Bradford Level 2 Strategic Flood Risk Assessment - Appendix B

Bradford Urban Area Nominal Risk Site Assessments

Draft

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1 Introduction

A Level 2 Strategic Flood Risk Assessment (SFRA) is required by the City of Bradford Metropolitan District Council (CBMDC) as all identified potential development sites cannot be allocated outside of areas of flood risk, as identified through the Bradford Level 1 SFRA, finalised November 2023.

The Level 1 SFRA entailed the high-level flood risk screening of 1,396 potential development sites. 260 of these sites were shown to be at some level of fluvial and/or surface water flood risk yet considered important to CBMDC's Local Plan ambitions. 98 of the 260 sites were shown to be at nominal risk of flooding yet still required brief assessment and commentary to support allocation.

This report summarises the fluvial, surface water, groundwater, reservoir, sewer and canal risk to the sites at nominal risk of flooding within the Bradford Urban Local Plan sub-area. This sub-area is located within the southeast of Bradford district, covering the City of Bradford and the town of Shipley.

2 Nominal Risk Sites

2.1 H1001

Site summary (Figure 2-1)	
Location	Upper Castle Street
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.4 hectares

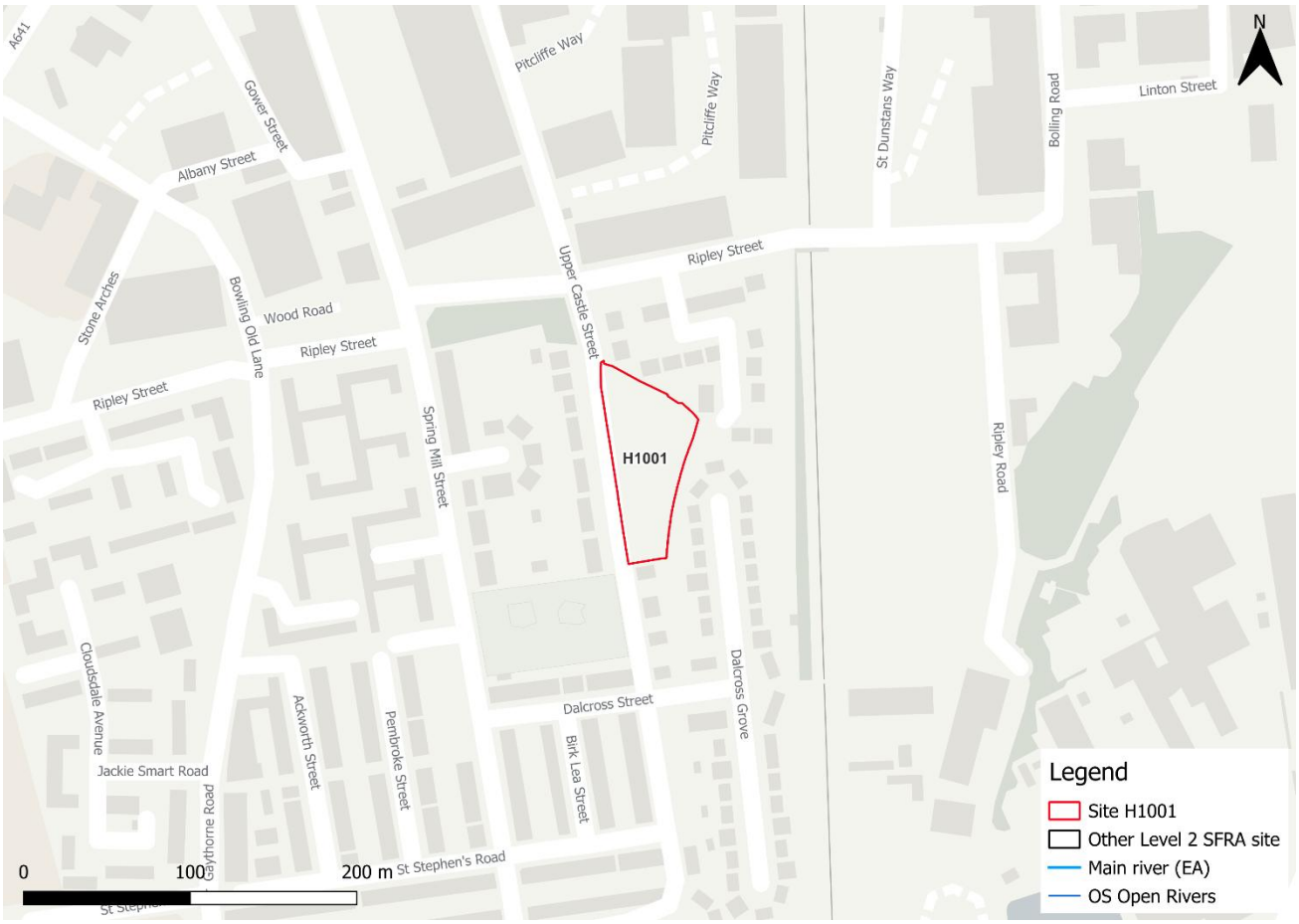


Figure 2-1: H1001 site location boundary

2.1.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled

to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.1.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-1). There is a surface water flow path along Upper Castle Street adjacent to the western boundary of the site. Maximum depths within the site are < 0.15 m (Figure 2-2). The flow path is modelled to increase in extent slightly along this boundary in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, and given the depths along Upper Castle Street are modelled to be low, safe access and escape should be possible via this route.

Table 2-1: Existing surface water flood risk within H1001 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
96	2	1	1



Figure 2-2: Medium risk event surface water flood depths within H1001 (Risk of Flooding from Surface Water)

2.1.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.1.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.2 H1037

Site summary (Figure 2-3)	
Location	Old Mill House, Dockfield Rd
Existing site use	Commercial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.5 hectares

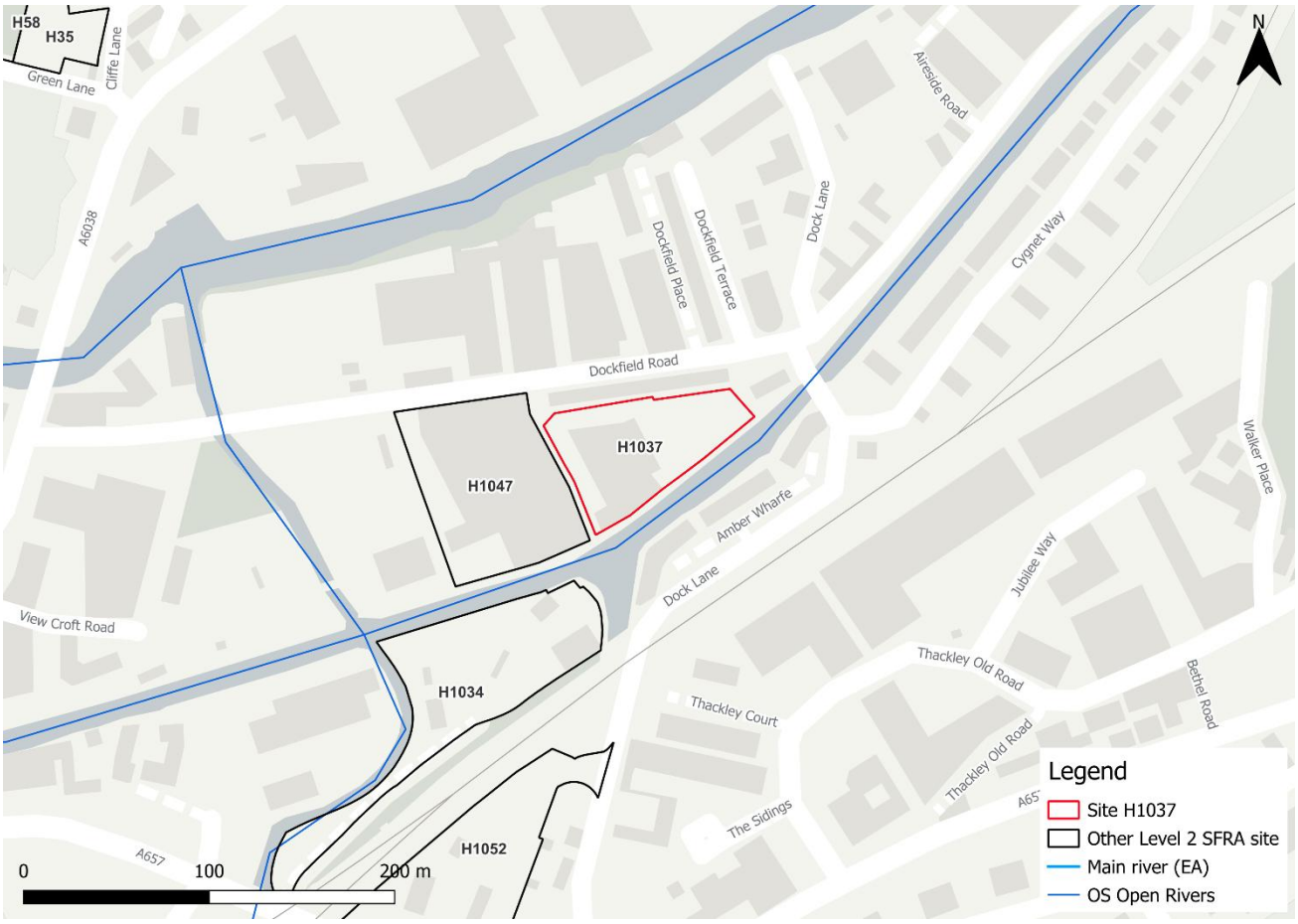


Figure 2-3: H1037 site location boundary

2.2.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.2.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-2). There is a surface water flow path along the western boundary of the site and a small area of ponding within the south of the site. Maximum depths within the site are > 1.2 m in a small area of the site (Figure 2-4). The areas at risk are modelled to increase in extent and depth in the medium risk event +45% climate change, with an additional area of ponding within the centre of the site. Surface water risk is constrained by the existing development within the site.

Based on available information, safe access and escape should be possible via Dockfield Road to the north of the site.

Table 2-2: Existing surface water flood risk within H1037 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
88	10	2	0

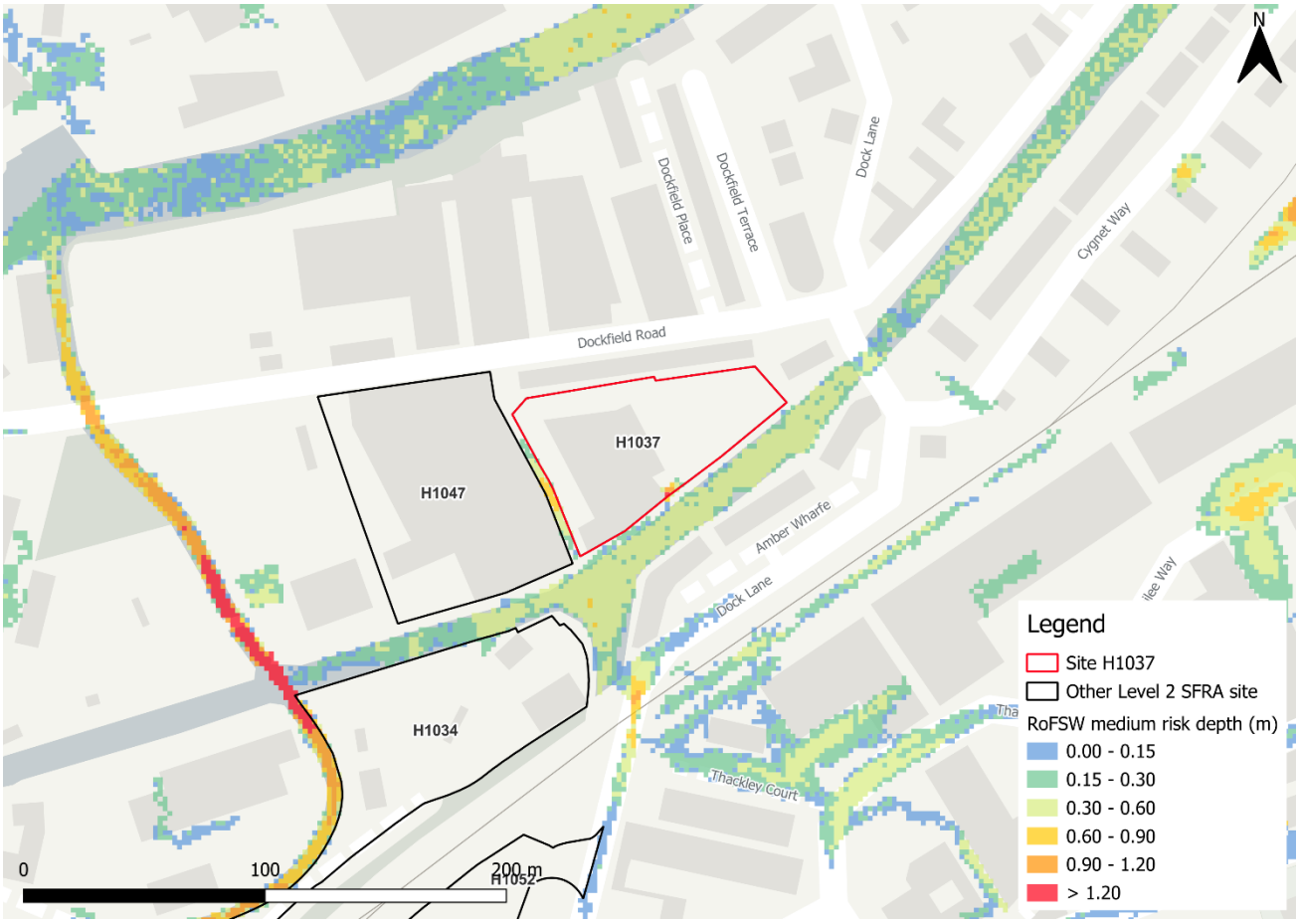


Figure 2-4: Medium risk event surface water flood depths within H1037 (Risk of Flooding from Surface Water)

2.2.3 Canals

The Leeds and Liverpool Canal is located to the south of the site. However, the canal is situated at a lower elevation than the site therefore should not pose residual risk to the site.

2.2.4 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.2.5 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Any change in site layout where there are changes to current building footprints or road layouts, will require detailed surface water modelling to ascertain flow routes and low-lying areas.

2.3 H1052

Site summary (Figure 2-5)	
Location	Land between Leeds Road and Dock Lane
Existing site use	Industrial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.7 hectares

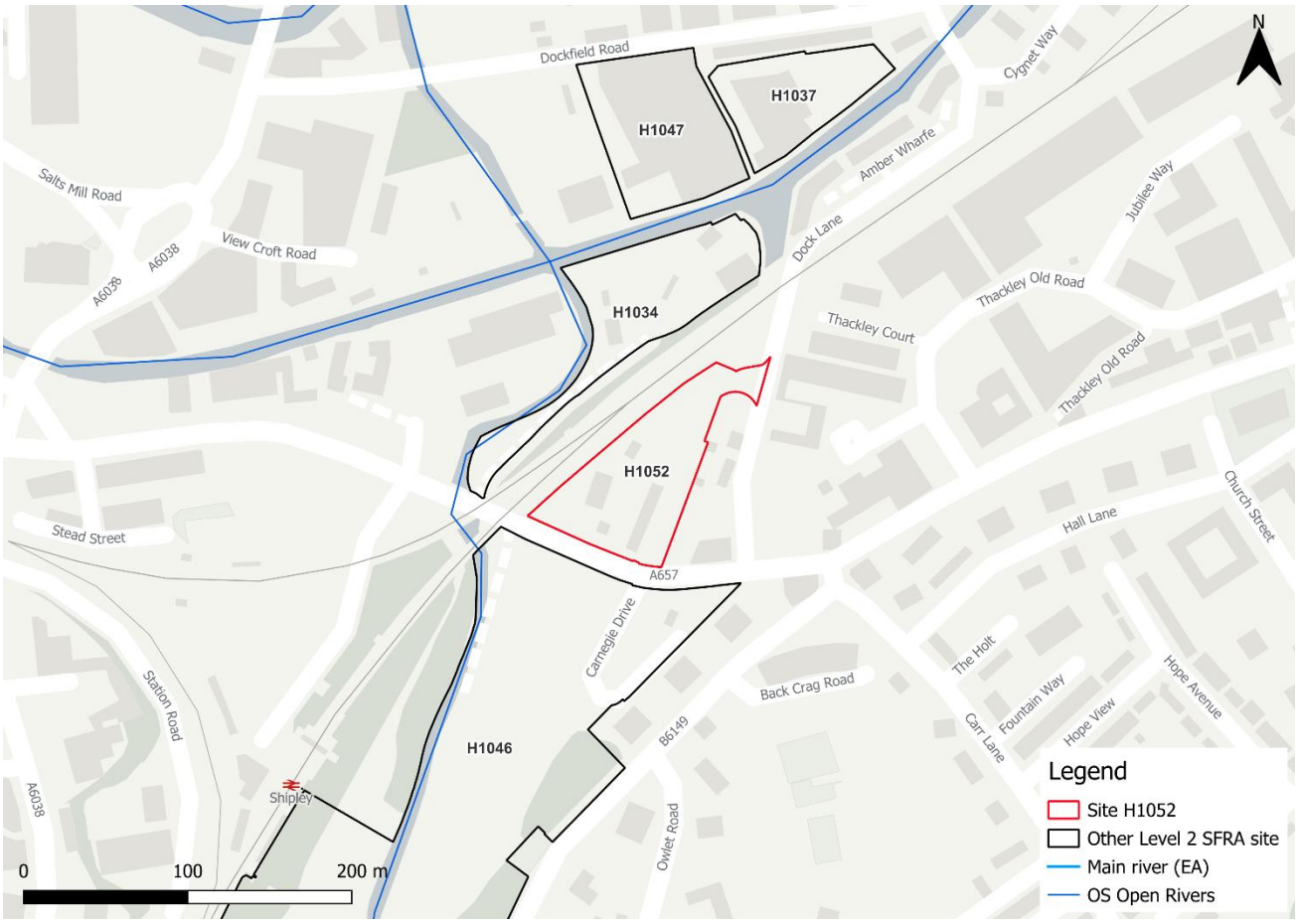


Figure 2-5: H1052 site location boundary

2.3.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.3.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-3). Surface water risk is confined to the eastern boundary of the site. Maximum depths within the site are between 0.15 and 0.3 m (Figure 2-6). The flow path is modelled to increase in extent slightly along this boundary in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via the A657 to the south of the site.

