated within the site or, where infiltration is not viable, attenuated and released at a restricted rate of 2 l/s, so in either case the burden on the sewer network is reduced relative to the existing position. Sewer flood risk is LOW, and non-return valves on the foul drainage connections protect the property against surcharge.

Reservoirs

The Environment Agency reservoir flood extent (wet day scenario) shows the site within the area that could be affected in the event of an upstream reservoir failure. Reservoir flooding is a residual risk: reservoirs regulated under the Reservoirs Act 1975 are subject to statutory inspection and supervision by qualified panel engineers, and the annual probability of failure is extremely low. The warning and evacuation measures in the Manage section address this residual risk.

Canals & other artificial sources

No canals, raised channels, lakes or other artificial water bodies with the potential to flood the site are identified in the vicinity on available mapping. Risk from artificial sources is LOW.

Historic flooding record

The Environment Agency Historic Flood Map and Recorded Flood Outlines hold no record of flooding at the site.



Figure 5 - Historic flood map (application site outlined red)

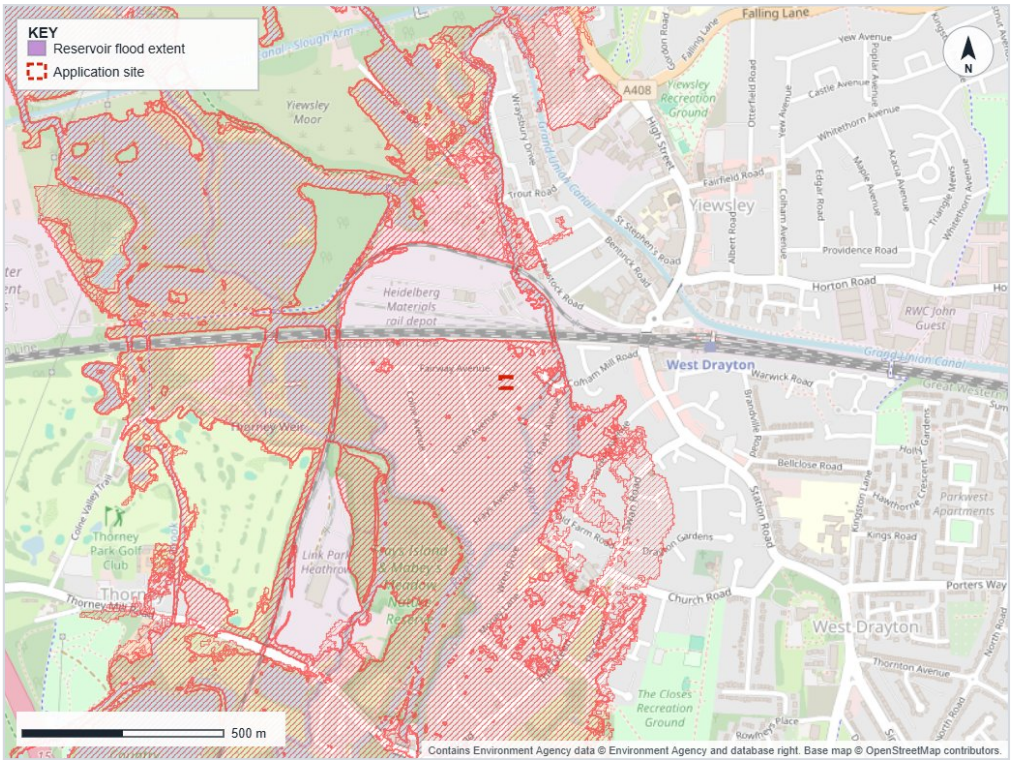


Figure 6 - Reservoir flood extent - wet day scenario (application site outlined red)

Climate change

Climate change allowances over the development lifetime

The assessment covers the 100-year lifetime of the development. In accordance with the Environment Agency's climate change allowances guidance, peak rainfall intensity is uplifted by 40% (upper end allowance) in the surface water drainage design. Peak river flow allowances for the Thames river basin district would be applied to any modelled fluvial level for the site; no such modelled level is published for this location, and the report recommends under Finished floor levels that one be obtained from the Environment Agency where a numerical freeboard is required. The flood zone classification itself is not altered by climate change over the development lifetime, and the resistance and resilience measures in this report are specified to accommodate an event exceeding the present-day design standard.

Summary of flood risk by source

Source	Risk to development	Basis
Rivers and the sea	Medium	Flood Zone 2 - river
Surface water	Medium	RoFSW medium risk band at/adjoining the site
Groundwater	Low (managed)	No below-ground accommodation
Sewers	Low	No surface water discharged to the network
Reservoirs	Low (residual)	Within mapped maximum extent
Artificial sources	Low	None identified in the vicinity
Climate change	Allowed for	+40% rainfall uplift; river flow allowances per EA guidance

Avoiding, controlling, mitigating and managing flood risk

The hierarchy required by the NPPF: avoid flood risk through location and layout; control it through levels and flow routes; mitigate what remains through resistant and resilient construction; manage residual risk through warnings and planning.

Avoid - sequential approach

Sequential Test position

The proposal is a householder extension within the curtilage of an existing dwelling. The Planning Practice Guidance confirms that the Sequential Test is not required for householder development of this kind: there is no reasonable alternative site for an extension to an existing house, and the development creates no additional dwelling and no additional sleeping accommodation at ground floor. The sequential approach is instead applied within the site, as set out below. For completeness, the part of the site affected by Flood Zone 2 is the frontage; the development does not extend the dwelling

into any part of the site at higher flood risk than the part it already occupies.

Sequential approach within the site

Within the site the most vulnerable elements are located in the areas of lowest flood risk in accordance with paragraph 181 of the NPPF, and the proposal improves on the existing arrangement in this respect. The existing ground floor plan (drawing 01A) shows a bedroom at the front of the dwelling - the part of the site that lies within Flood Zone 2. The proposed ground floor plan (drawing 02A) contains no bedroom: the front rooms become a study, hall and lounge, and all five bedrooms are at first floor and above, clear of any credible flood level. The proposal therefore removes sleeping accommodation from the Flood Zone 2 part of the site, which is a material reduction in the vulnerability of the most sensitive use to flooding. The ground floor is built to resist and recover from water entry, as set out under Control and Mitigate below.

Exception Test (where required)

The Exception Test is not required for 'More vulnerable' development in Flood Zone 2 (PPG Table 2).

Control - levels & flow routes

Finished floor levels

Ground level at the site is approximately 27.6 m AOD from the Copernicus EU-DEM 25 m terrain model. No topographical survey has been provided, and no modelled flood level is published for this site on the Environment Agency Flood Map for Planning. The extension is built against the existing dwelling and is internally continuous with it. Its finished floor level is therefore set to match the existing ground floor of the house and is not set below it. Raising the extension floor independently would introduce an internal step between the extension and the existing rooms it opens into, and would leave the existing ground floor - the larger and lower part of the dwelling - unchanged, so it would not make the dwelling safer. The existing building is the binding constraint on floor level. Safety is accordingly secured by resistance and resilience rather than by freeboard, which is the approach Environment Agency standing advice accepts for a householder extension where the existing floor level governs. External door thresholds are set as high as the existing structure permits and are detailed as water-entry-resistant, and external levels are graded away from all openings. Where the Council or the Environment Agency require a numerical freeboard to be demonstrated, the modelled 1% annual probability plus climate change level should be obtained from the Environment Agency under a Product 4 request and the threshold detail confirmed against it. This report recommends that step.