Table 2-3: Existing surface water flood risk within H1052 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
93	5	1	1

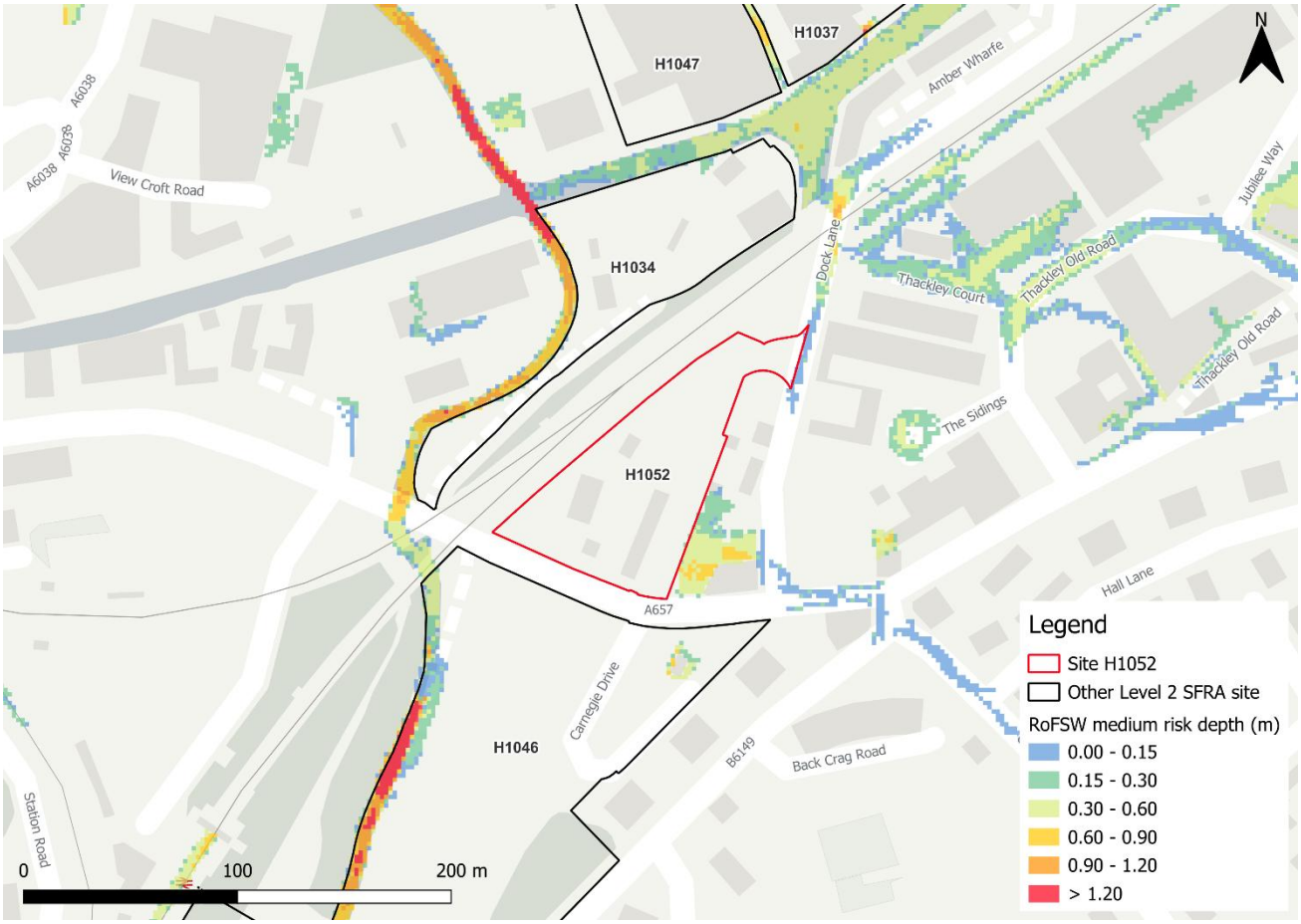


Figure 2-6: Medium risk event surface water flood depths within H1052 (Risk of Flooding from Surface Water)

2.3.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.3.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.4 H1055

Site summary (Figure 2-7)	
Location	Wrose Brow Road, Windhill
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	2 hectares



Figure 2-7: H1055 site location boundary

2.4.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.4.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-4). Surface water risk is confined to a shallow flow path within the east of the site. Maximum depths within the site are < 0.15 m (Figure 2-8). The flow path is modelled to increase in extent and depth slightly in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via Church Street to the north of the site.

Table 2-4: Existing surface water flood risk within H1055 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	2	3	0

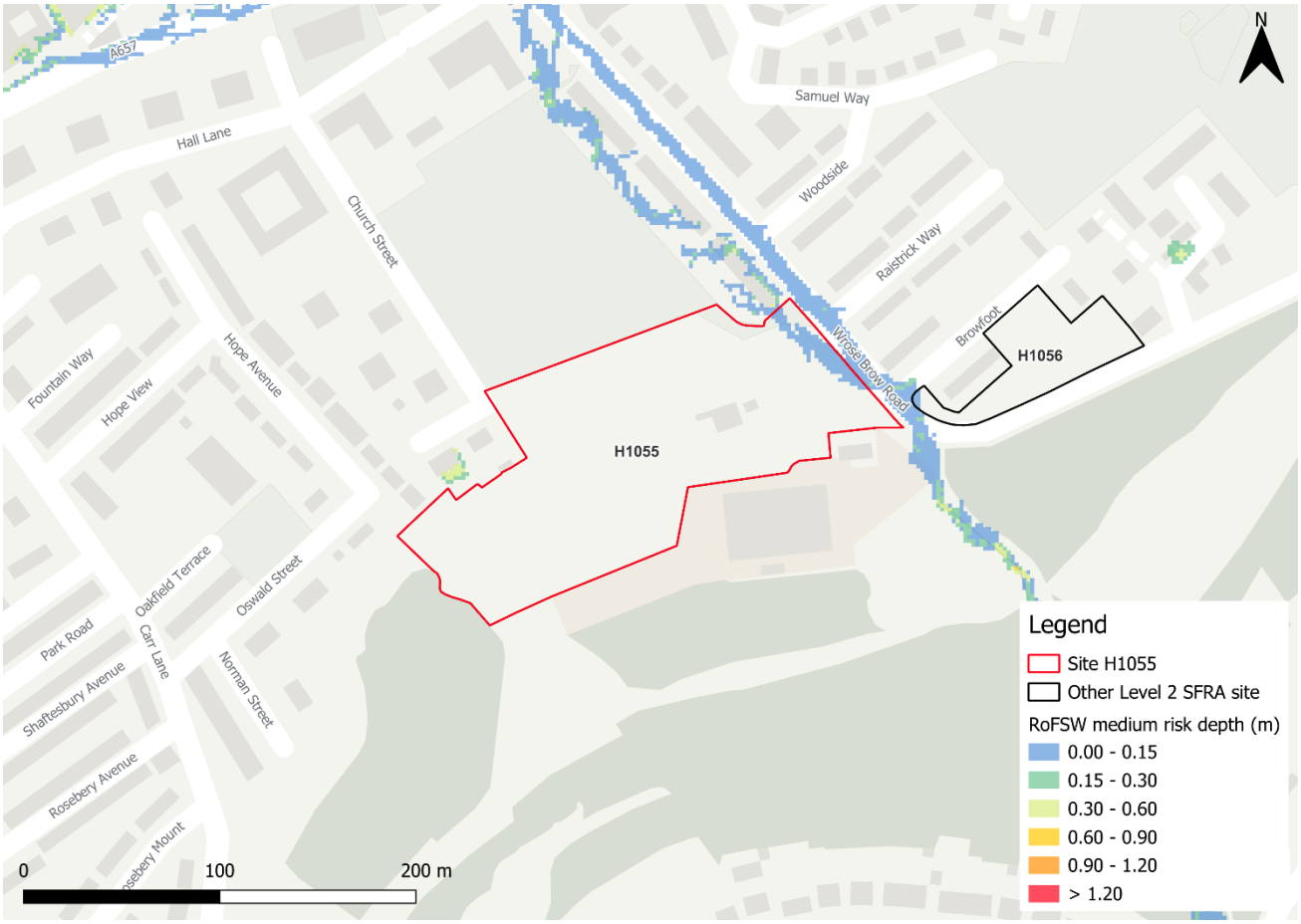


Figure 2-8: Medium risk event surface water flood depths within H1055 (Risk of Flooding from Surface Water)

2.4.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.4.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.5 H1056

Site summary (Figure 2-9)	
Location	Browfoot/Wrose Brow Road
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.3 hectares

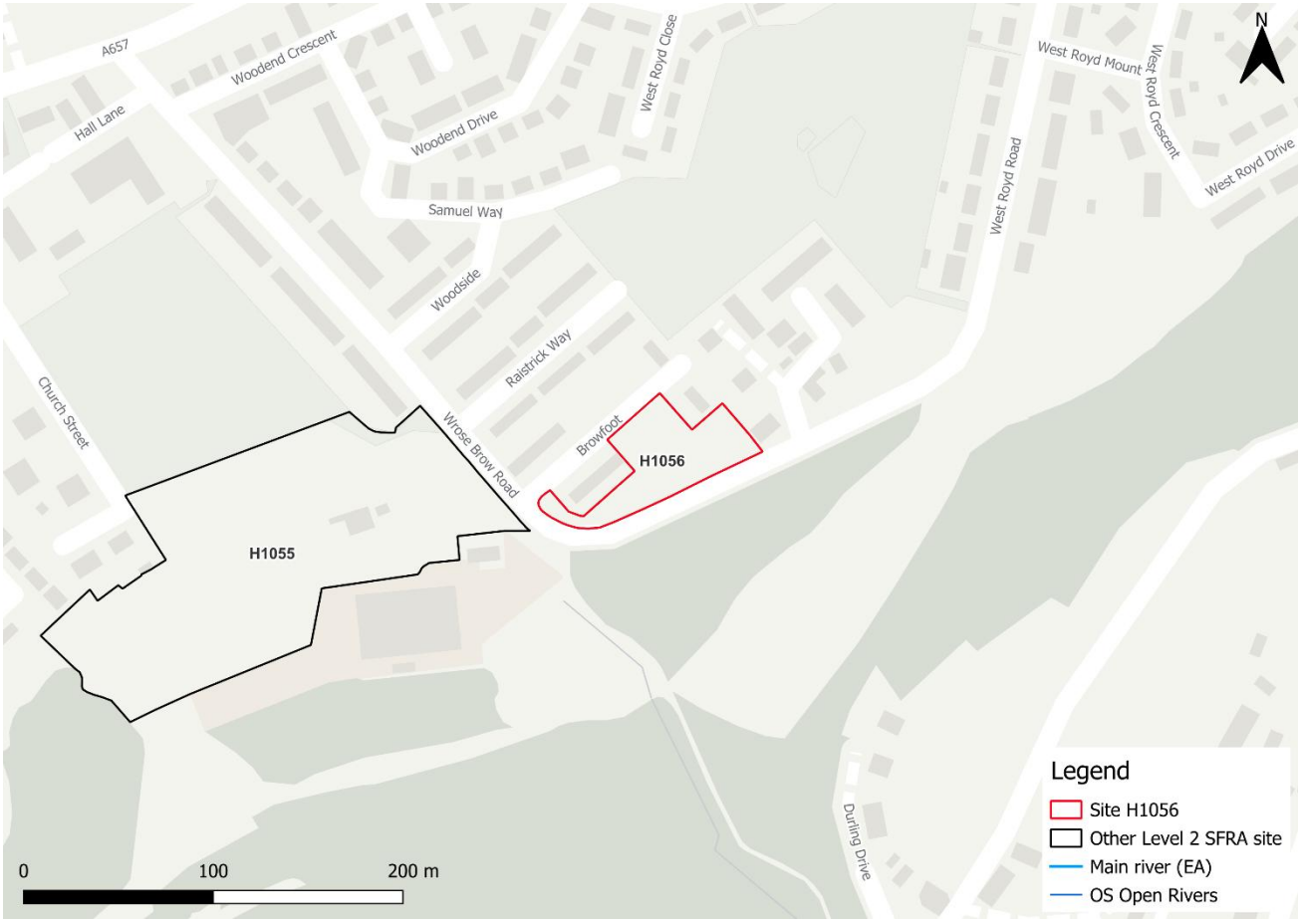


Figure 2-9: H1056 site location boundary

2.5.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.5.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-5). Surface water risk is confined to a small area within the west of the site. Maximum depths within the site are < 0.15 m (Figure 2-10). This area of risk is modelled to increase in extent and depth slightly in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via Wrose Brow Road to the south of the site.

Table 2-5: Existing surface water flood risk within H1056 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0

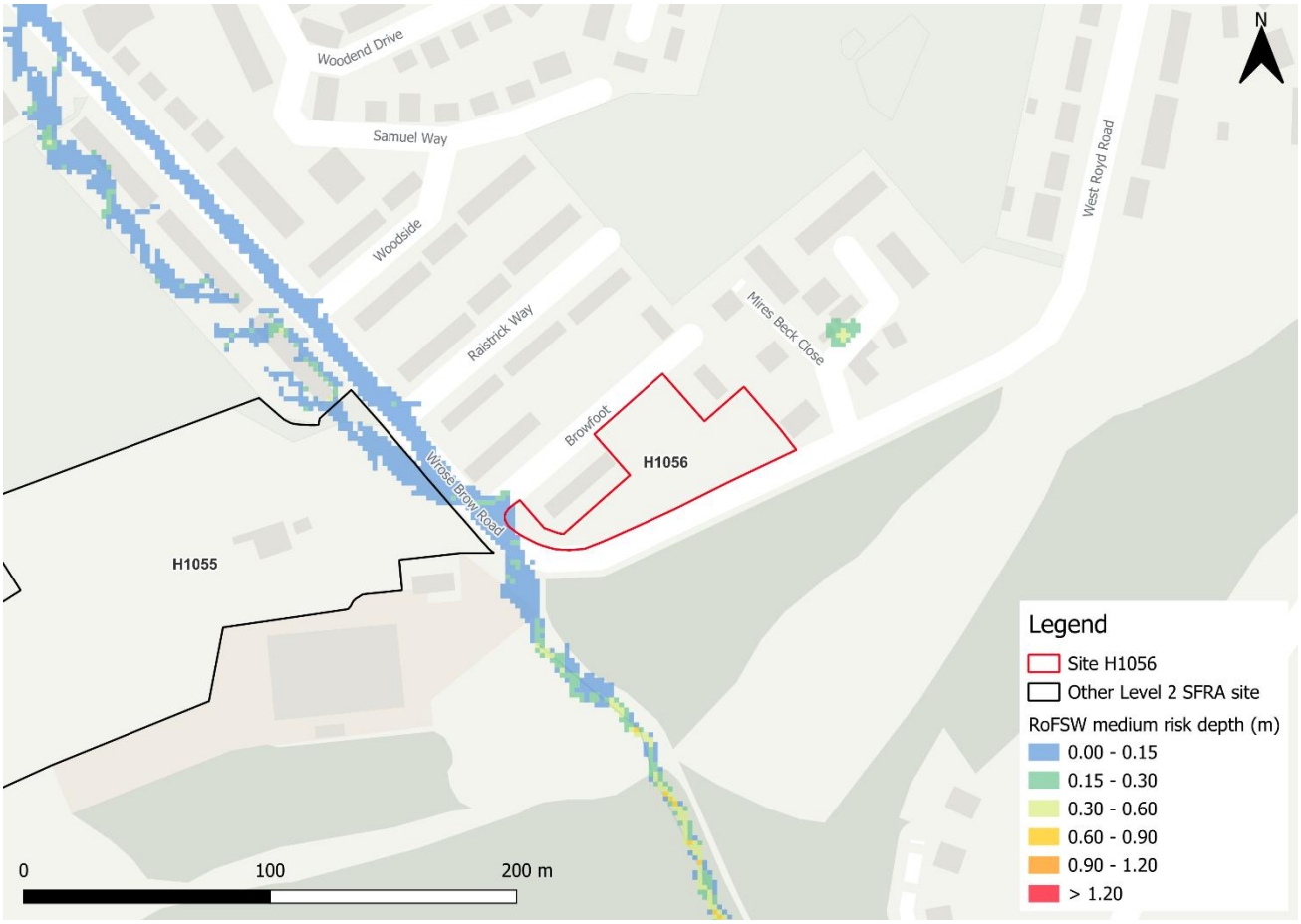


Figure 2-10: Medium risk event surface water flood depths within H1056 (Risk of Flooding from Surface Water)

2.5.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.5.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.6 H1173

Site summary (Figure 2-11)	
Location	Legrams Lane
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.3 hectares

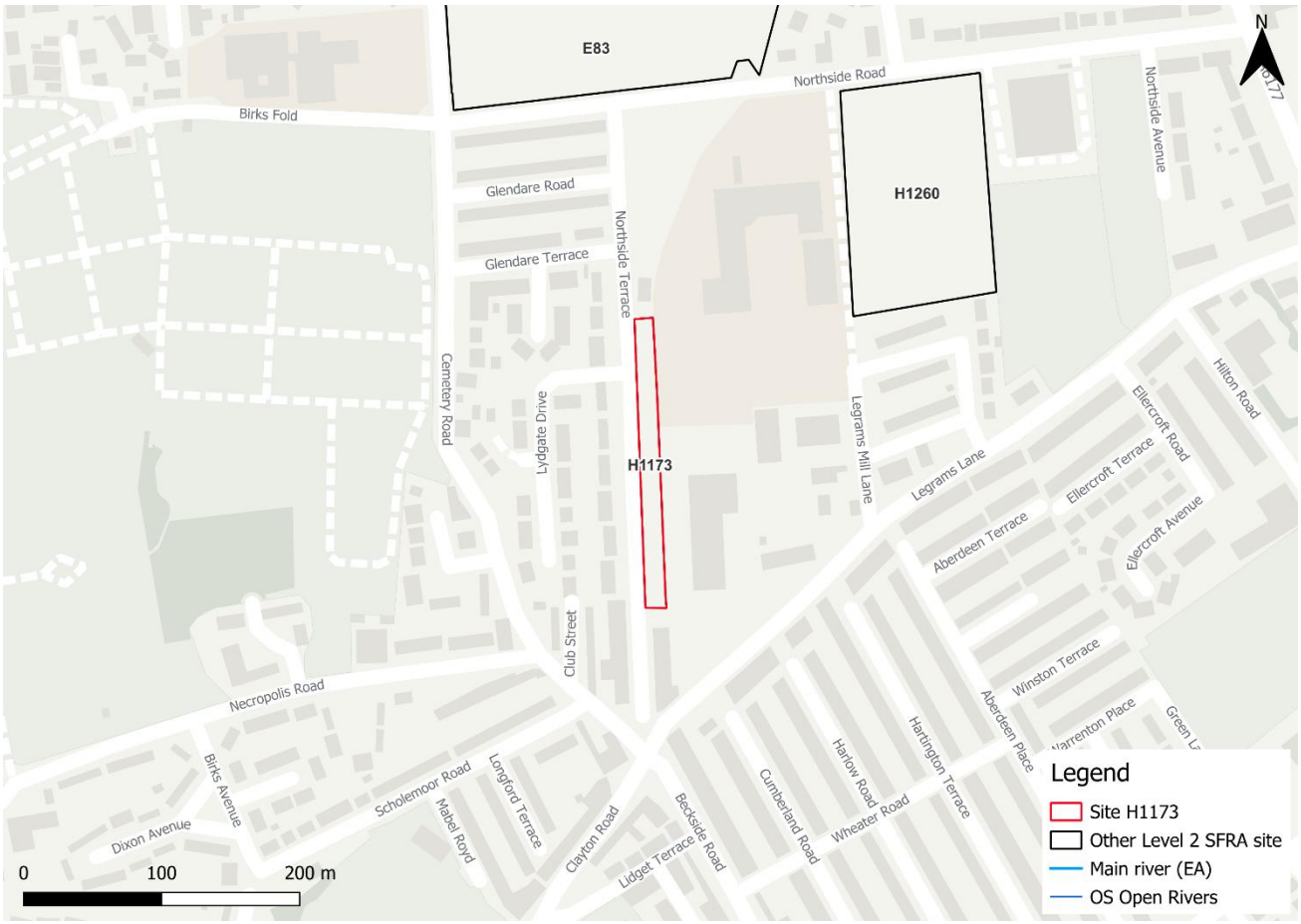


Figure 2-11: H1173 site location boundary

2.6.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.6.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-6). Surface water risk is confined to a very small area of the site along the western boundary. Maximum depths within the site are < 0.15 m (Figure 2-12). This area of risk is modelled to increase in extent and depth slightly in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via Wrose Northside Terrace to the west of the site.