Flood flow routes across the site

The development does not obstruct flood flow routes: external works maintain existing overland flow directions (the land falls towards the south-east), boundary treatments are permeable to flow where they cross potential flow paths, and no land-raising is proposed beyond minor regrading around the building, with any raising within the floodplain compensated level-for-level as set out below.

Floodplain storage / compensation

The site lies in Flood Zone 2, not in the functional floodplain, and no level-for-level floodplain compensation is required or proposed. The extension is built on the footprint of the existing dwelling

and its immediate curtilage, no land-raising is proposed beyond minor regrading around the building, and the long rear garden is unaltered and continues to function as it does at present. The development therefore causes no loss of flood storage and no increase in flood risk elsewhere. Were the Council to require compensation to be demonstrated numerically, it would depend on the modelled flood level referred to under Finished floor levels, which has not been published for this site.

Mitigate - resistance & resilience

Flood resistance & resilience measures

Flood resistance and resilience measures are incorporated in accordance with the CIRIA Code of Practice for Property Flood Resilience (C790): water-entry-resistant door thresholds and airbricks with automatic closures, non-return valves on foul and surface water connections, electrical services dropped from first-floor level with socket outlets at least 600 mm above floor level, closed-cell insulation and water-compatible wall and floor finishes up to the resilient design level, and kitchen appliances raised on plinths. These measures exclude water in the design event and enable rapid reoccupation after any more extreme event.

Essential services & utilities

Incoming utilities, meters and the electrical consumer unit are located above the resilient design level, and any external plant is mounted on raised plinths. The development does not provide essential services for the wider community.

Manage - warnings & evacuation

Safe access & escape

Safe access and egress is provided: the egress route from the principal entrance leads away from the fall of the land to the adjoining highway and onwards to ground at lower flood risk. In an extreme event exceeding the design standard, occupants use the first-floor place of safety within the building rather than travelling through flood water, in line with the flood plan below.

Flood warning availability

The site is within an Environment Agency flood warning/alert area (River Pinn and Woodridings Stream; Colne Brook at Iver and Colnbrook; River Colne and Frays River at West Drayton and Stanwell Moor; Lower River Colne and Frays River). Occupants register for the free Environment Agency flood warning service on occupation (telephone, text and email alerts), providing advance warning of fluvial/tidal events.

Emergency / evacuation plan

A flood plan is provided to occupants with the home user guide, covering: how warnings are received; moving people, pets and valuables to the upper floor; shutting off electricity and gas; the egress route to higher ground; and key contacts (Floodline 0345 988 1188, emergency services 999). The plan notes that in the highly unlikely event of a reservoir emergency, instructions from the emergency services take precedence. The plan is kept with the property and passed to future occupiers.

Residual risk

Residual risks - events exceeding the design standard, blockage of local drainage, overtopping of the natural high ground along the Fray's River and River Colne, reservoir failure, and climate change beyond the allowances applied - are managed through the resistance and resilience measures, the exceedance routing within the site, the first-floor place of safety, and the warning and evacuation arrangements above. With these measures the development remains safe for its lifetime and does not increase flood risk elsewhere.

Surface water drainage strategy (SuDS)

Sustainable drainage designed to the London Plan drainage hierarchy adopted by Hillingdon, retaining runoff on site and providing treatment, in accordance with the PPG, the Non-Statutory Technical Standards for SuDS and the CIRIA SuDS Manual (C753). Calculations follow the stated methods (design rainfall with climate change allowance; greenfield rates with IH124 growth factors).

Discharge strategy

Discharge hierarchy assessment

Hillingdon adopts the London Sustainable Drainage Proforma, which requires the drainage strategy to follow the London Plan drainage hierarchy in order: (1) store rainwater for later use; (2) use infiltration techniques such as porous surfaces in non-clay areas; (3) attenuate rainwater in ponds or open water features for gradual release; (4) attenuate by storing in tanks or sealed water features; (5) discharge direct to a watercourse; (6) discharge to a surface water sewer or drain; (7) discharge to the combined sewer. This strategy is taken from the first step of that hierarchy and does not descend below the third. Rainwater from the new roof is stored for re-use in slow-release water butts on the downpipes, and the balance is received by two shallow planted depressions - rain gardens - formed in the rear garden, where it is held at surface and soaks away into the garden. No surface water is discharged to a watercourse, to a surface water sewer or to the combined sewer, and no connection to any sewer is proposed. The rear garden, where the depressions are formed, lies within Flood Zone 1 and is the highest and driest part of the site. The depressions are 150 mm deep and sit within the topsoil layer of the garden, so no deep soakaway is proposed, no BRE Digest 365 percolation test arises, and no 5 m foundation setback is engaged. The components are shallow landscape features that the householder can maintain.

Runoff rates & betterment

The proposed impermeable area is 200 m², an increase of 105 m² over the existing 95 m², arising from the new roof of the two-storey and single-storey extensions. The greenfield equivalent for the site is QBAR 0.17 l/s (1 in 1 yr 0.15, 1 in 30 yr 0.40, 1 in 100 yr 0.55 l/s). The London Sustainable Drainage Proforma requires post-development discharge to be limited to greenfield run-off rates, and requires clear evidence where greenfield rates cannot be achieved. No such evidence is needed here: the scheme discharges no surface water from the site at any rate, so the discharge rate is nil and is below the greenfield rate at every return period. That is the most onerous position available in the hierarchy and is a betterment on the existing arrangement, under which the dwelling drains without

restriction and without attenuation. Because there is no outfall there is no flow control device, no orifice and no minimum practical discharge rate to justify.

Attenuation storage

Storage is sized on the new impermeable area created by the development, which is the runoff the scheme must manage; the existing 95 m² continues to drain as it does at present and is not made worse. For the 105 m² of new roof, the 1 in 100 year 6 hour design rainfall of 55 mm uplifted by the 40% climate change allowance gives 77 mm, and a storage requirement of 8.0 m³. The scheme provides 8.0 m³: 2.0 m³ in two 1,000 litre slow-release water butts, and 6.0 m³ within the rain garden depressions, which are 150 mm deep over a combined area of 40 m². The butts are a slow-release type with a permanent small orifice that empties the stored volume within 24 hours, so the storage is available again at the start of the next event; a sealed butt with only a tap would not attenuate and is not proposed. The rear garden measures approximately 12.4 m by 33 m, some 410 m² scaled from the block plan, so the 40 m² of depressions occupies about a tenth of it and the remaining lawn is undisturbed.

Drain-down time

There is no restricted outfall, so drain-down is by the slow-release orifice in the water butts and by soakage from the shallow depressions into the garden. The butts empty their stored volume within 24 hours. The depressions, being only 150 mm deep and spread over 40 m², drain down well inside the same period and hold no standing water between events. Both are therefore available at the start of a subsequent storm, meeting the 24-hour drain-down standard.

SuDS measures

Proposed SuDS measures

The following SuDS measures are incorporated, taken from the top of the London Plan drainage hierarchy. Rainwater harvesting: two 1,000 litre slow-release water butts on the downpipes serving the new roof, storing rainwater for re-use on the garden and providing interception of the first 5 mm of rainfall. This is step 1 of the hierarchy - store rainwater for later use. Rain gardens: two shallow planted depressions formed in the rear garden, each approximately 4.0 m by 5.0 m and 150 mm deep, 40 m² in total, receiving the butt overflows. Planted with species tolerant of both wet and dry conditions, they hold runoff at surface, allow it to soak into the garden and provide treatment through the planted soil layer. These are steps 2 and 3 of the hierarchy - infiltration at source and attenuation in open features. At 150 mm the depressions remain mowable and need no liner, no retaining structure and no percolation test. The existing lawn beyond the depressions is retained undisturbed and the spoil from forming them is regraded across it, so no material leaves the site.

Interception of the first 5 mm

The first 5 mm of rainfall on the new roof (0.53 m³) is intercepted at source by the slow-release water butts on the downpipes, so that runoff from small, frequent events is retained and re-used rather than leaving the roof. This satisfies the interception standard of the CIRIA SuDS Manual and delivers the first step of the London Plan drainage hierarchy, storing rainwater for later use.

Water quality treatment

Water quality is addressed using the Simple Index Approach of the CIRIA SuDS Manual (C753). The only area drained by these proposals is the new roof, which is a low pollution hazard land use. Runoff passes through the water butts and then through the planted soil layer of the rain gardens, whose mitigation indices exceed the hazard indices for all contaminant groups for roof runoff. Because no surface water leaves the site, no runoff reaches a watercourse or a sewer, and the treatment provided is ahead of the water soaking into the garden.

Exceedance routing

Rainfall in excess of the 1 in 100 year plus 40% climate change event, or a blockage of a downpipe or butt inlet, is routed at surface: external levels fall away from the building towards the south-east, following the natural fall of the land, so that exceedance flows follow safe, shallow paths across the rear garden and the soft landscaped areas without entering the building or discharging onto neighbouring property at increased rates. The rear garden is large relative to the roof area it serves and provides substantial capacity for exceedance.

Wider design & construction

Biodiversity & vegetated SuDS

Vegetated SuDS are maximised within the constraints of the site: the two rain gardens and the retained planting within the 554 m2 of soft landscaping provide habitat and pollinator value alongside their drainage function, contributing to national and local policy on biodiversity, moderating summer temperatures and sequestering carbon through the planting. The rain gardens are planted with species tolerant of both wet and dry conditions, which broadens the habitat value beyond that of the existing mown lawn.

Amenity, health & safety

The SuDS components are designed for safety in accordance with the CIRIA SuDS Manual: the depressions are only 150 mm deep with shallow side slopes, they hold no standing water between events, and there is no below-ground storage and no open water anywhere on the site. The water butts are proprietary domestic units with sealed lids. The landscape-integrated components add visual amenity to the rear garden, and the design has been reviewed against CDM duties for safe construction and maintenance access.

Construction-phase surface water management

During construction, surface water and sediment are controlled so that runoff from the works does not affect neighbouring land or receiving drainage: topsoil is stripped and stockpiled away from flow paths, silt fencing and cut-off measures protect the site boundary and any gullies, wheel-washing and road-sweeping keep the highway clean, and the infiltration and attenuation components are brought into service early so they manage runoff through the construction phase. Final SuDS surfaces are protected from construction sediment until external works are complete.

Maintenance

Ownership & maintenance regime

The rain gardens and the water butts remain in the ownership of the householder and are maintained by them. Maintenance is light and needs no specialist contractor: cut the depressions as part of the lawn and keep the planting clear; check the depression inlets and the butt leaf guards before forecast storms and after heavy rainfall, clearing leaf litter and silt; confirm each spring that the slow-release orifice in each butt is clear so the storage empties between events; and keep the overflow route from each butt to its depression unobstructed. The arrangements pass to future occupiers with the property, and an operation and maintenance strategy to section 32.2 of CIRIA C753 can be provided where the Lead Local Flood Authority requires one.

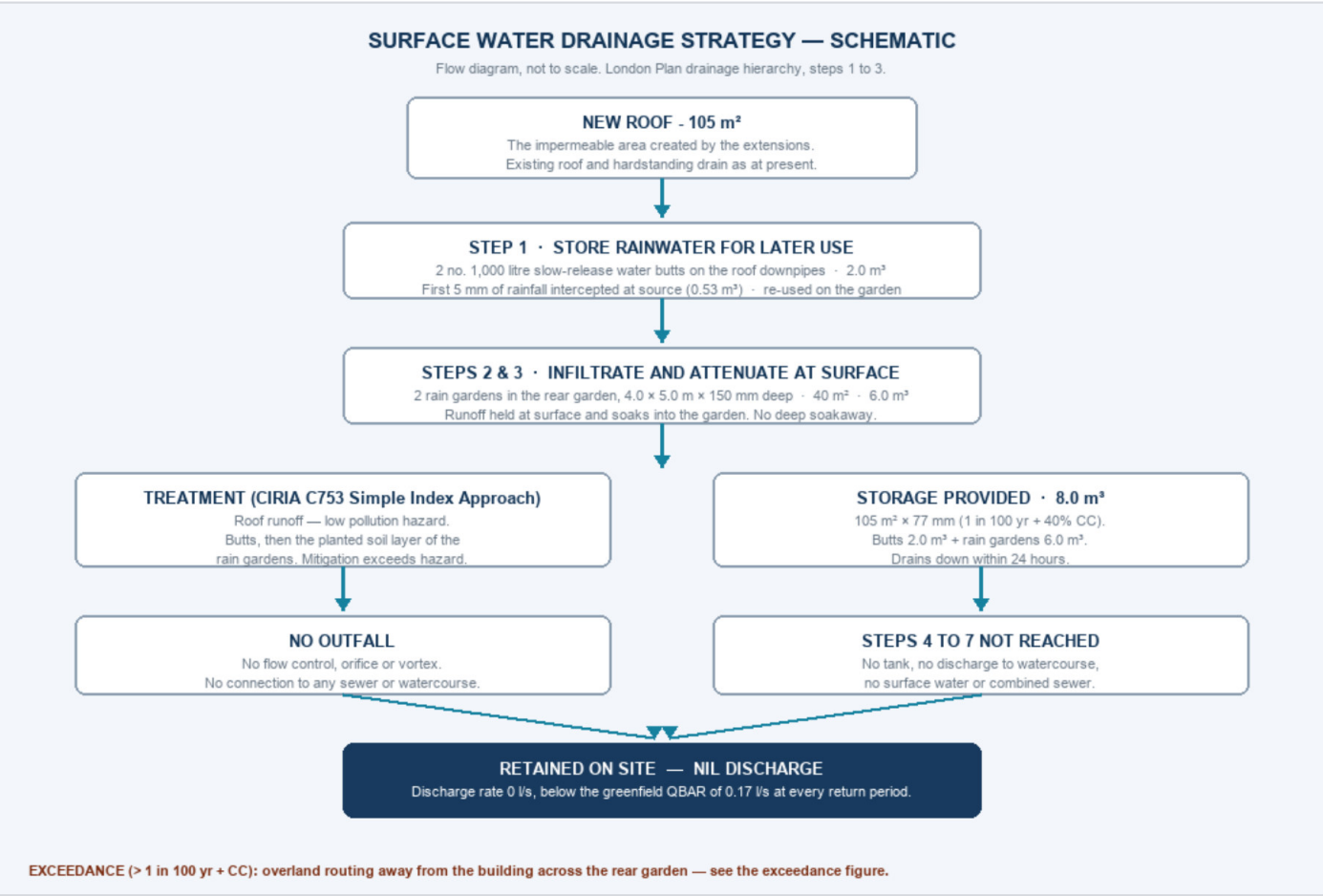


Figure 7 - Surface water drainage strategy - schematic flow diagram (not to scale)