Table 2-6: Existing surface water flood risk within H1173 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0

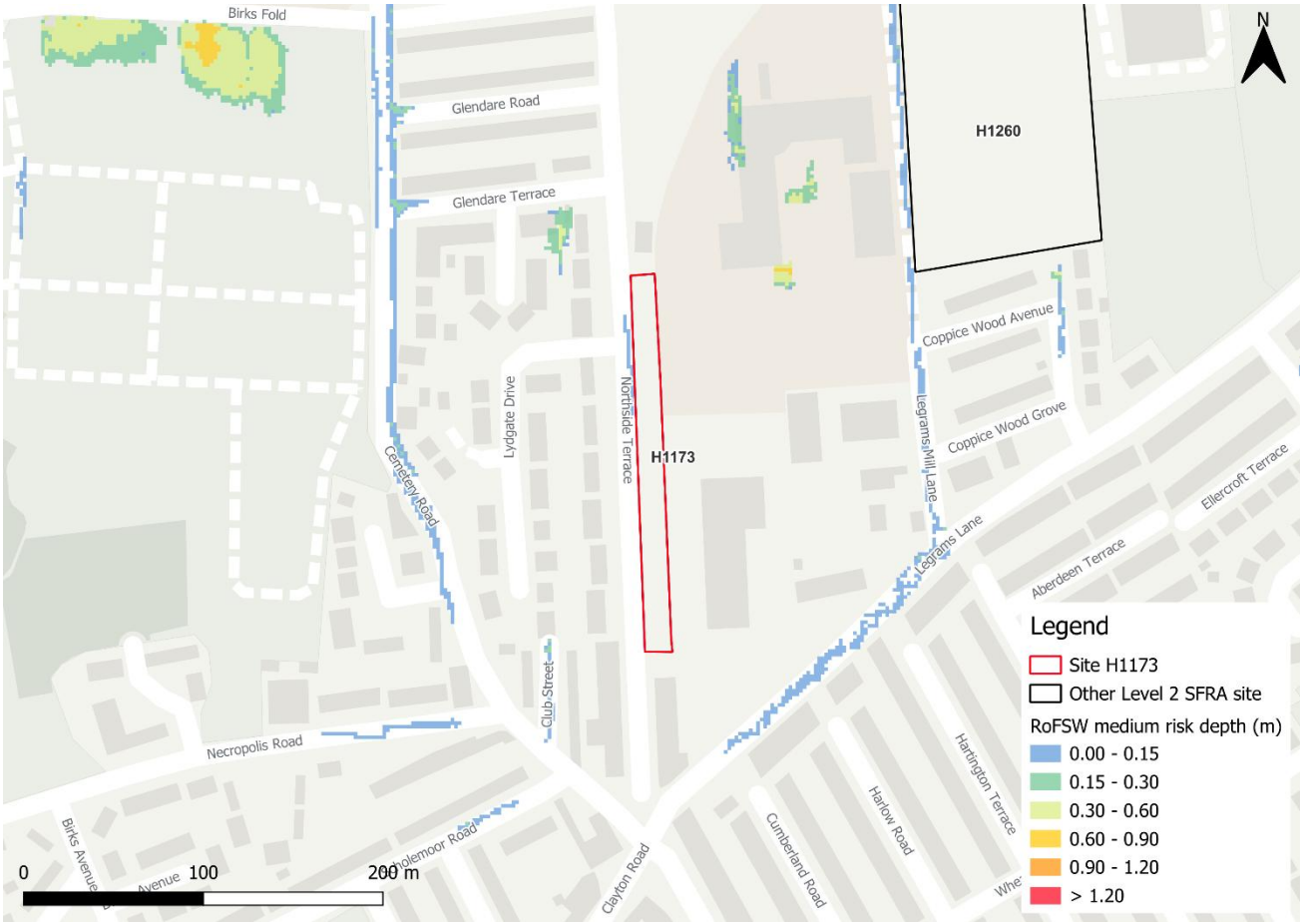


Figure 2-12: Medium risk event surface water flood depths within H1173 (Risk of Flooding from Surface Water)

2.6.3 Groundwater

Through the centre and a small area within the south of the site, there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-13). The

remaining area of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas.

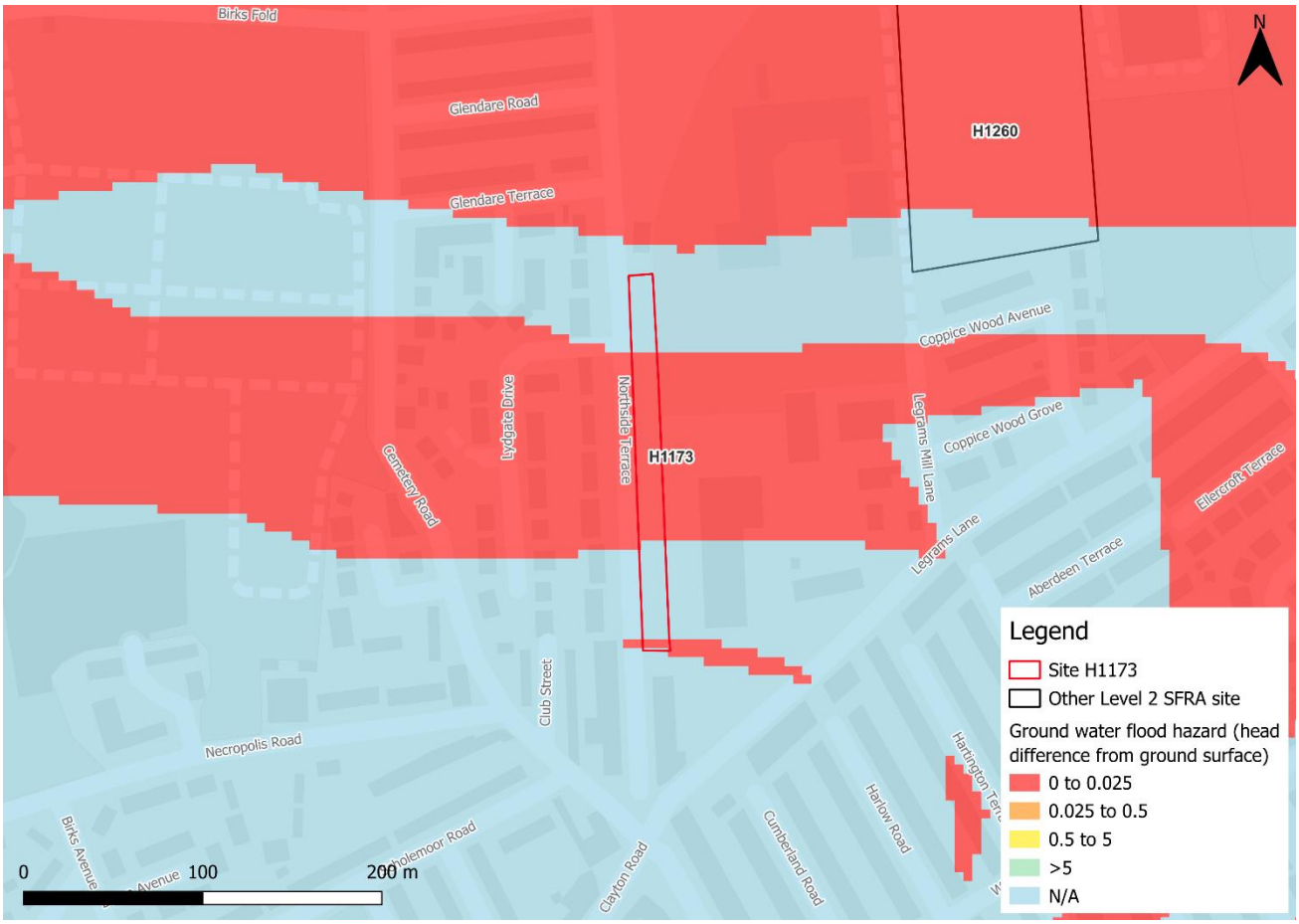


Figure 2-13: JBA 5m Groundwater Emergence Map (H1173)

2.6.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Groundwater conditions at the site should be explored further through a site-specific FRA.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.7 H1248

Site summary (Figure 2-14)	
Location	Back Fold, Clayton
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.6 hectares

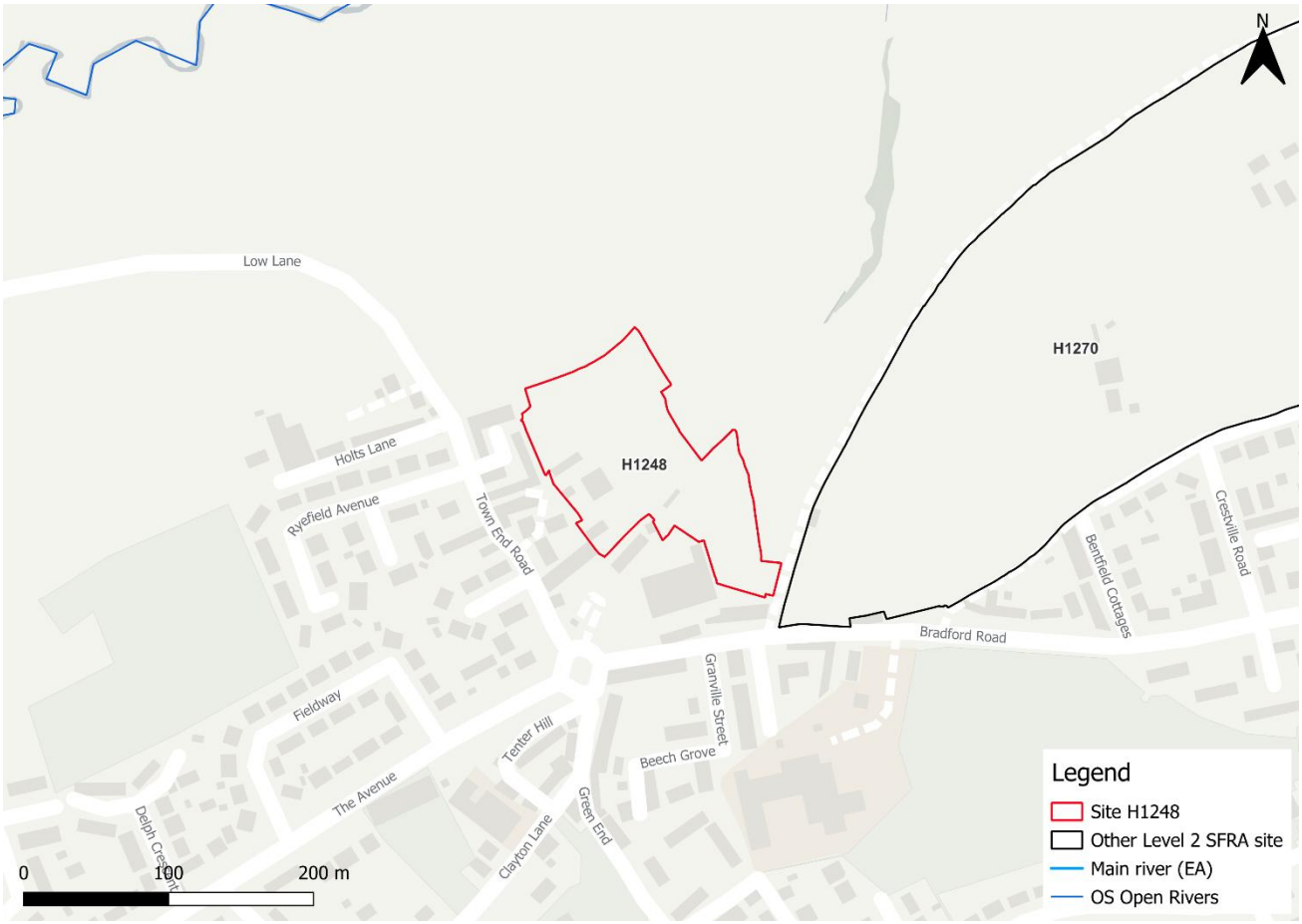


Figure 2-14: H1248 site location boundary

2.7.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.7.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-7). There is a distinct, shallow surface water flow path extending through the centre of the site. Maximum depths within the site are between 0.15 and 0.3 m (Figure 2-15). This flow path is modelled to increase in extent and depth in the medium risk event +45% climate change, with additional areas of risk within the northwest and southeast of the site. Maximum depths are modelled to increase to between 0.3 and 0.6 m.

Based on available information, safe access and escape should be possible however specific access roads will need to be identified at the FRA stage.

Table 2-7: Existing surface water flood risk within H1248 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
84	6	5	5

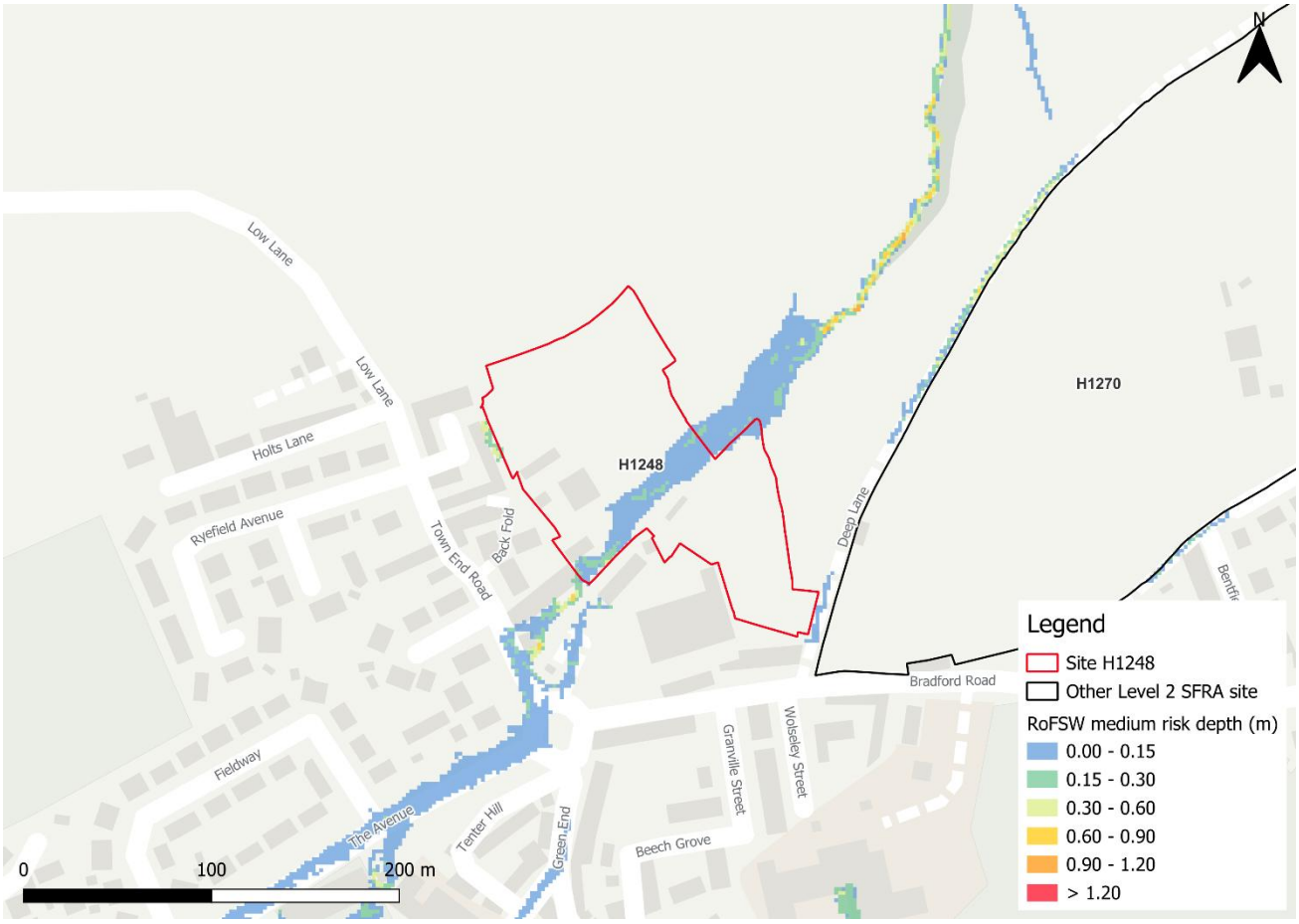


Figure 2-15: Medium risk event surface water flood depths within H1248 (Risk of Flooding from Surface Water)

2.7.3 Groundwater

The entire site is situated in an area where there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-16). Groundwater conditions should be investigated further as part of a site-specific FRA.

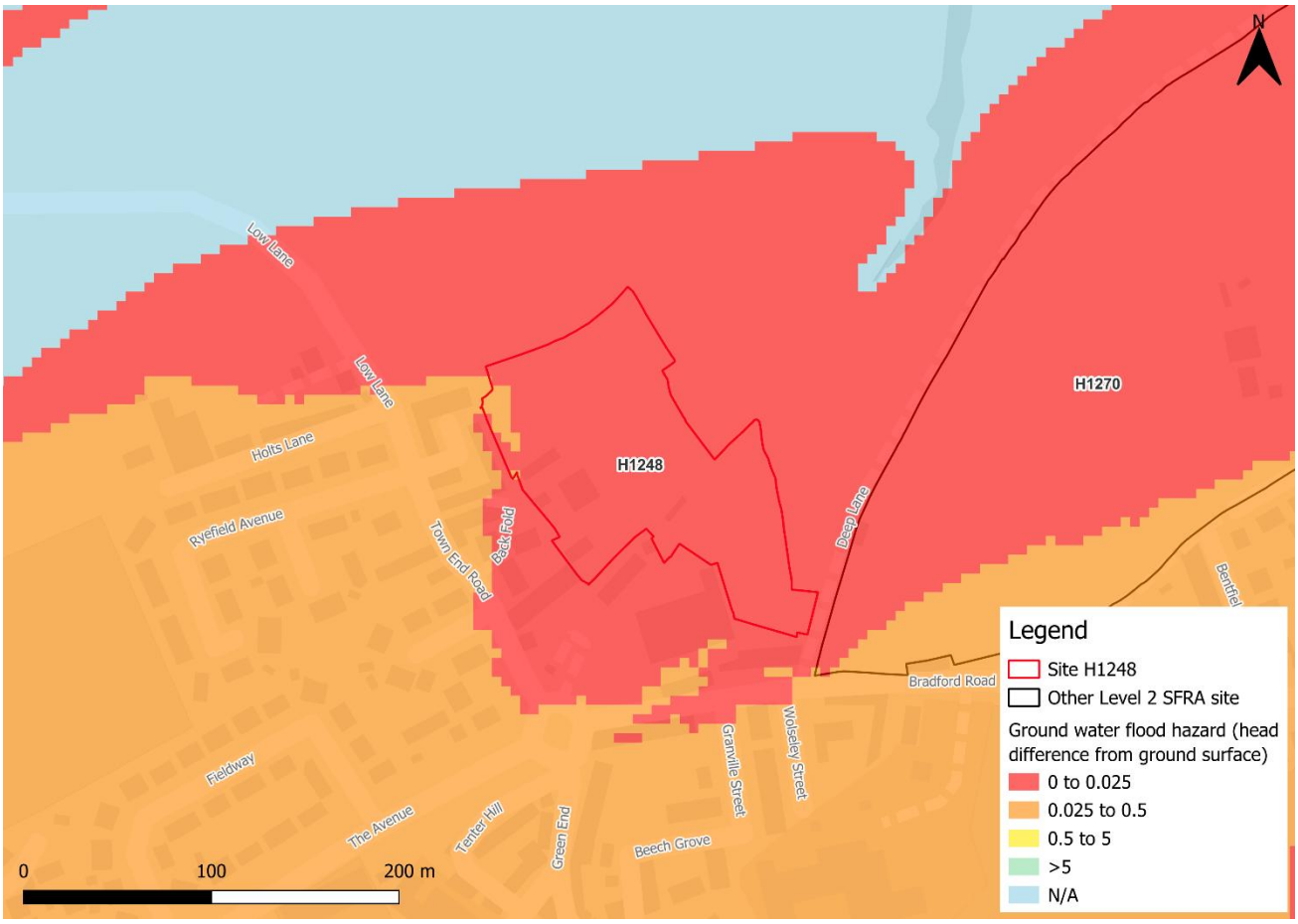


Figure 2-16: JBA 5m Groundwater Emergence Map (H1248)

2.7.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions should be explored further through a site-specific FRA.

2.8 H1252

Site summary (Figure 2-17)	
Location	Fenwick Drive, Woodside
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	7.8 hectares

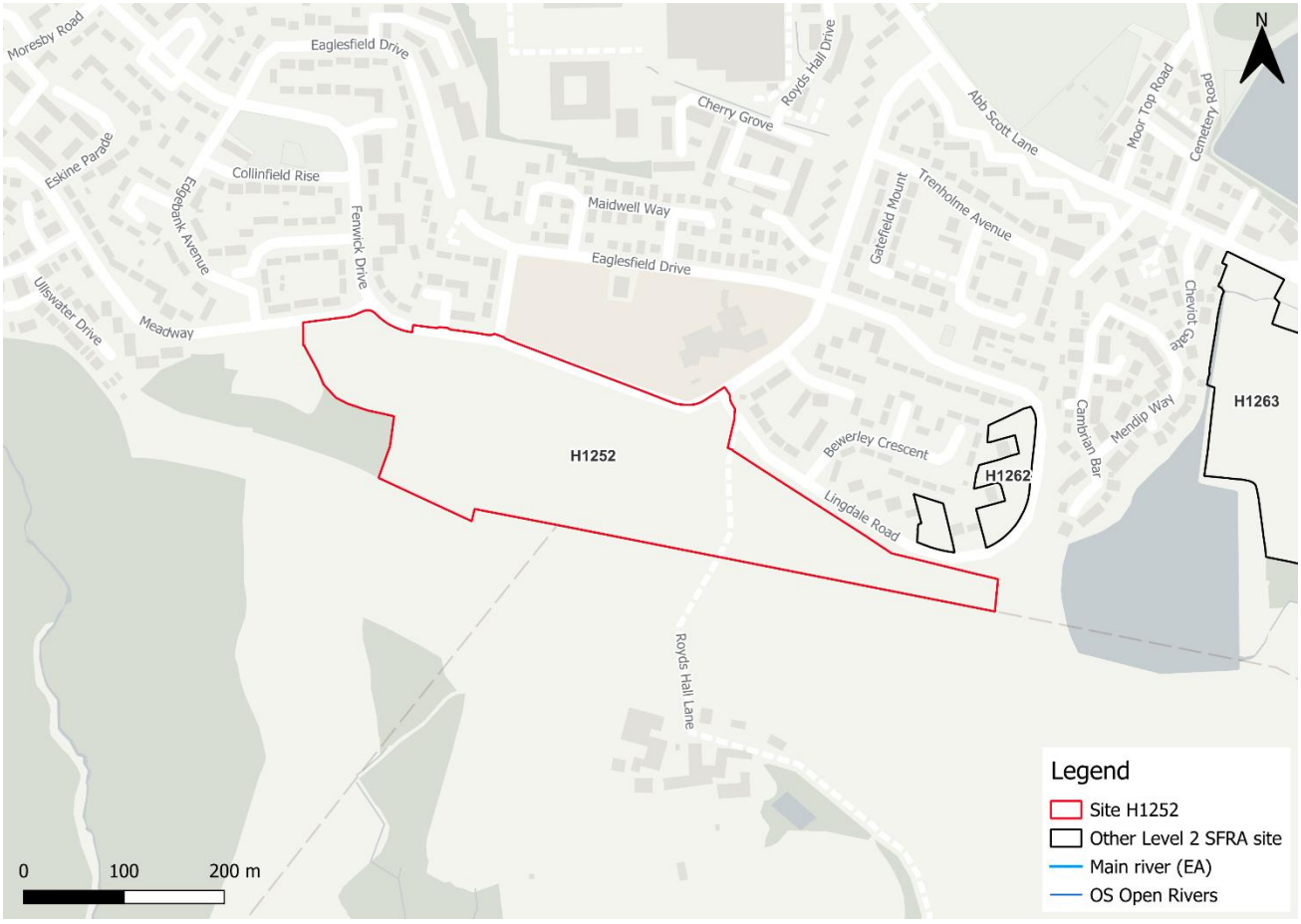


Figure 2-17: H1252 site location boundary

2.8.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.8.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-8). Surface water risk is confined to a flow path along the northern boundary of the site. There is a small area of ponding within the centre of the site. Maximum depths within the site are between 0.6 and 0.9 m (Figure 2-18). This area of risk is modelled to increase in extent and depth in the medium risk event +45% climate change, with some additional flow paths emerging within the north and east of the site. However, depths in these areas are low.

Based on available information, safe access and escape should be possible in the present day events via Fenwick Drive to the north of the site.

Table 2-8: Existing surface water flood risk within H1252 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
85	9	2	4

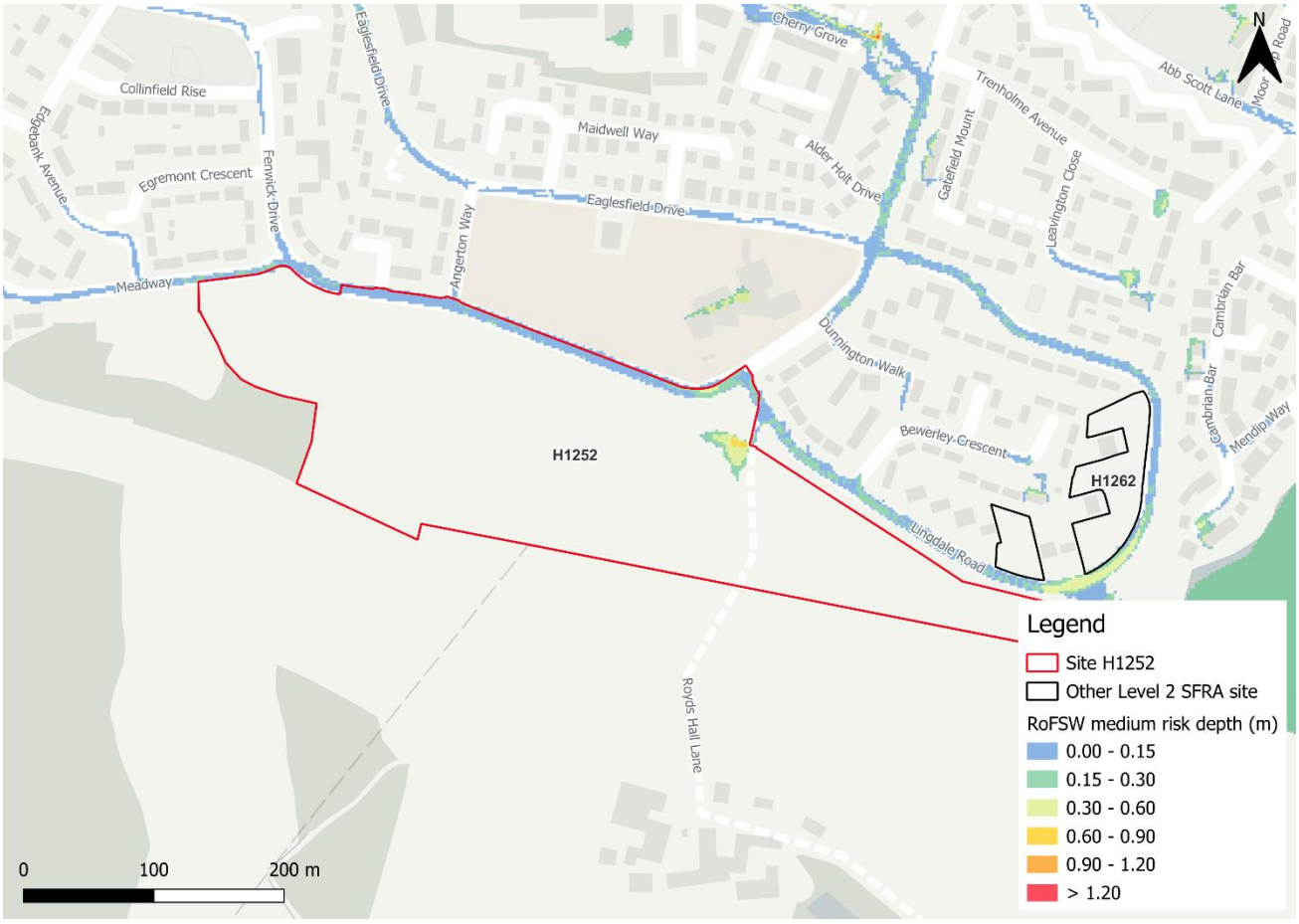


Figure 2-18: Medium risk event surface water flood depths within H1252 (Risk of Flooding from Surface Water)

2.8.3 Groundwater

The majority of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas. Within the south of the site, there is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-19).

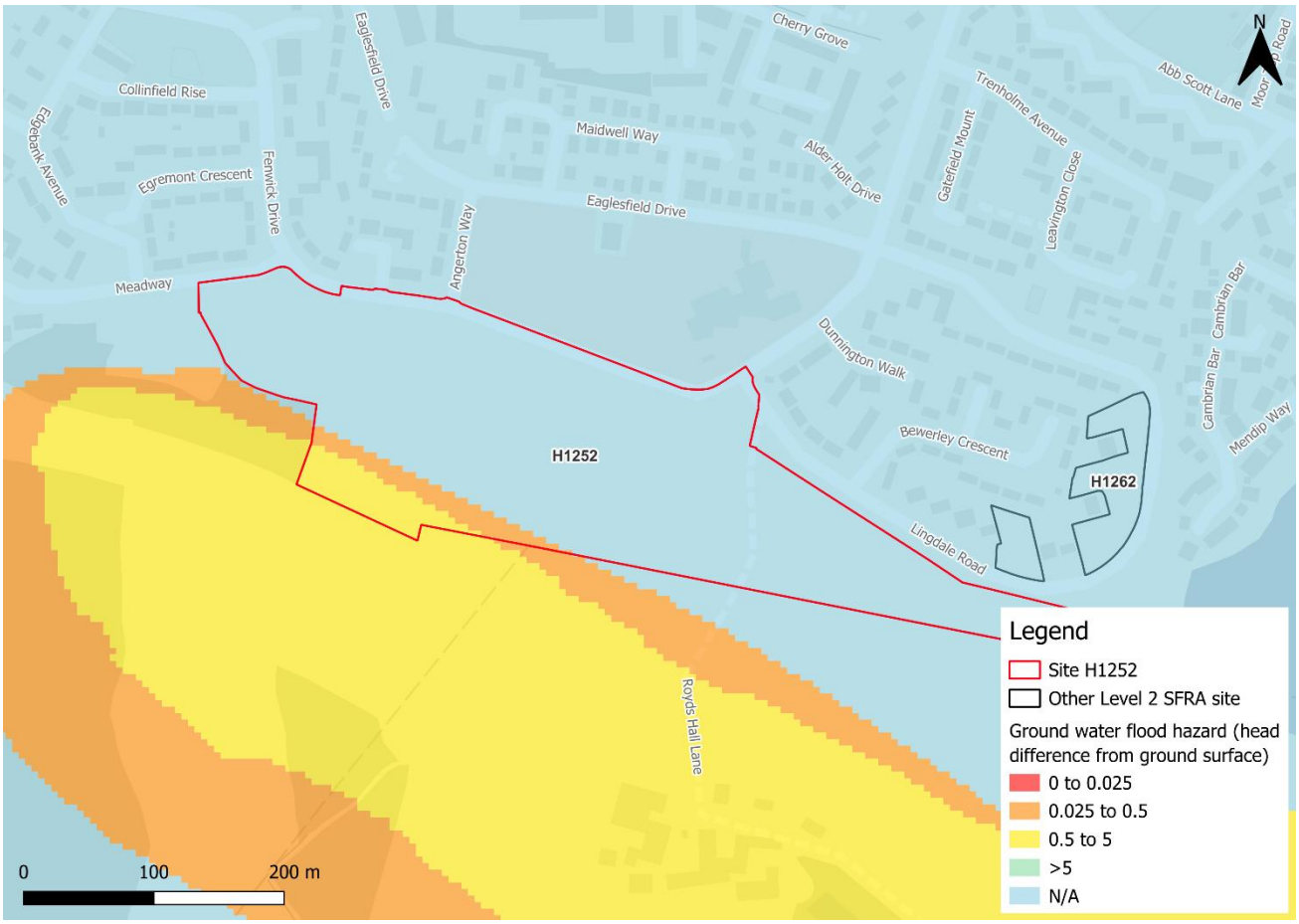


Figure 2-19: JBA 5m Groundwater Emergence Map (H1252)

2.8.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.9 H1256

Site summary (Figure 2-20)	
Location	Junction with Park Road, Manchester Road, Little Horton
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.4 hectares

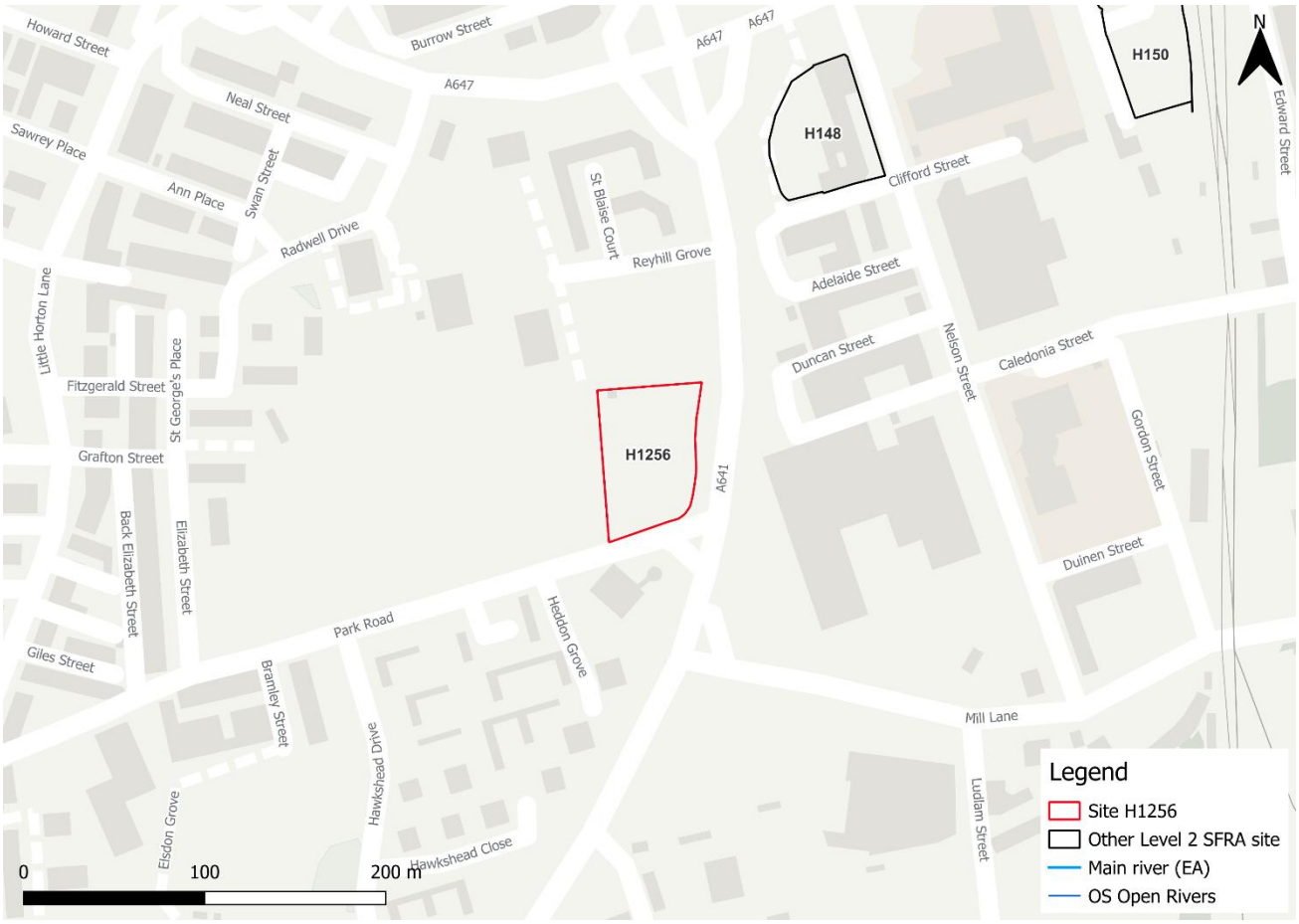


Figure 2-20: H1256 site location boundary

2.9.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.9.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-9). Surface water risk in the medium risk event is confined to a very small area along the southern boundary of the site. Surface water risk in the low risk event is confined to an area of ponding within the north of the site and a small area along the southern boundary. Maximum depths within the site in the low risk event are between 0.15 and 0.3 m (Figure 2-21). In comparison to the present day medium risk event, risk within the site is modelled to increase in extent and depth in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via Park Road to the south of the site.