Drainage calculation summary

Parameter	Value
Total site area	754 m²
Existing impermeable area	95 m²
Proposed impermeable area (roofs + hardstanding)	200 m²

Parameter	Value
Proposed permeable / soft area (garden and soft landscaping)	554 m²
Impermeable area increase vs existing	+111 %
Greenfield runoff rate - QBAR (2.3 l/s/ha)	0.17 l/s
Greenfield runoff rate - 1 in 1 yr / 1 in 30 yr / 1 in 100 yr	0.15 / 0.4 / 0.55 l/s
Discharge rate off site	0 l/s (2 l/s minimum practical orifice)
Design rainfall (1 in 100 yr, 6 hr) + 40% climate change	77 mm
Runoff volume generated in the design event	15.4 m³
Attenuation storage provided	8 m³
Drain-down time (butt orifice and depressions)	24 hours
Interception depth captured at source (first 5 mm on impermeable areas)	1 m³

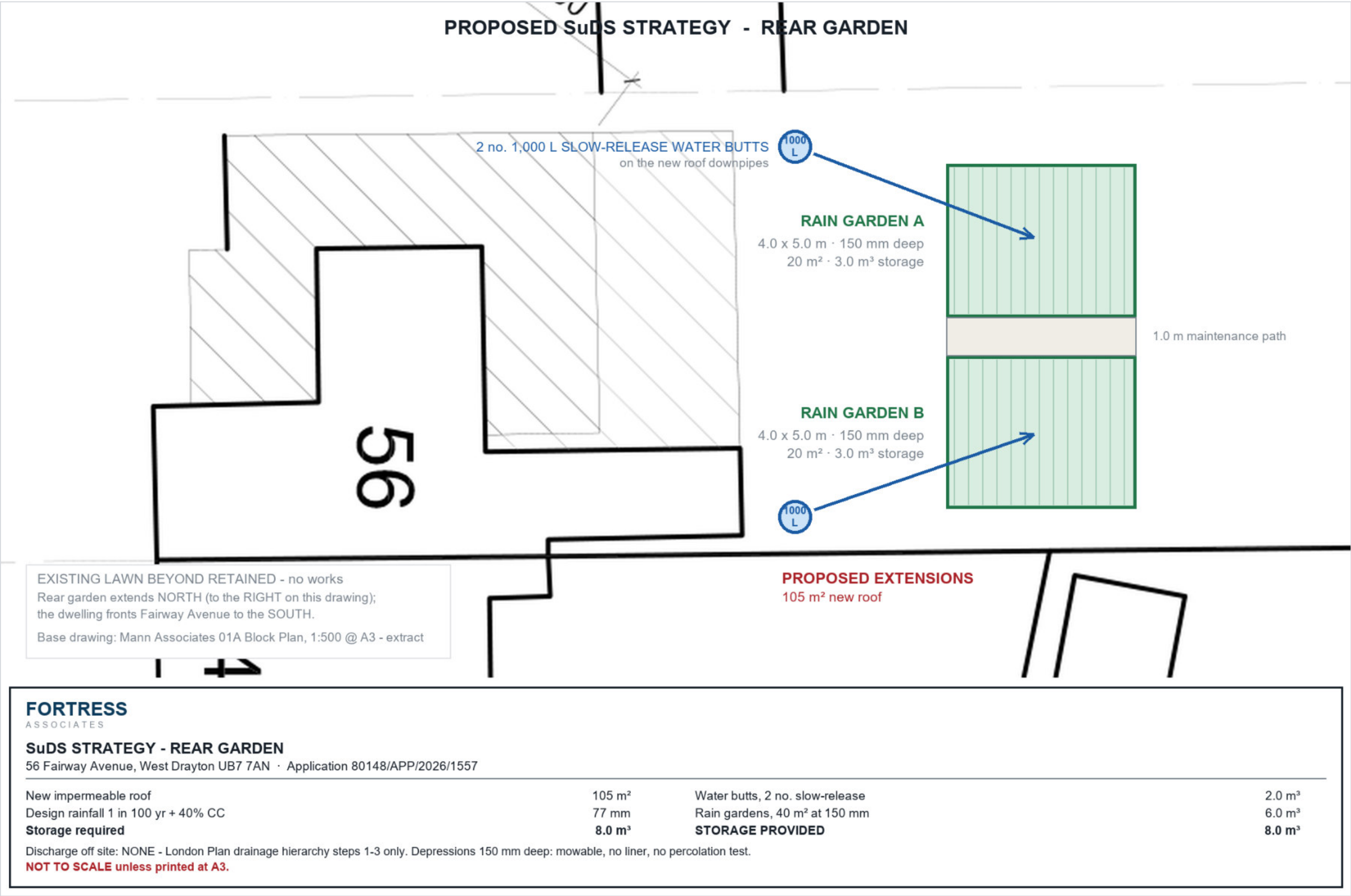
Schedule of SuDS measures

Measure	Application on this site	Design notes
Water butts / rainwater harvesting	2 no. 1,000 litre slow-release butts on the new roof downpipes; 2.0 m3 of storage, interception of the first 5 mm, overflow to the rain gardens	Small-scale source control; encourages re-use
Rain gardens / bioretention	Two shallow planted depressions in the rear garden, each 4.0 m x 5.0 m and 150 mm deep; 40 m2 and 6.0 m3 in total	Provides treatment, interception and amenity value

SuDS maintenance schedule

Component	Activity & frequency	Responsibility
Water butts / rainwater harvesting	Check leaf guards before forecast storms; confirm each spring that the slow-release orifice is clear so the butt empties between events	Property owner
Rain gardens / bioretention	Cut as part of the lawn; keep planting clear; check inlets and the butt overflow route for blockage after heavy rainfall	Property owner

Figure P14 - SuDS strategy - rear garden



Summary of measures

The measures below are incorporated in the design, classified against the NPPF hierarchy so the local planning authority can secure them by condition where appropriate.

Class	Measure
Avoid	Vulnerable elements located in the lowest-risk parts of the site; sequential approach applied to layout
Avoid	Sleeping accommodation at first floor or above
Control	Finished floor levels set with the freeboard standards of EA standing advice (see Control section); thresholds raised above adjacent ground (see Control section)
Control	External levels graded away from openings; overland exceedance routes preserved towards the south-east
Mitigate	Flood resistance and resilience measures per CIRIA C790 (raised electrics, resilient finishes, non-return valves)
Manage	Occupants register for EA flood warnings; flood plan provided with the home user guide
SuDS	Discharge restricted to - l/s following the discharge hierarchy; first 5 mm of rainfall intercepted at source
SuDS	8 m³ attenuation for the 1 in 100 yr + 40% CC event, half-emptying within 24 hours, with treatment per CIRIA C753
SuDS	Maintenance schedule in private ownership for the lifetime of the development

Data sources and basis of assessment

Dataset	Publisher	Licence
Flood Map for Planning - Flood Zones 2 & 3 (Rivers and Sea)	Environment Agency	OGL v3
Risk of Flooding from Surface Water (NaFRA2)	Environment Agency	OGL v3
Historic Flood Map	Environment Agency	OGL v3
Recorded Flood Outlines	Environment Agency	OGL v3
Reservoir Flood Extents - Wet Day	Environment Agency	OGL v3
Spatial Flood Defences	Environment Agency	OGL v3
Statutory Main River Map	Environment Agency	OGL v3
Flood warning / alert area coverage	Environment Agency real-time flood monitoring API	OGL v3
Ground elevation (EU-DEM 25 m)	Copernicus	Open

All datasets were accessed on 03 September 2026 under the Open Government Licence v3.0 / ODbL. Contains Environment Agency data © Environment Agency and database right; base mapping © OpenStreetMap contributors.