Table 2-9: Existing surface water flood risk within H1256 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
92	7	1	0

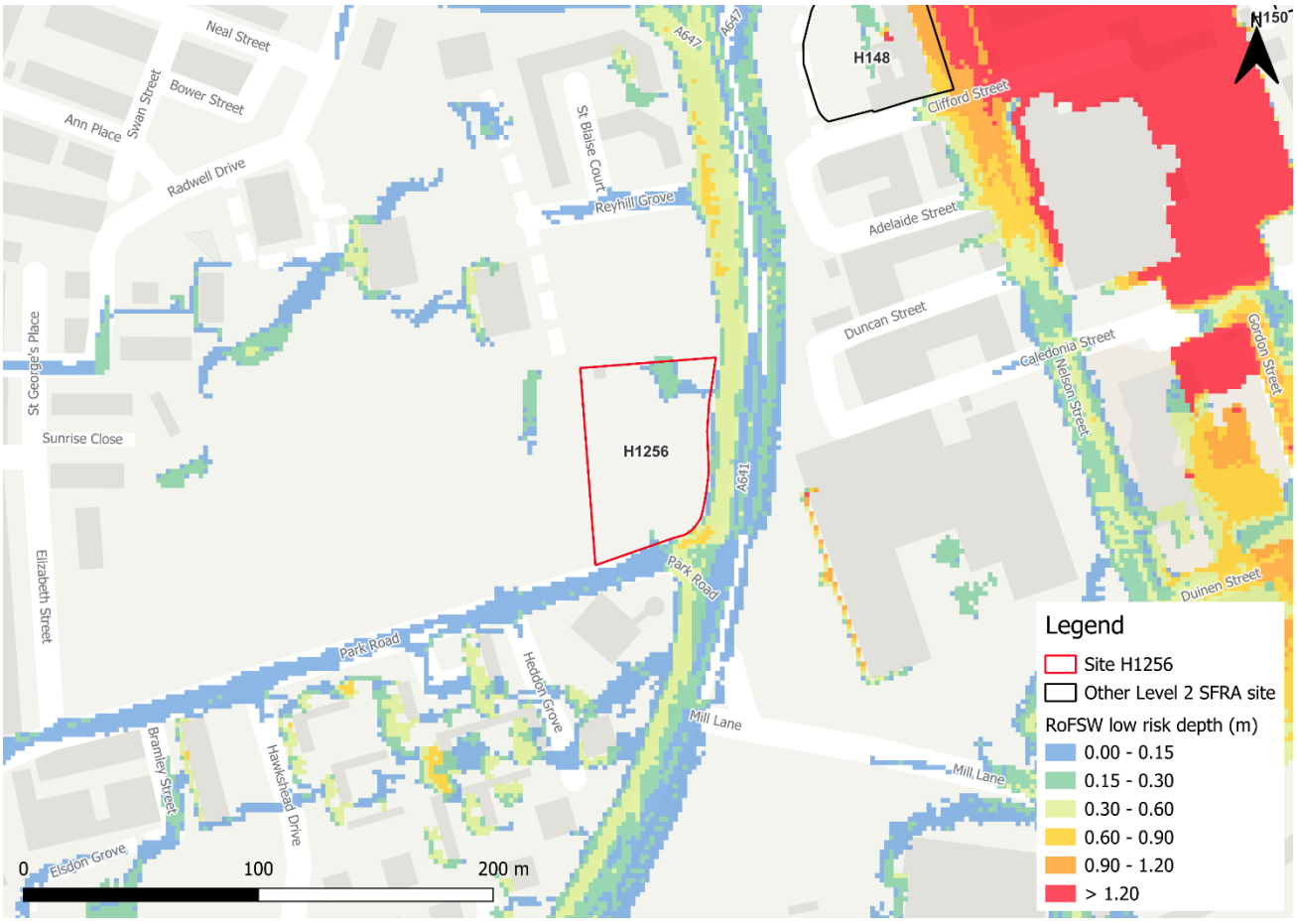


Figure 2-21: Low risk event surface water flood depths within H1256 (Risk of Flooding from Surface Water)

2.9.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.9.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.10 H1257

Site summary (Figure 2-22)	
Location	Quaker Lane, Southfield Lane
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.4 hectares



Figure 2-22: H1257 site location boundary

2.10.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.10.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-10). Surface water risk in the medium risk event is confined to a very small area along the northern boundary of the site. Surface water risk in the low risk event is largely confined to a shallow flow path through the west of the site. Maximum depths within the site in the low risk event are < 0.15 m (Figure 2-23). In comparison to the present day medium risk event, risk within the site is modelled to increase in extent and depth in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via the A6177 to the south of the site.

Table 2-10: Existing surface water flood risk within H1257 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
94	5	1	0



Figure 2-23: Low risk event surface water flood depths within H1257 (Risk of Flooding from Surface Water)

2.10.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.10.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.11 H1260

Site summary (Figure 2-24)	
Location	Northside Road Girlington
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.7 hectares

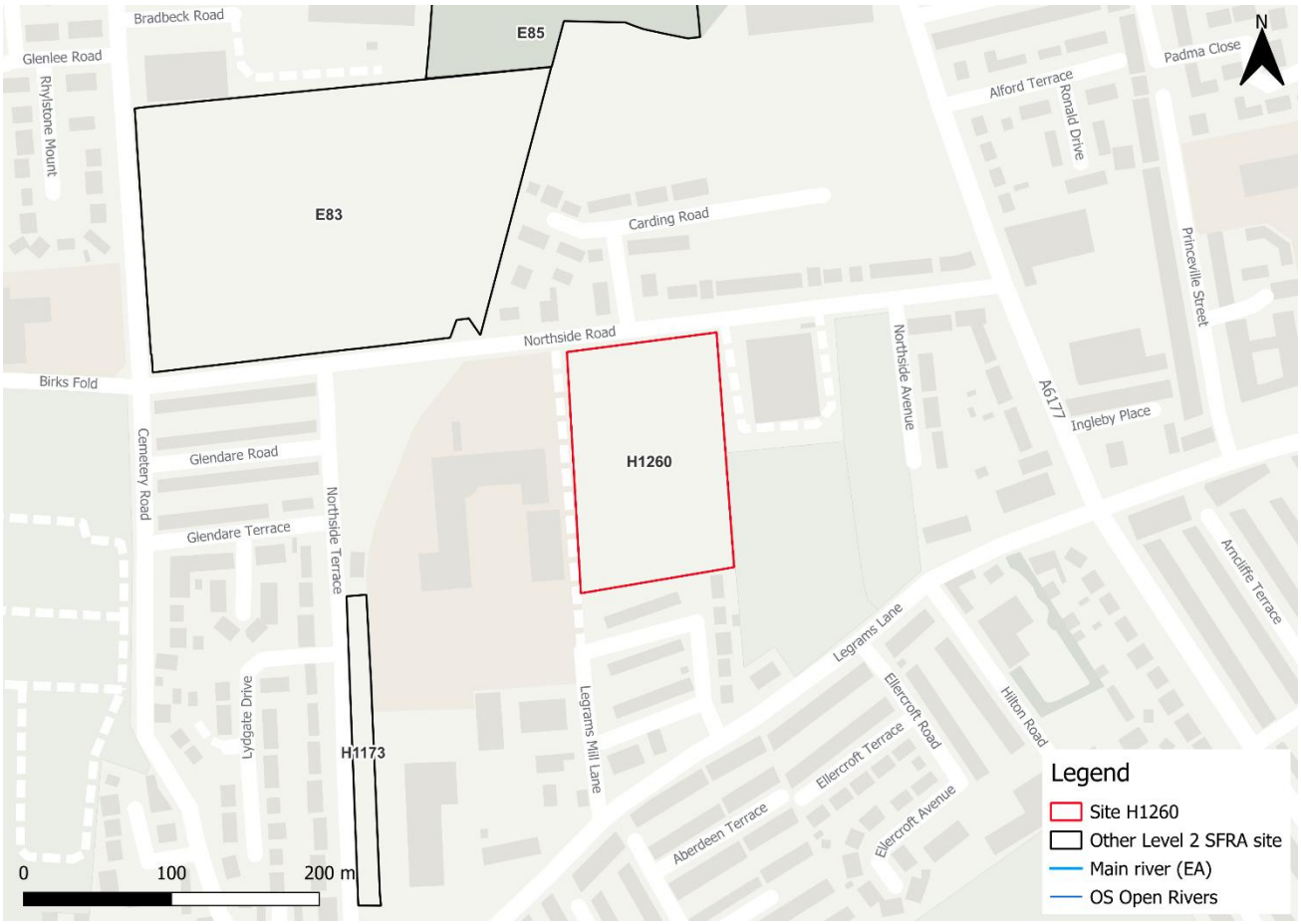


Figure 2-24: H1260 site location boundary

2.11.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.11.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-11). Surface water risk in the medium risk event is confined to a very small area along the northern boundary of the site. Surface water risk in the low risk event is largely confined to shallow areas of flooding within the north and south of the site. Maximum depths within the site in the low risk event are between 0.3 and 0.6 m (Figure 2-25). In comparison to the present day medium risk event, risk within the site is modelled to increase in extent and depth in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via Legrams Mill Lane to the west of the site.

Table 2-11: Existing surface water flood risk within H1260 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
97	2	1	0

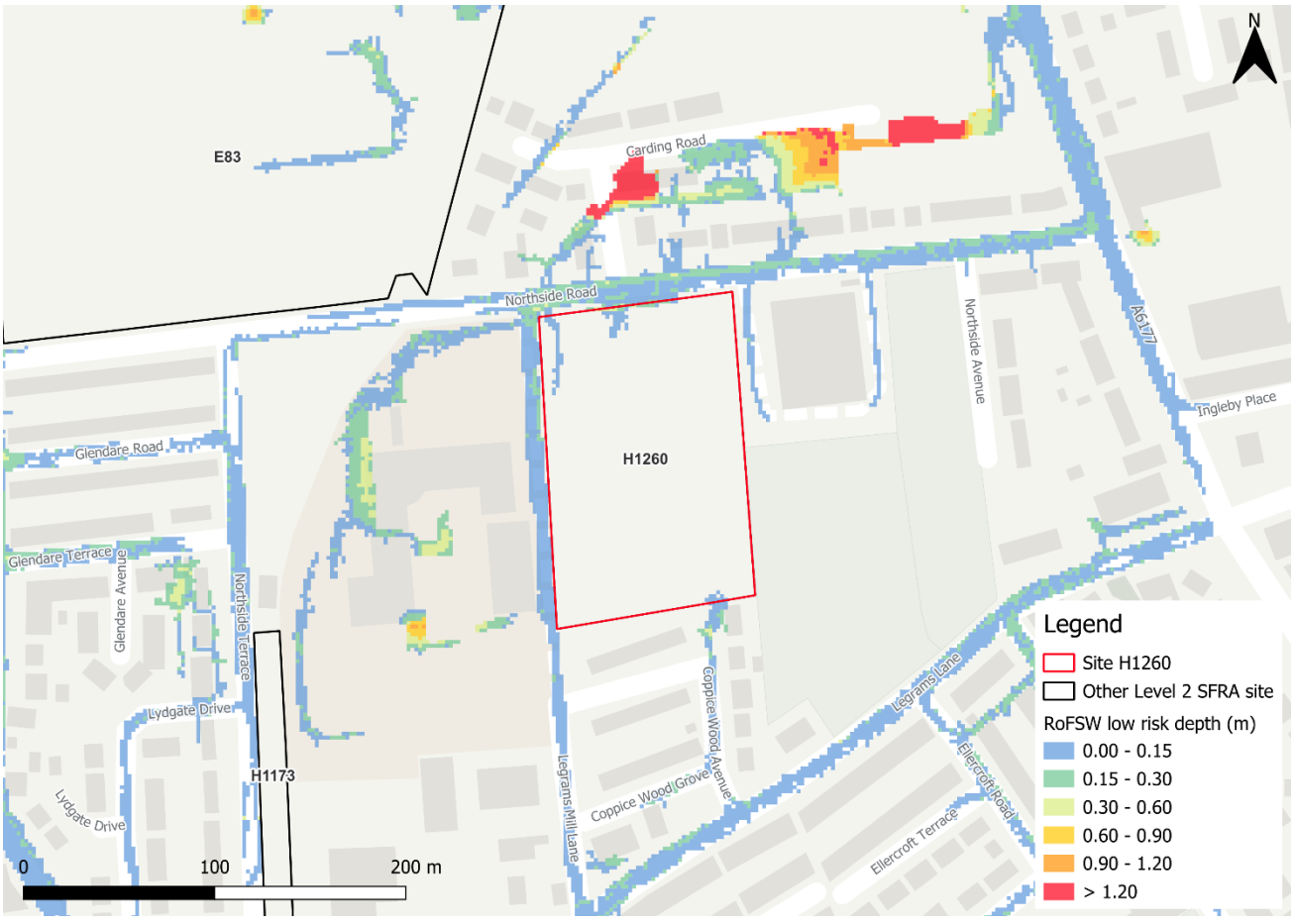


Figure 2-25: Low risk event surface water flood depths within H1260 (Risk of Flooding from Surface Water)

2.11.3 Groundwater

The majority of the site is in an area where there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-26). Groundwater conditions should be investigated further as part of a site-specific FRA. There is a small area within the south of the site where there is no risk of groundwater emergence

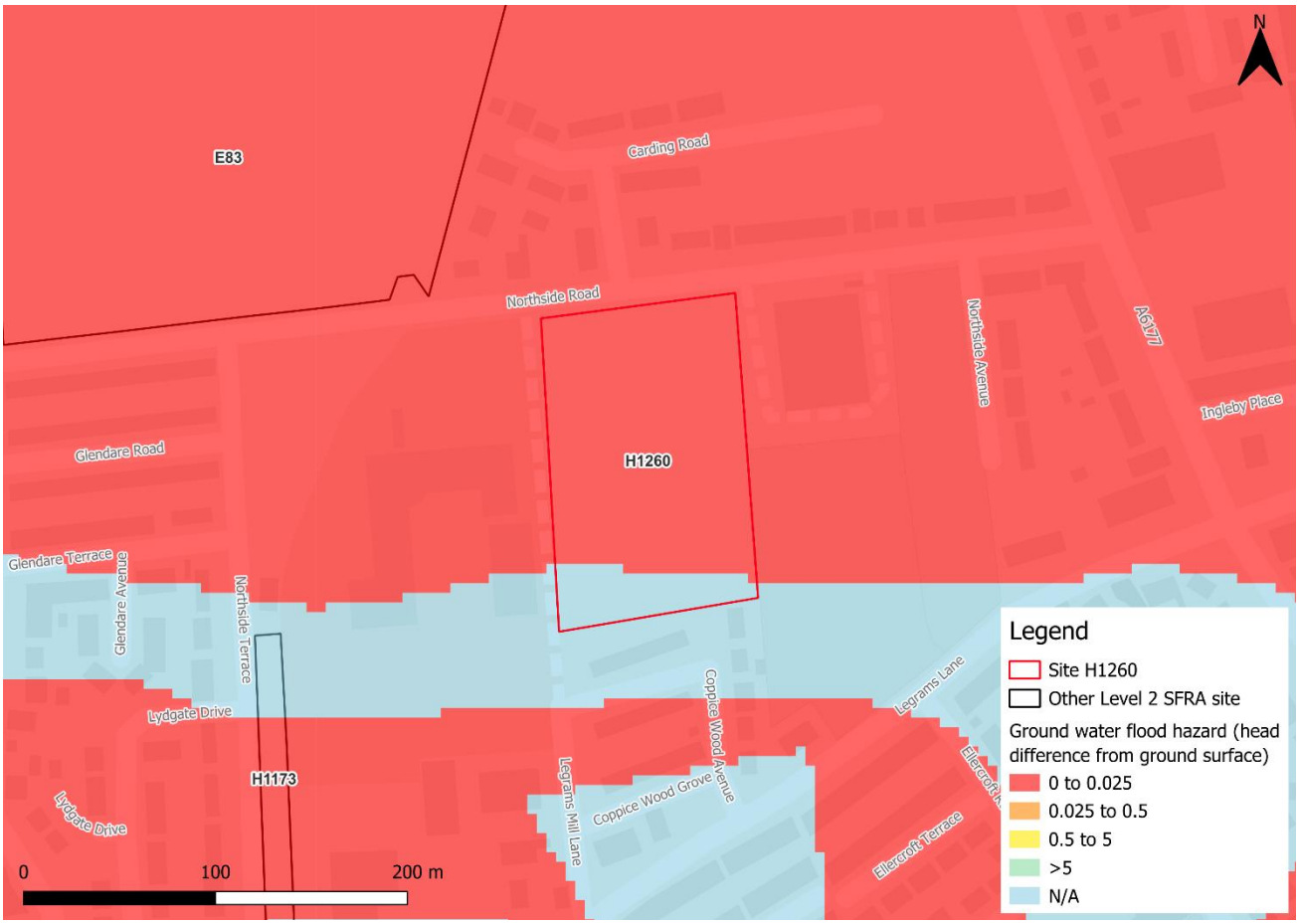


Figure 2-26: JBA 5m Groundwater Emergence Map (H1260)

2.11.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions should be explored further through a site-specific FRA.

2.12 H1262

Site summary (Figure 2-27)	
Location	Lingdale Road, Woodside
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.6 hectares

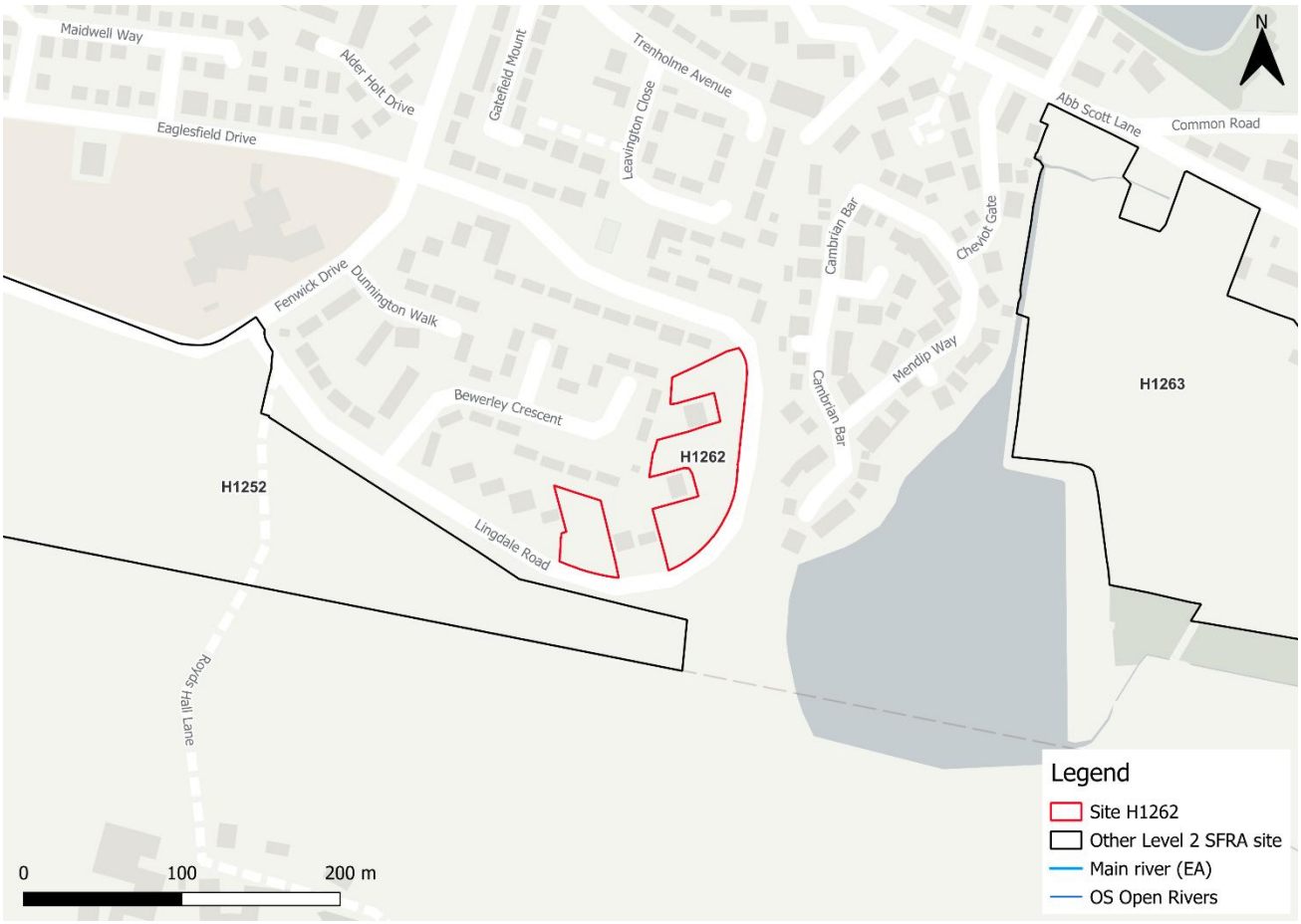


Figure 2-27: H1262 site location boundary

2.12.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.12.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-12). Surface water risk in the medium risk event is confined to a very small area along the eastern boundary of the larger site parcel. Surface water risk in the low risk event is largely confined to a shallow flow path within the south of the larger site parcel and a small area along the southern boundary of the smaller parcel. Maximum depths within the site in the low risk event are between 0.15 and 0.3 m (Figure 2-28). In comparison to the present day medium risk event, risk within the site is modelled to increase in extent and depth in the medium risk event +45% climate change, however depths within the site remain low.

Based on available information, safe access and escape should be possible via Lingdale Road from the larger site parcel. Safe access and escape from the small site parcel should be considered further given depths of up to 0.6 m along Lingdale Road in this location.

Table 2-12: Existing surface water flood risk within H1262 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
91	7	1	1

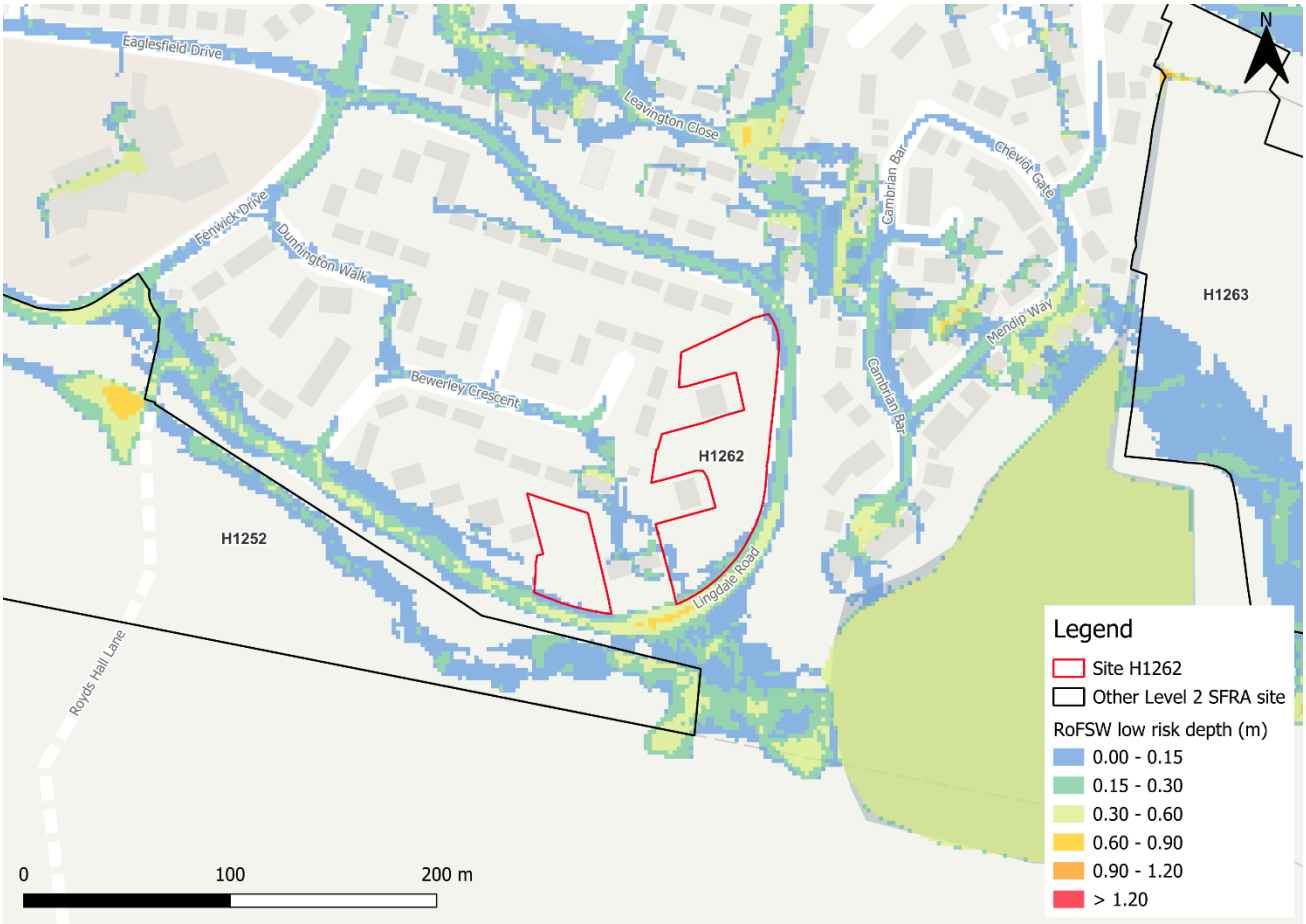


Figure 2-28: Low risk event surface water flood depths within H1262 (Risk of Flooding from Surface Water)

2.12.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.12.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Safe access and escape routes from the smaller site parcel should be considered further as part of a site-specific FRA, including for detailed surface water modelling.

2.13 H1263

Site summary (Figure 2-29)	
Location	Abb Scott Lane, Low Moor
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	6.8 hectares

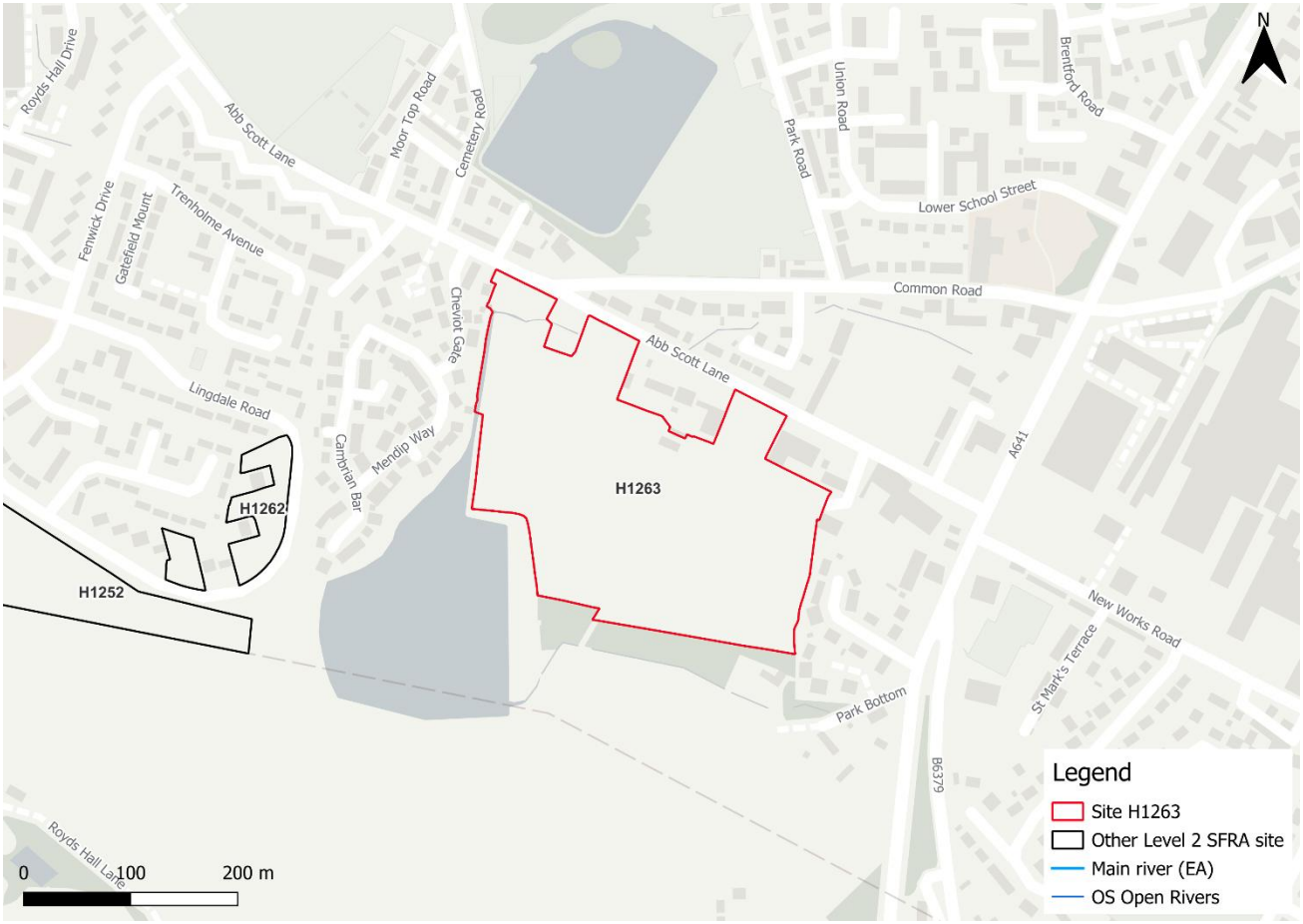


Figure 2-29: H1263 site location boundary

2.13.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's Flood Map for Planning. There is a small drainage ditch located within the north of the site, visible within the OS mapping. The site is not modelled to be at additional risk from fluvial climate change. Fluvial risk from the drainage ditch within the north should be quantified as part of a site-specific FRA.

2.13.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-13). Surface water risk is confined to a shallow flow path through the south west of the site. Maximum depths within the site are between 0.15 and 0.3 m (Figure 2-30). This area of risk is modelled to increase significantly in extent in the medium risk event +45% climate change, with some additional flow paths emerging within the north and east of the site. Maximum depths within these areas are between 0.3 and 0.9 m (Figure 2-31).

Based on available information, safe access and escape should be possible via Abb Scott Lane to the north of the site.

Table 2-13: Existing surface water flood risk within H1263 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
87	11	2	0

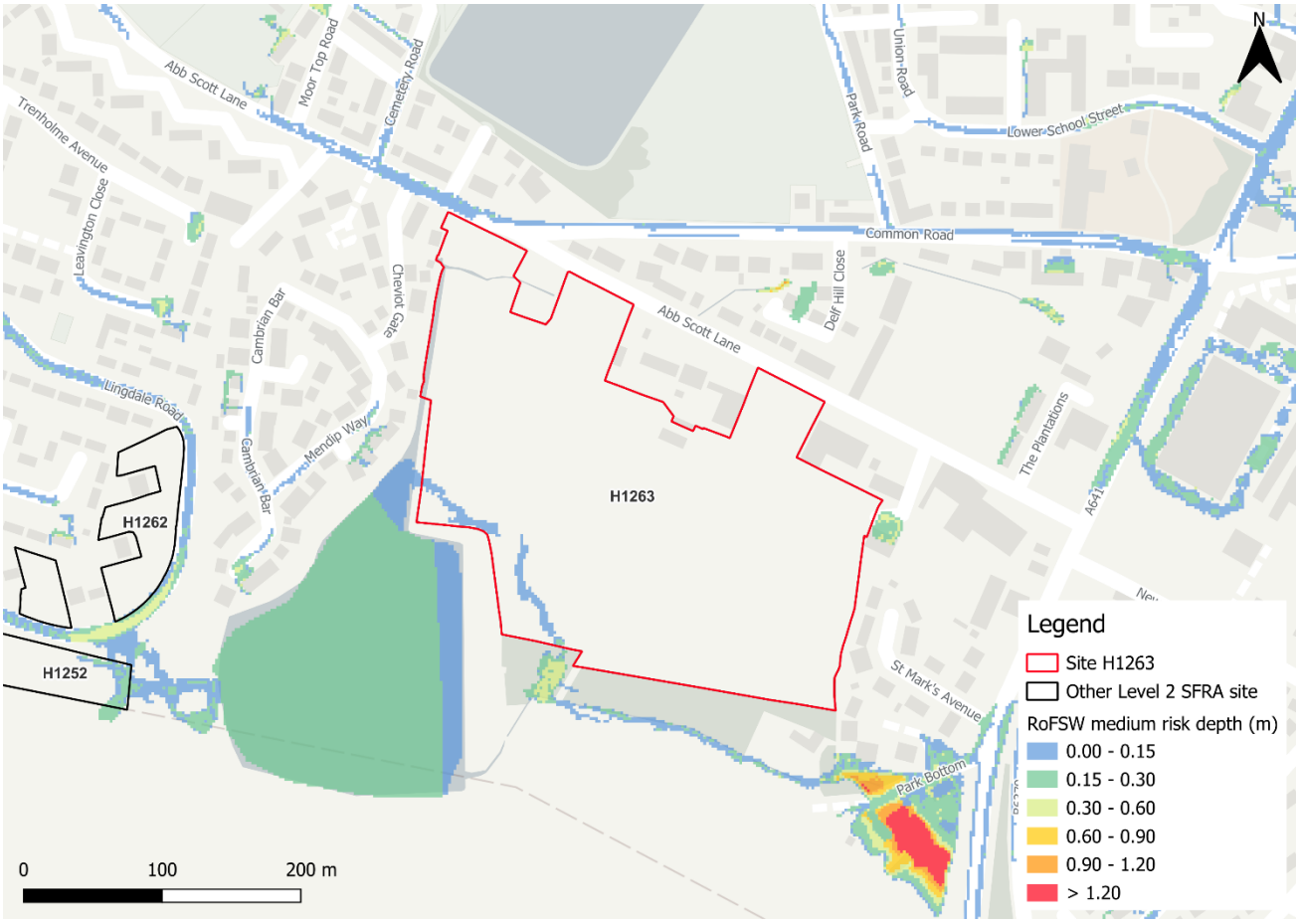


Figure 2-30: Medium risk event surface water flood depths within H1263 (Risk of Flooding from Surface Water)