Basis of assessment

- This is a professional flood risk assessment prepared in accordance with the Planning Practice Guidance and Environment Agency standing advice, applying the industry-standard methodologies used by flood risk practitioners across the UK to the authoritative national datasets listed above, current at the date of access and specific to this site.
- Drainage calculations follow the stated methods: greenfield rates at 2.3 l/s/ha with IH124 growth factors, and the 1 in 100 year, 6 hour design rainfall with a 40% climate change allowance, in accordance with the Non-Statutory Technical Standards for SuDS.
- The drainage components are designed to the standards stated and are built to the design values.
- The assessment addresses flood risk and surface water drainage; foul drainage and other environmental matters are covered by the other application documents.

Closure

This Flood Risk Assessment and Drainage Strategy demonstrates that the proposed development satisfies the requirements of the NPPF and PPG: flood risk from all sources has been assessed for the lifetime of the development including climate change; the development is appropriate development in its flood zone; it is safe for its lifetime; it does not increase flood risk elsewhere; and surface water is managed sustainably with no increase over the existing position.

Prepared by M Nagani CEng MSc
For Fortress Associates

FA-FRA-0182 | 3 September 2026

Figure P1 - Site location - close up

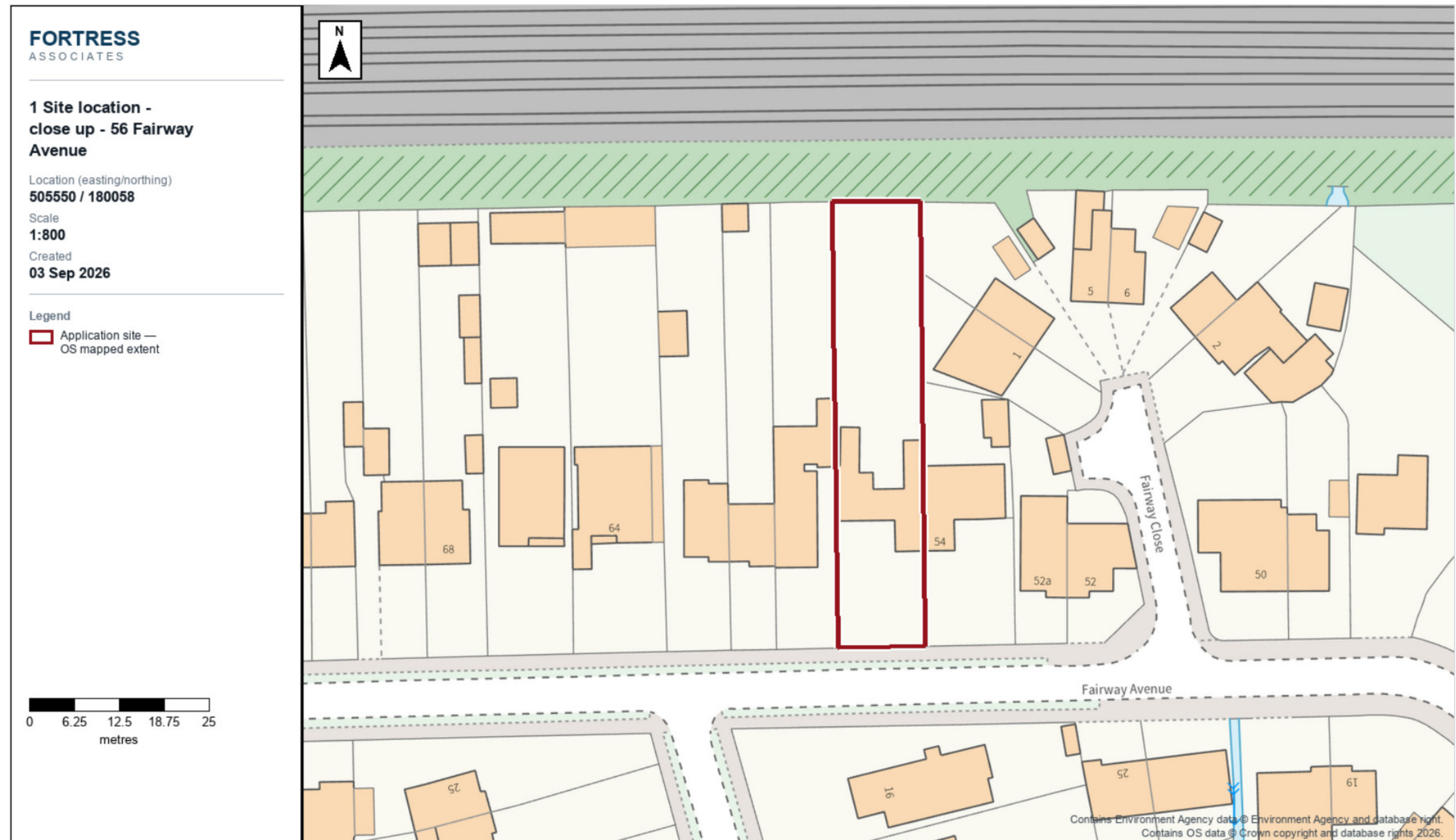


Figure P1a - Site location - street context

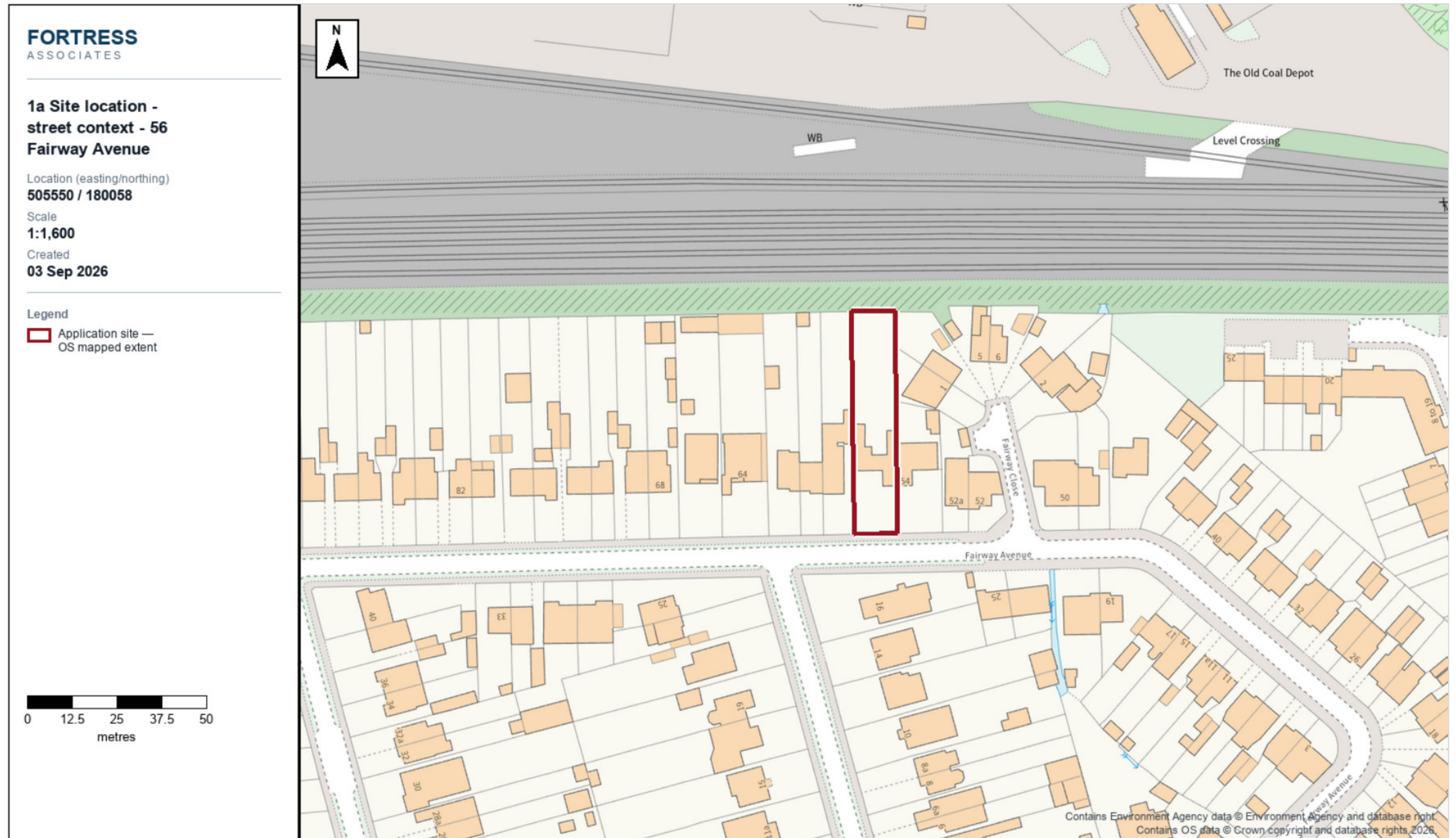


Figure P2 - Flood Map for Planning - Flood Zones 2 and 3

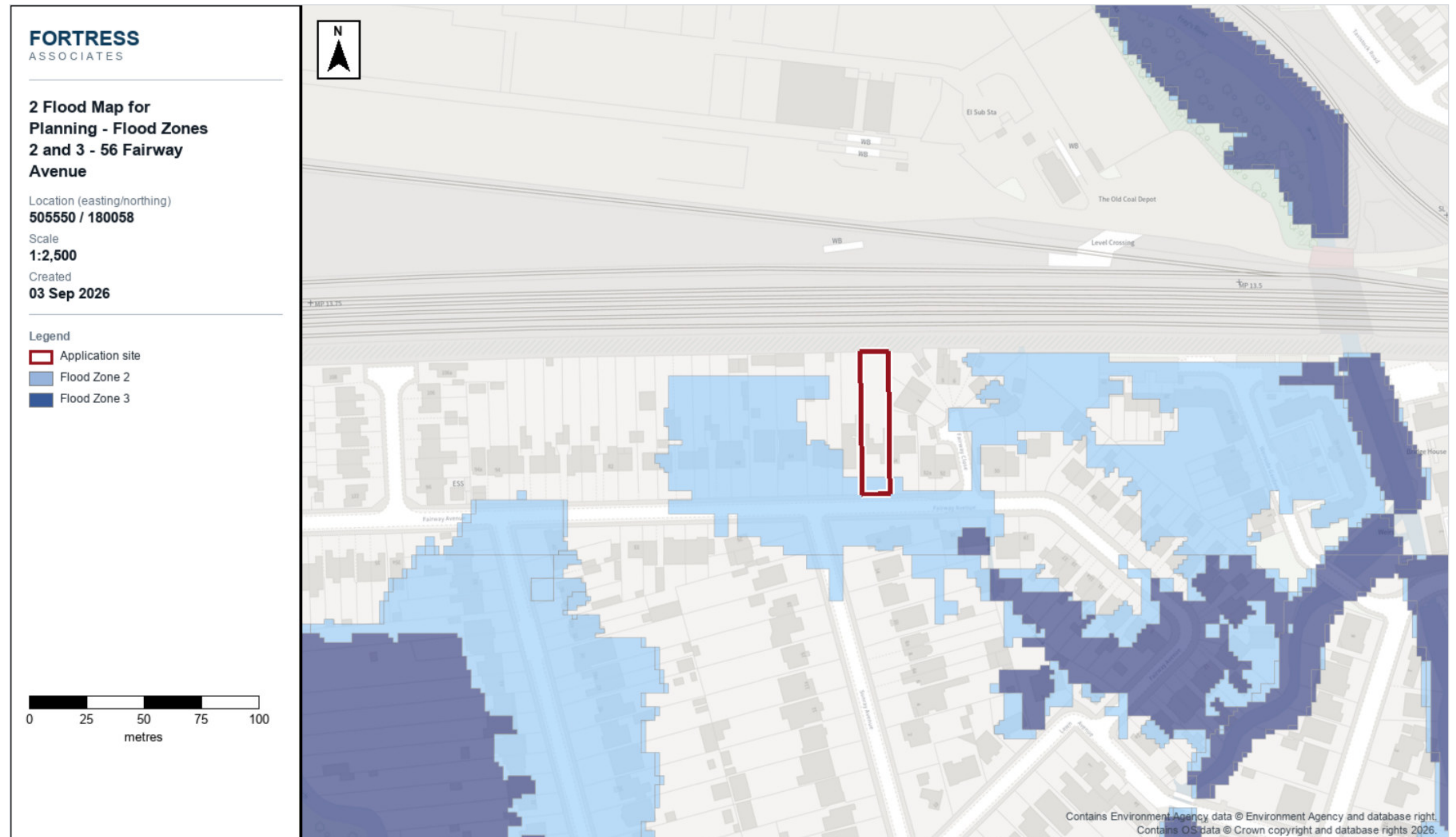
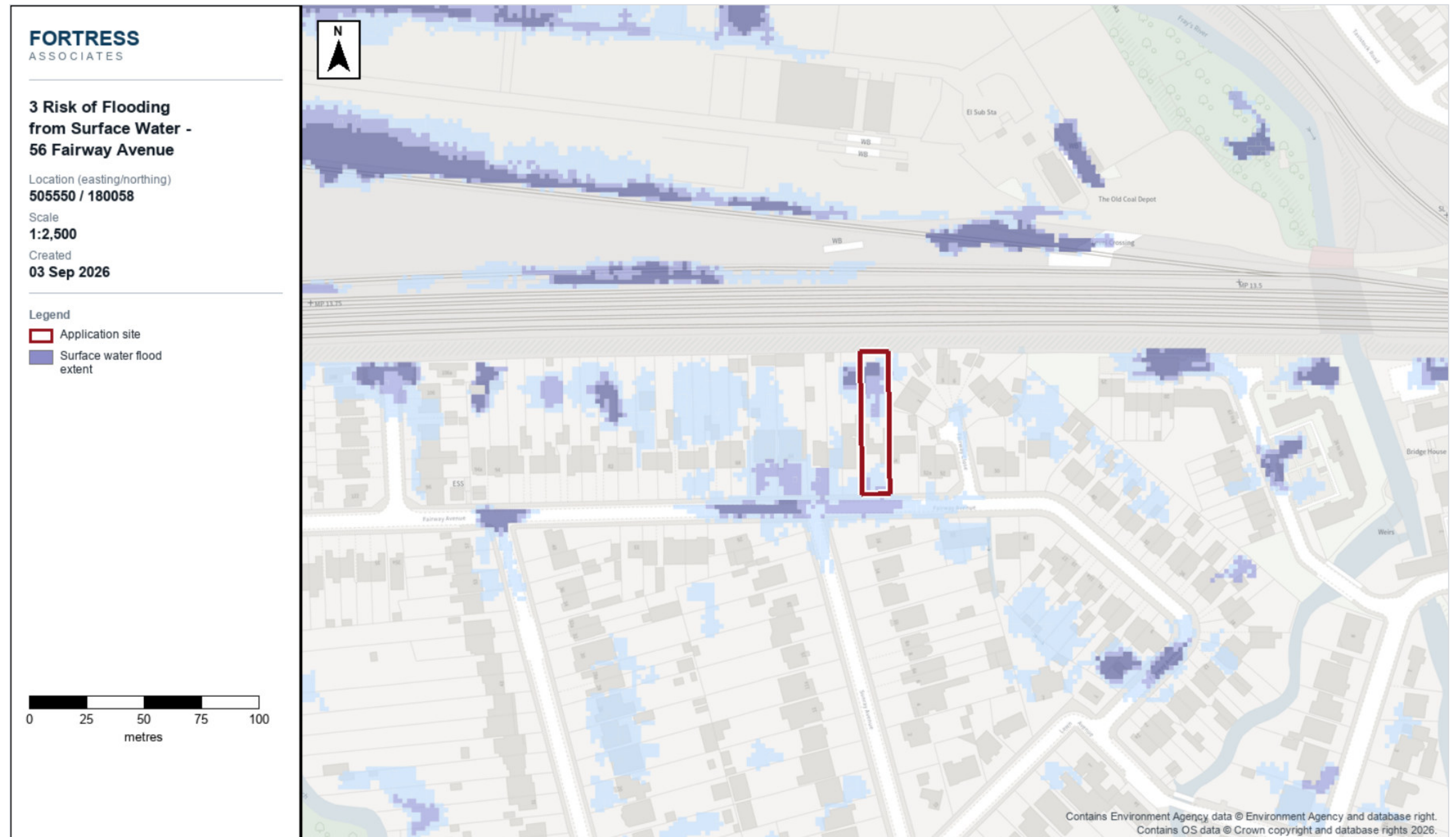


Figure P3 - Risk of Flooding from Surface Water



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4 Surface water depth over 0.3 m - 56 Fairway Avenue

Location (easting/northing)
505550 / 180058

Scale
1:2,500

Created
03 Sep 2026

Legend

- Application site
- Depth greater than 300 mm

The map displays a residential area with Fairway Avenue running horizontally. A red rectangle highlights the application site. Blue areas indicate surface water depth greater than 300 mm. The map includes a north arrow, a scale bar (0 to 100 metres), and a legend. The application site is highlighted in red. The map shows the river, surrounding roads, and buildings.

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Figure P7 - Flood defences

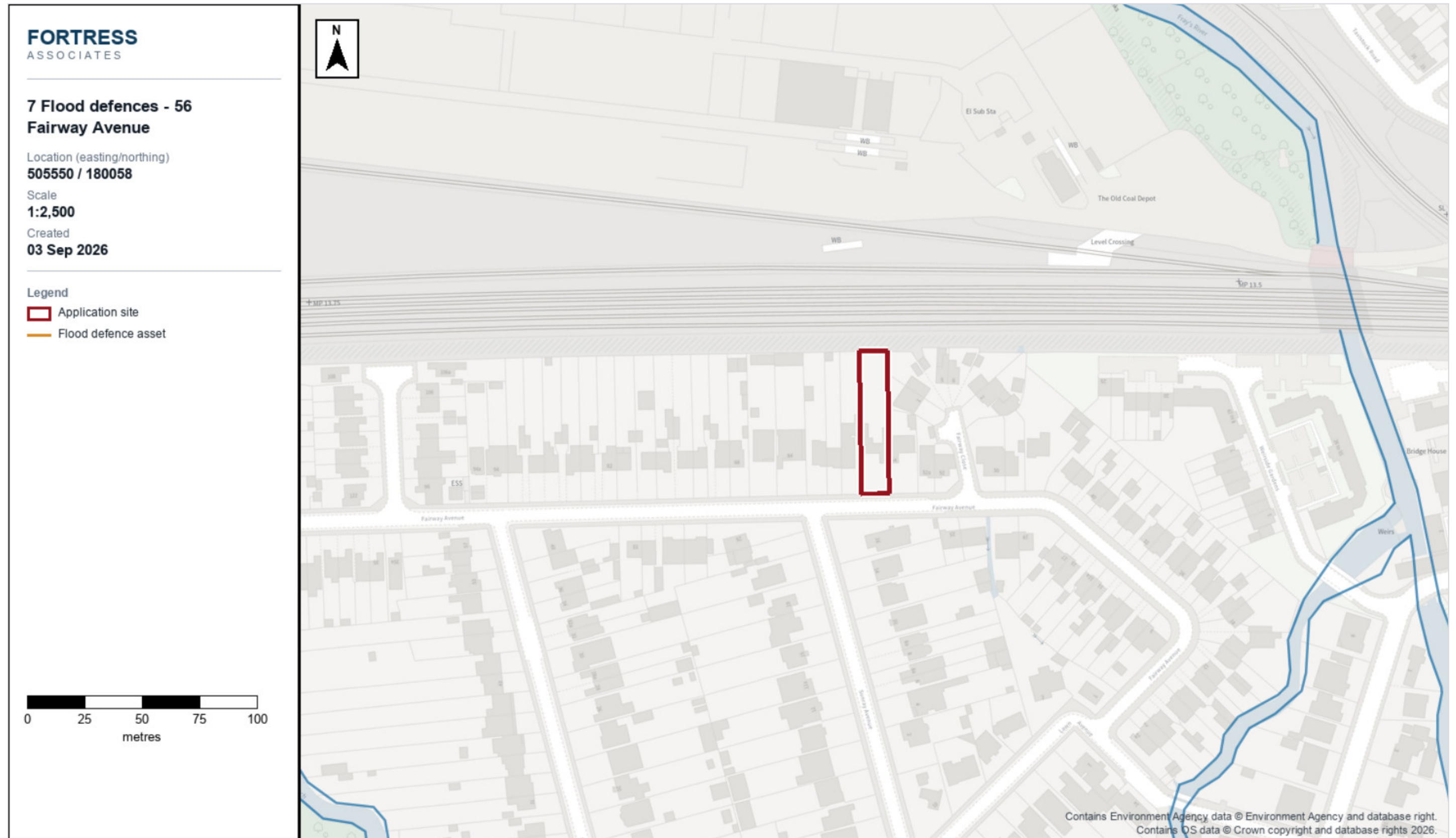
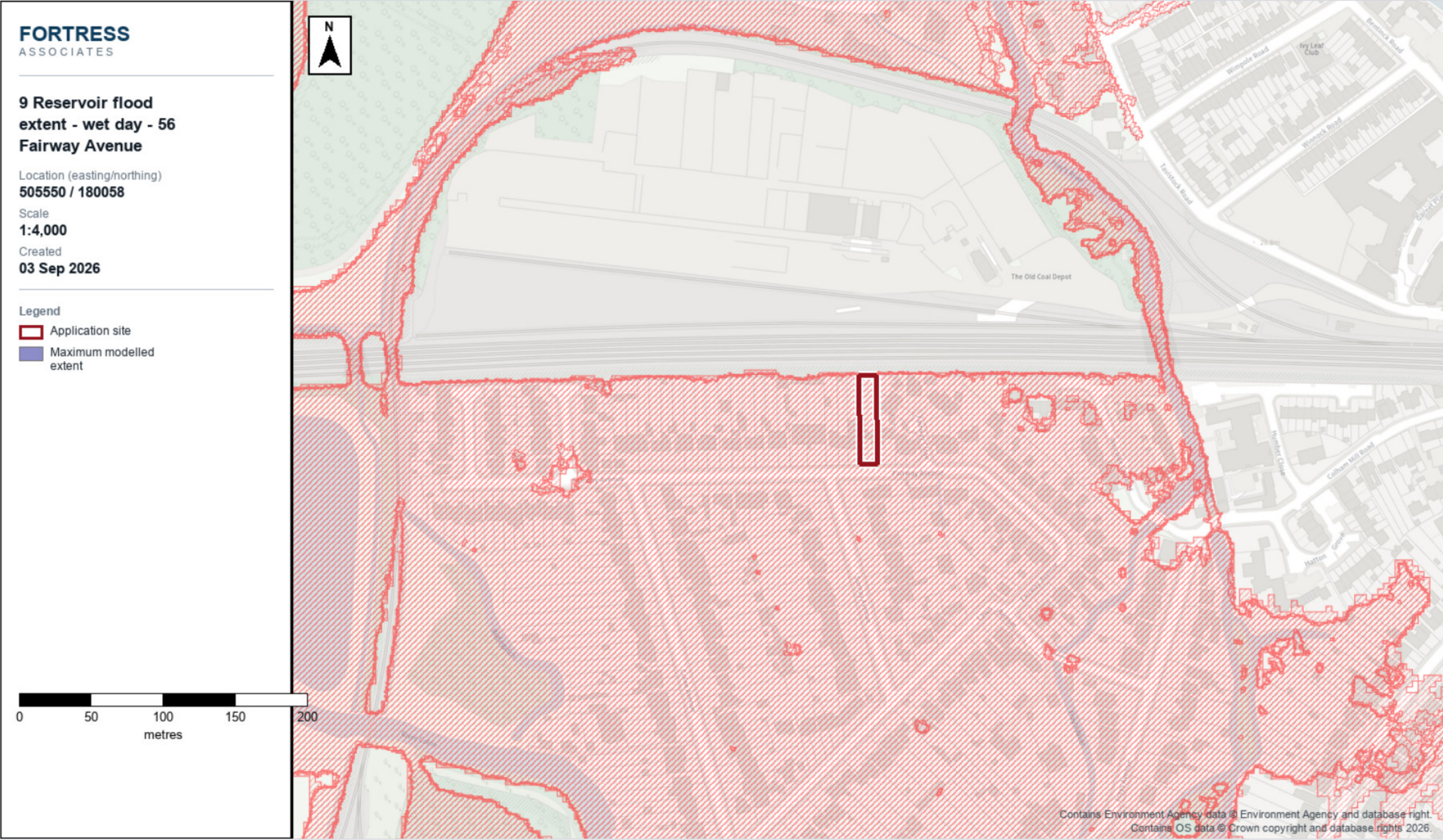