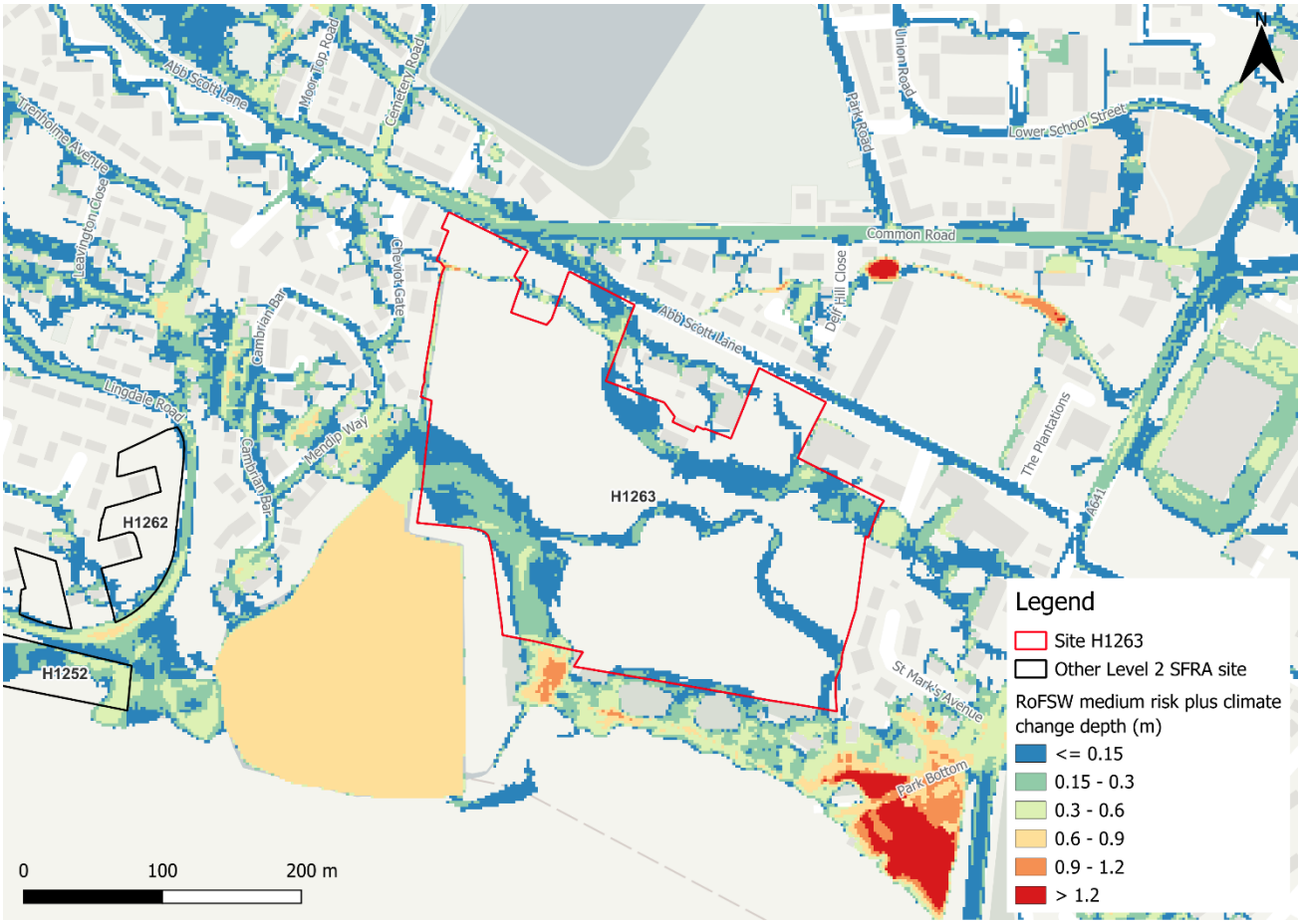


Figure 2-31: Medium risk event surface water flood depths plus 45% climate change within H1263 (based on Risk of Flooding from Surface Water map)

2.13.3 Reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. Figure 2-32 shows the RFM in a 'dry day' and 'wet day' scenario. A 'dry day' scenario assumes that the water level in the reservoir is the same as the spillway level or the underside of the roof for a service reservoir and the watercourses upstream and downstream of the reservoir are at a normal level. A 'wet day' scenario assumes a worst-case scenario where a reservoir releases water held on a 'wet day' when local rivers have already overflowed their banks.

The site is potentially at risk from Harold Park and Park Dam reservoirs located within Bradford, owned and maintained by the City of Bradford Metropolitan District Council. The site is located immediately downstream of Park Dam reservoir.

The EA's SFRA guidance states that where a proposed development site is at flood risk from a reservoir, then an assessment into whether the reservoir design or maintenance schedule needs improving should be carried out. Expert advice may be required from an all-reservoirs panel engineer. The Council should consult internally to ascertain whether the proposed development could affect the reservoir's risk designation, it's design category or

how it is operated. The Council, as category 1 responders, can access more detailed information about reservoir risk and reservoir owners using the Resilience Direct system.

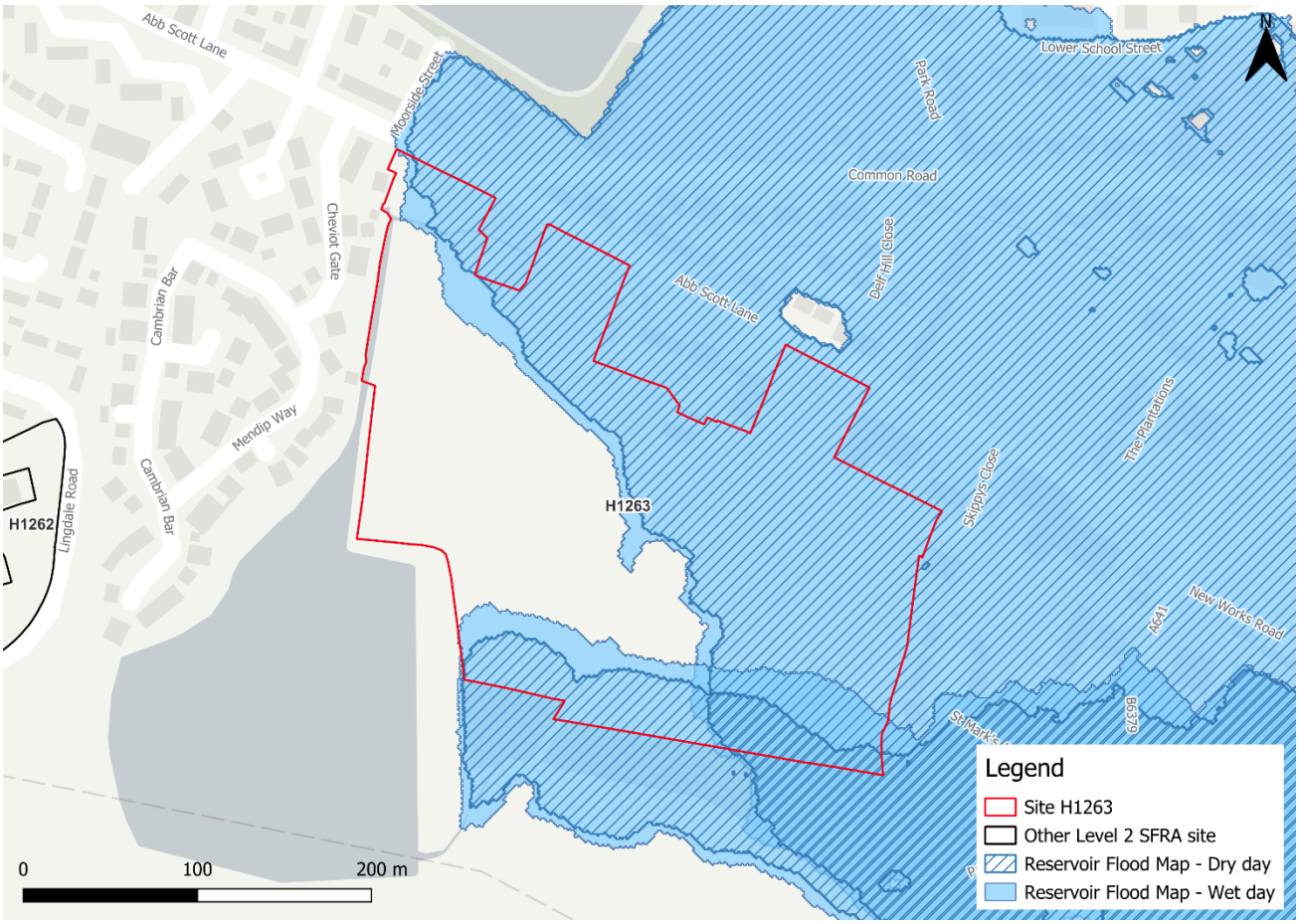


Figure 2-32: Flood risk from reservoirs within H1263

2.13.4 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.13.5 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from canal or sewer flooding.

- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site. Fluvial risk from the drainage ditch within the north should be quantified as part of a site-specific FRA.
- The site is not modelled to be at significant additional fluvial risk as a result of climate change.
- Development would ideally avoid the significant surface water flow path within the south west of the site.
- The Council should consult internally regarding the potential reservoir risk.

2.14 H1266

Site summary (Figure 2-33)	
Location	Ferndale, Clayton
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	2.1 hectares

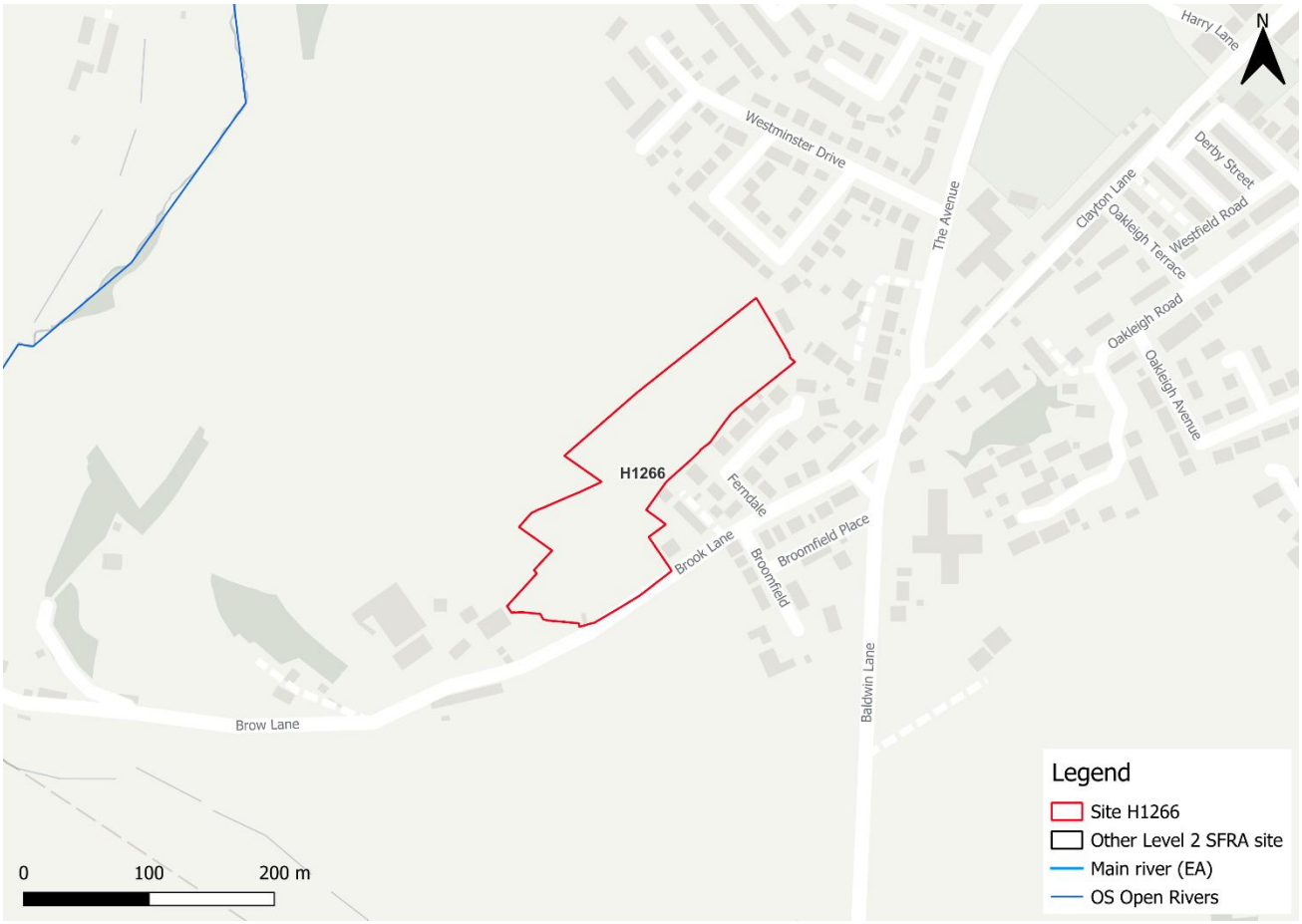


Figure 2-33: H1266 site location boundary

2.14.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.14.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-14). Surface water risk is largely confined to an area of ponding towards the south of the site, with a short flow path along the north eastern site boundary. Maximum depths within the site are between 0.3 and 0.6 m (Figure 2-34). This area of risk is modelled to increase in extent and depth in the medium risk event +45% climate change, with maximum depths between 0.6 and 0.9 m.

Based on available information, safe access and escape should be possible via Brook Lane to the south of the site.

Table 2-14: Existing surface water flood risk within H1266 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	3	1	1

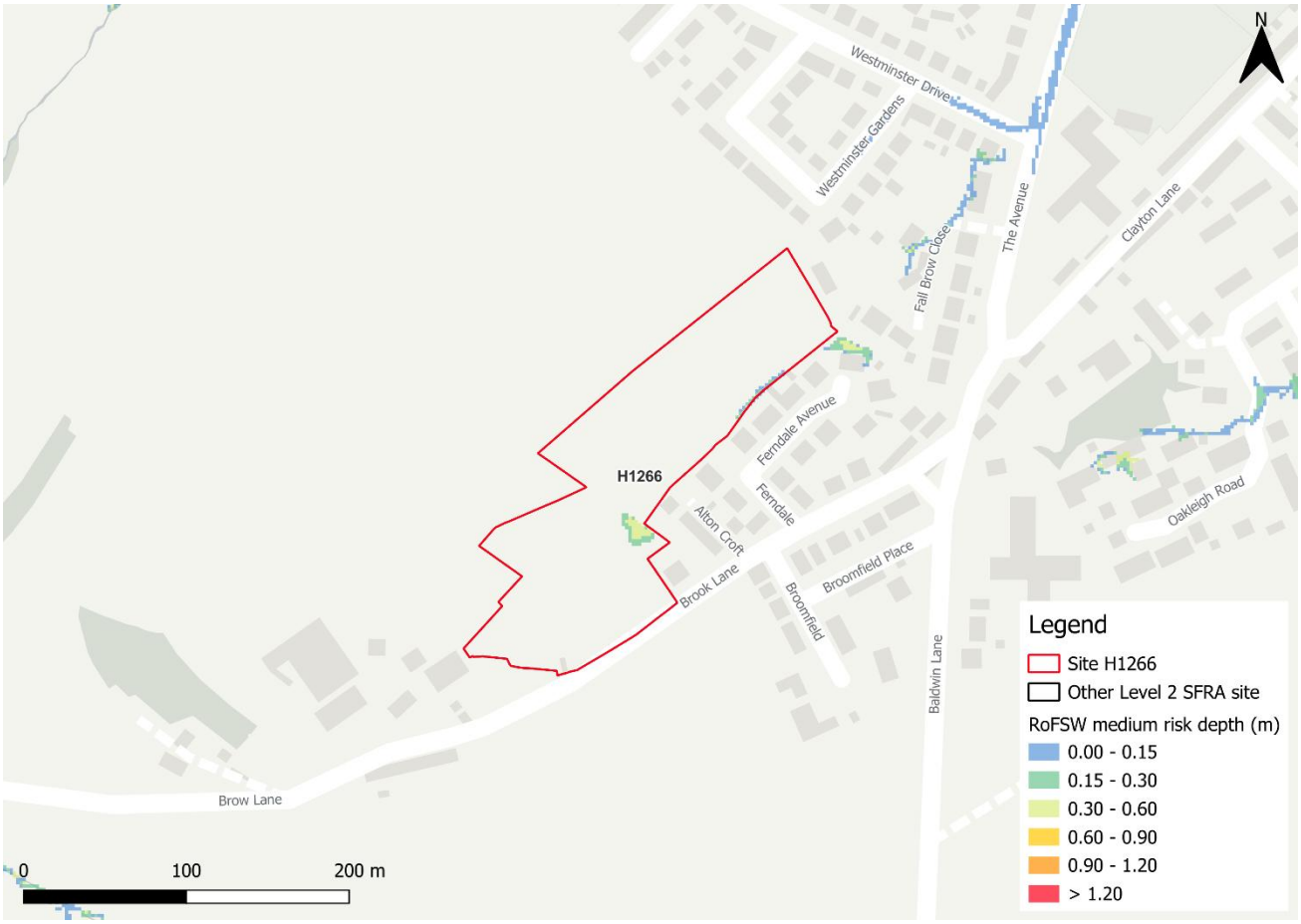


Figure 2-34: Medium risk event surface water flood depths within H1266 (Risk of Flooding from Surface Water)

2.14.3 Groundwater

The majority of the site is in an area where there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-35). Groundwater conditions should be

investigated further as part of a site-specific FRA. There is a small area within the south of the site where there is no risk of groundwater emergence.

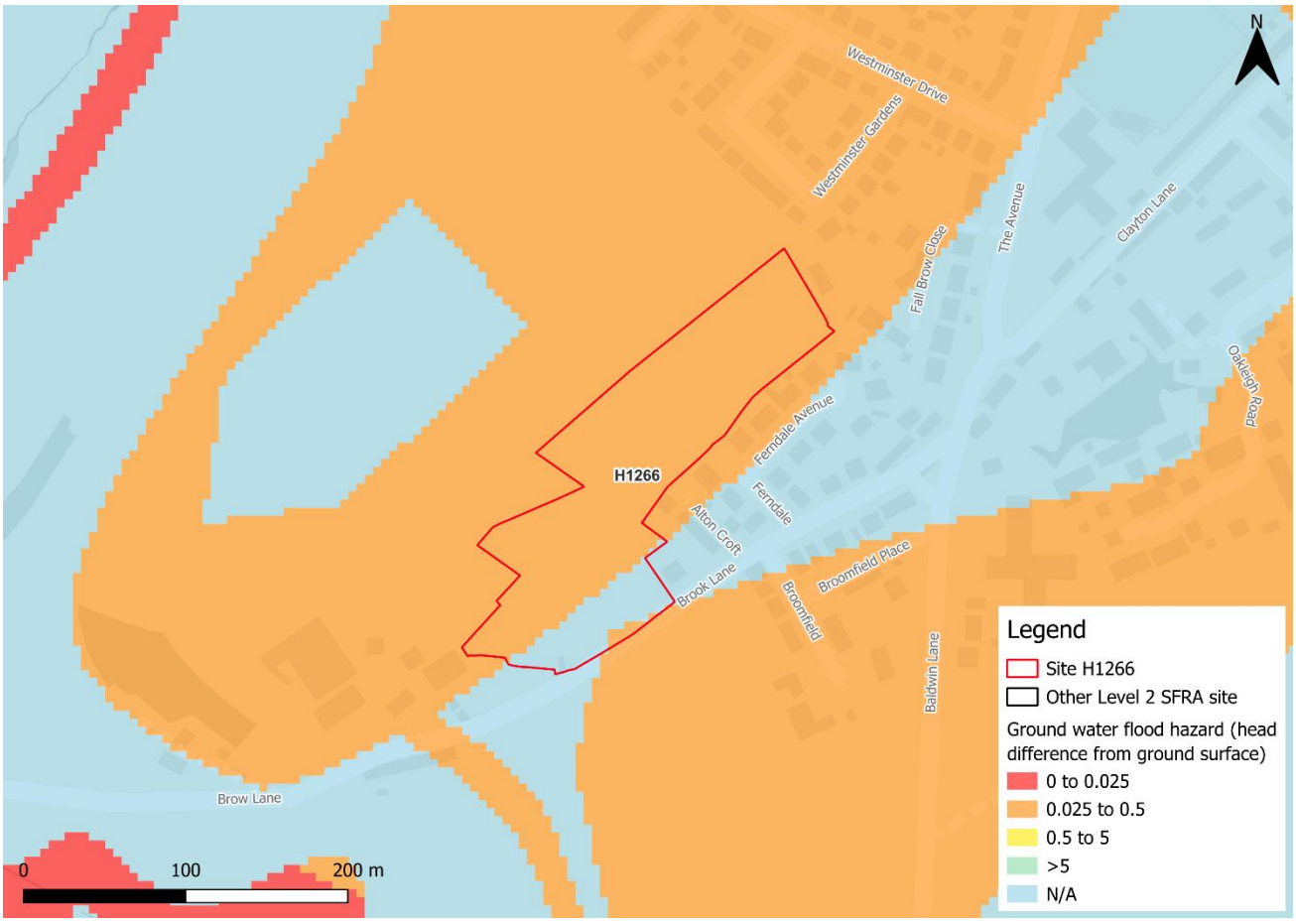


Figure 2-35: JBA 5m Groundwater Emergence Map (H1266)

2.14.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions should be explored further through a site-specific FRA.