Figure P8 - Statutory main rivers



Figure P9 - Reservoir flood extent - wet day



FORTRESS ASSOCIATES

10 Climate change - rivers and sea - 56 Fairway Avenue

Location (easting/northing)
505550 / 180058

Scale
1:2,500

Created
03 Sep 2026

Legend

- Application site
- Extent with climate change

0 25 50 75 100 metres

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Figure P11 - Flood hazard FD2320 above 0.75

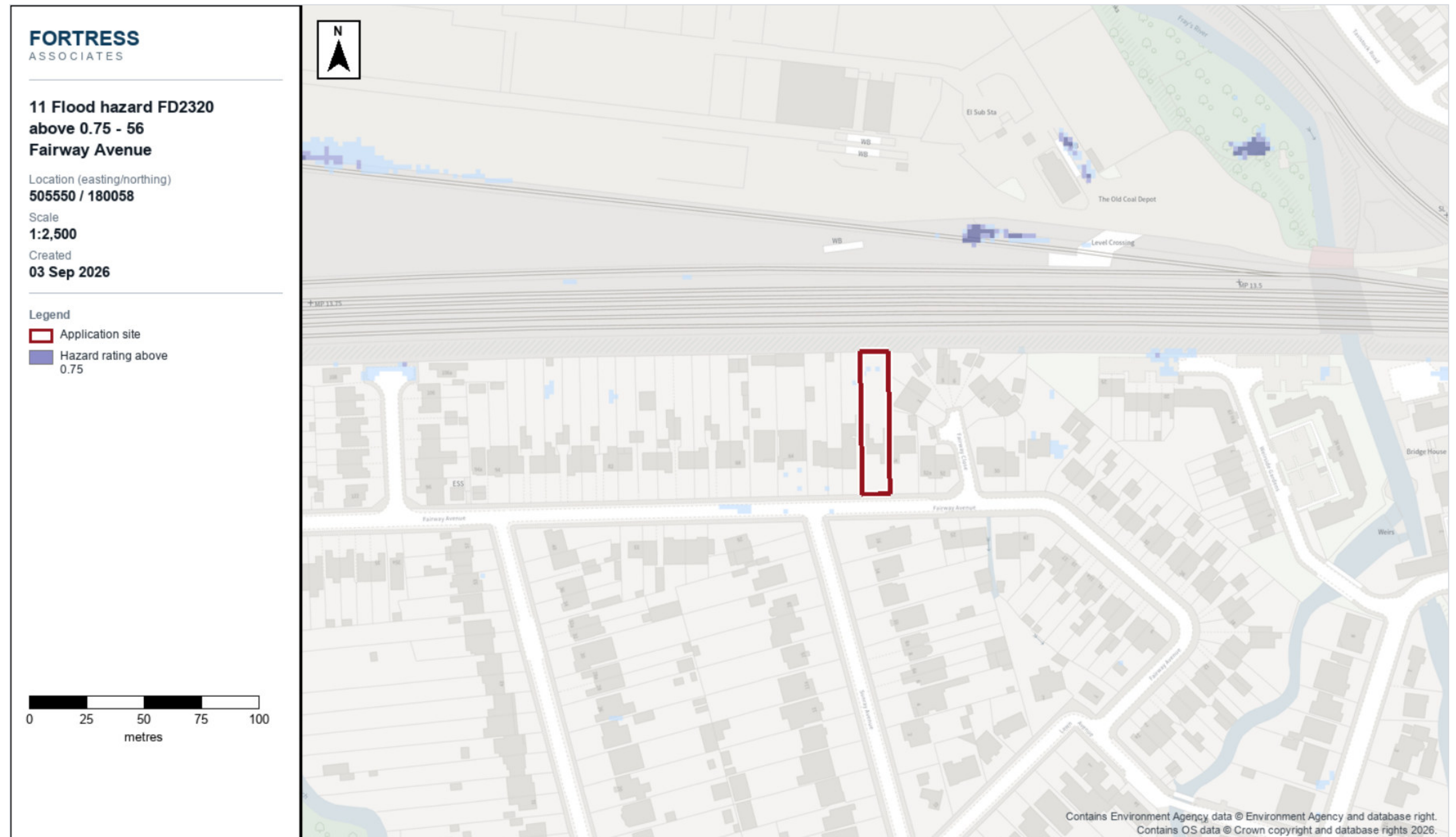


Figure P12 - Surface water flow direction