2.15 H1270

Site summary (Figure 2-36)	
Location	Land off Buckingham Crescent, Clayton
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	11.8 hectares

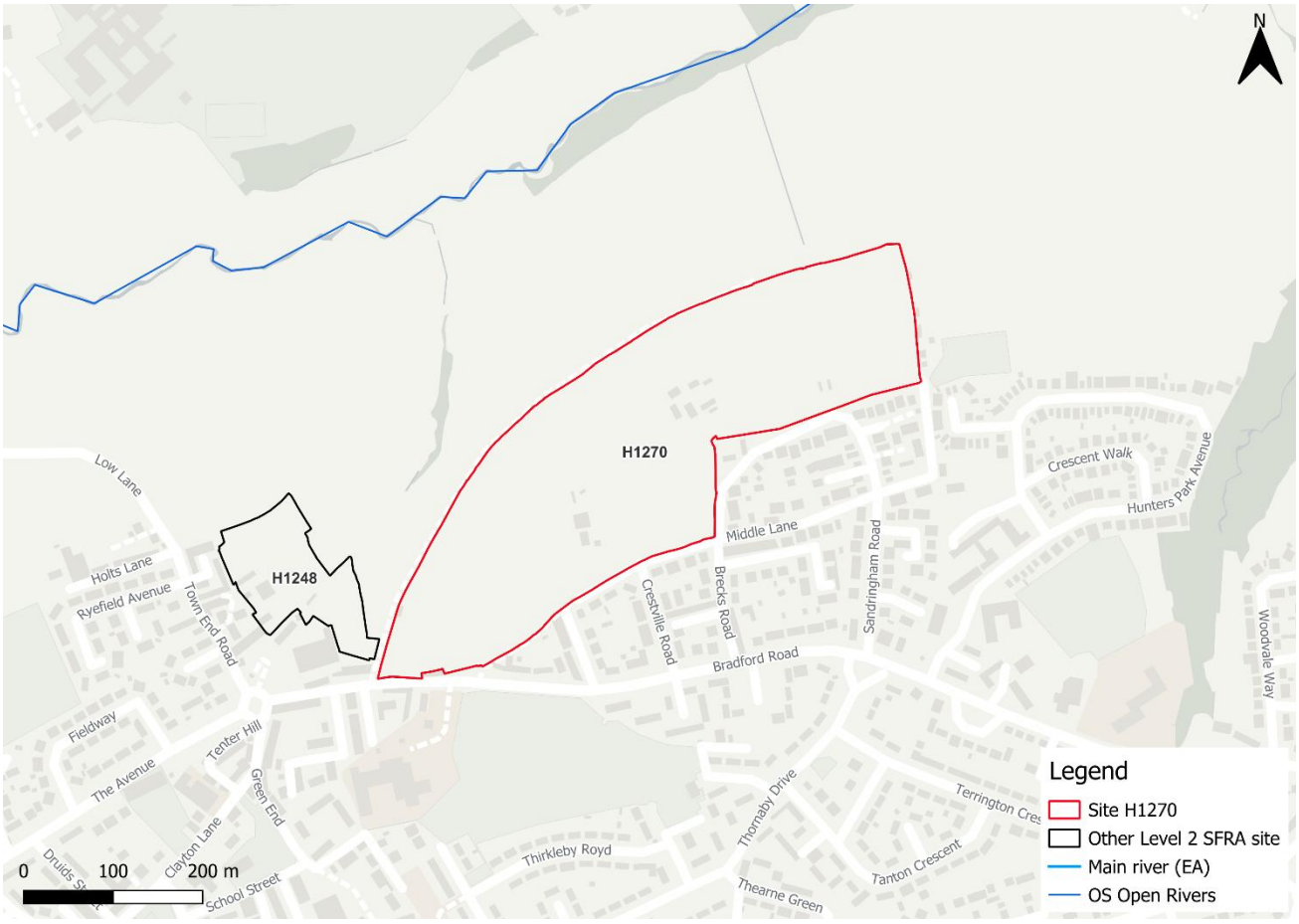


Figure 2-36: H1270 site location boundary

2.15.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.15.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-15). Surface water risk in all events is confined to the boundaries of the site. Maximum depths within the site are < 0.15 m (Figure 2-37). There is no modelled additional risk to the site in the medium risk event +45% climate change.

Based on available information, safe access and escape should be possible via Bradford Road to the south of the site.

Table 2-15: Existing surface water flood risk within H1270 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
97	1	1	1

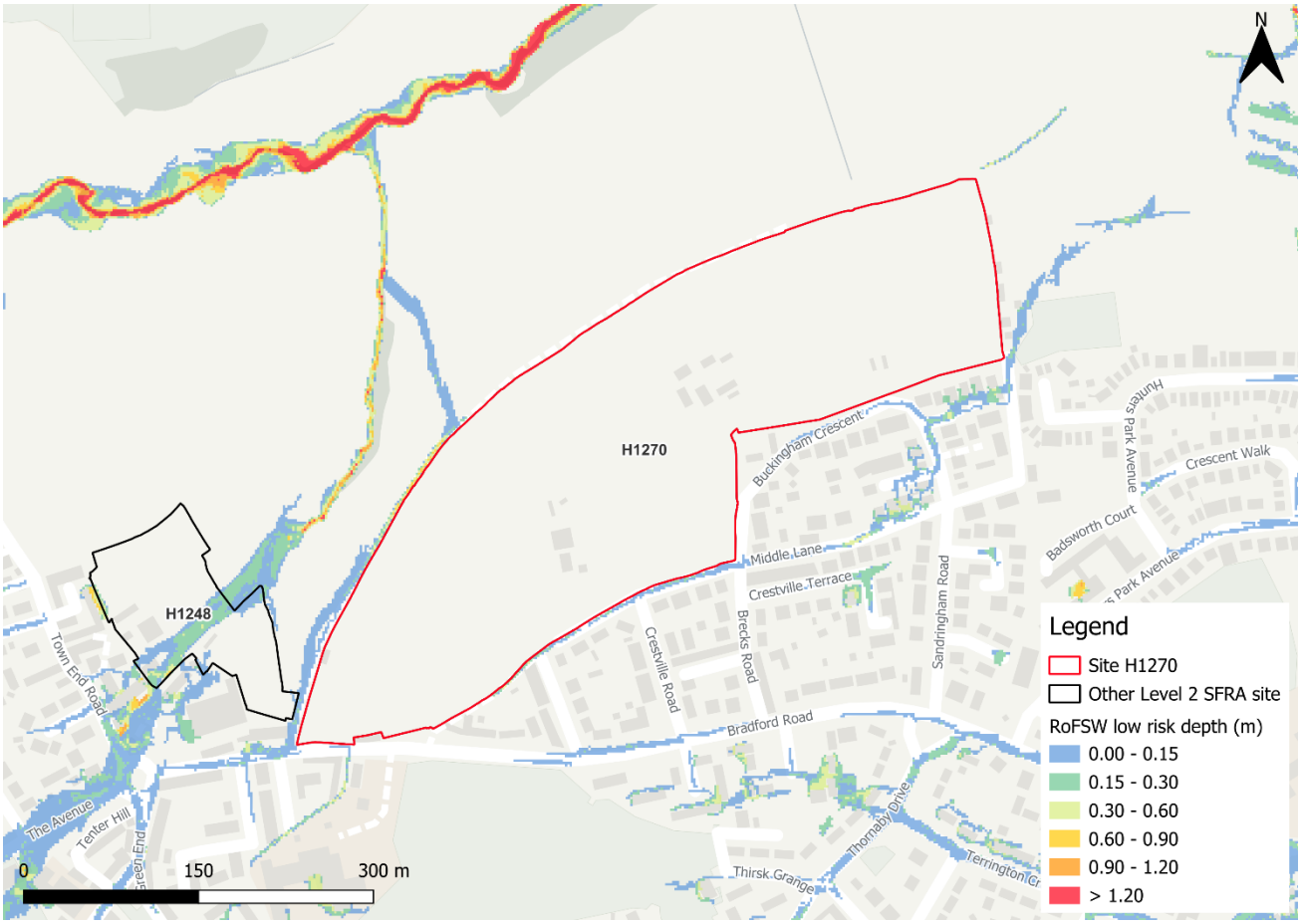


Figure 2-37: Low risk event surface water flood depths within H1270 (Risk of Flooding from Surface Water)

2.15.3 Groundwater

The entirety of the site is in an area where there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-38). Groundwater conditions should be investigated further as part of a site-specific FRA..

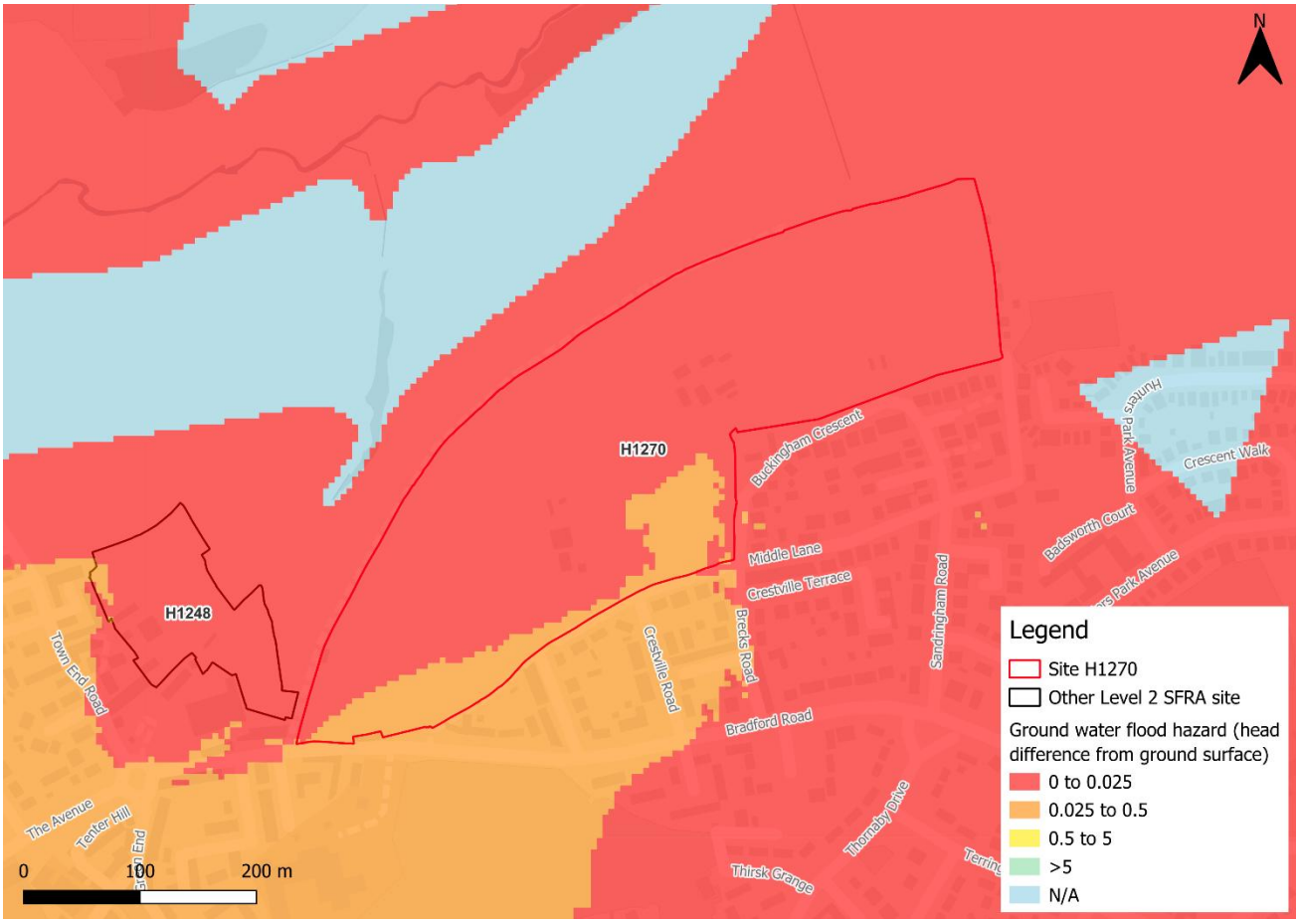


Figure 2-38: JBA 5m Groundwater Emergence Map (H1270)

2.15.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions should be explored further through a site-specific FRA.

2.16 H1282

Site summary (Figure 2-39)	
Location	Frensham Drive
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.8 hectares



Figure 2-39: H1282 site location boundary

2.16.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.16.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-16). Surface water risk in the medium risk event is confined to a small area of ponding along the western boundary of the site. Maximum depths within the site are between 0.3 and 0.6 m (Figure 2-40). This area of risk is modelled to increase in extent in the medium risk event +45% climate change, with an additional flow path emerging within the northeast of the site. However, depths in this area are low.

Based on available information, safe access and escape should be possible via Frensham Drive to the southeast of the site.

Table 2-16: Existing surface water flood risk within H1282 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	3	2	0

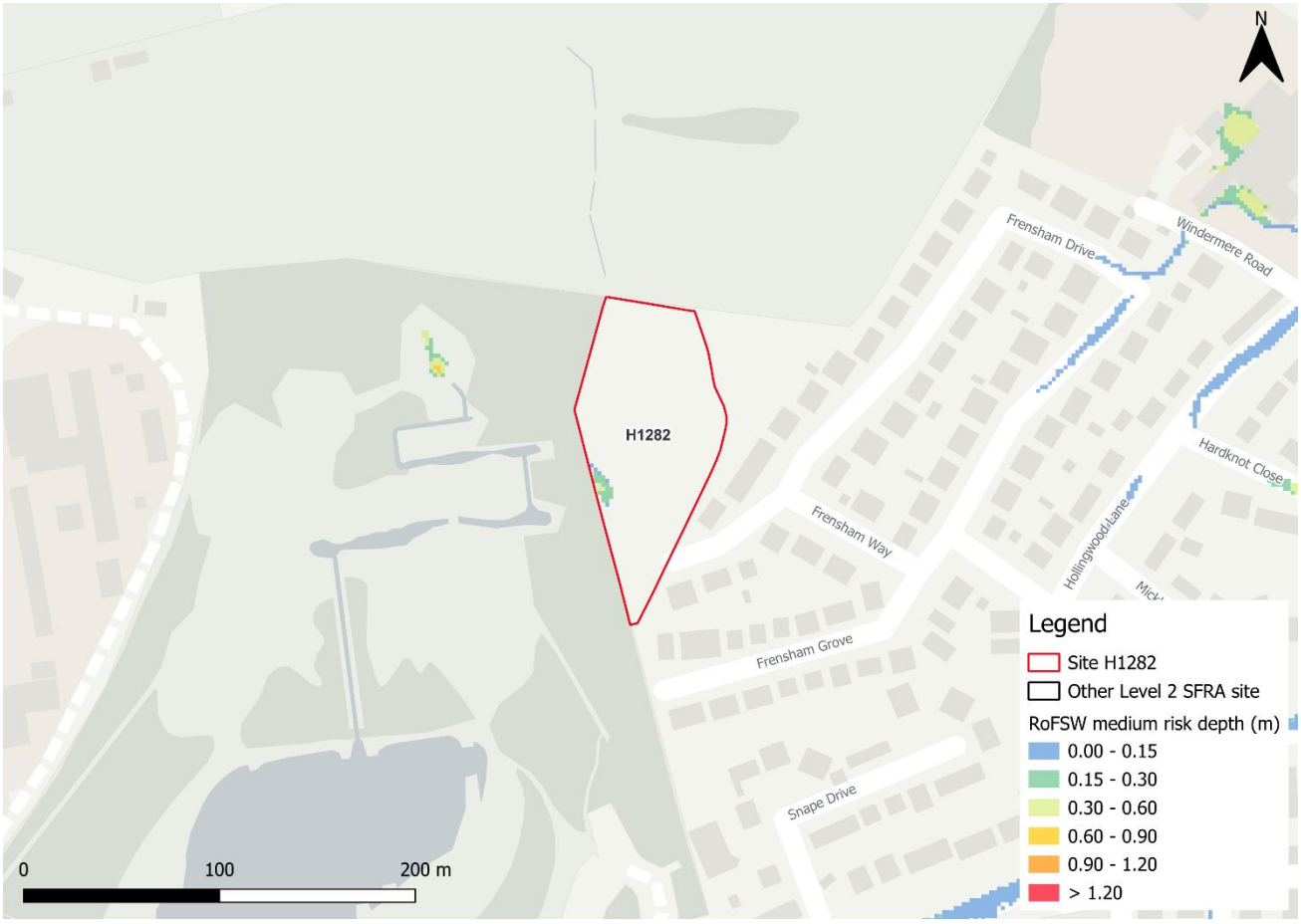


Figure 2-40: Medium risk event surface water flood depths within H1282 (Risk of Flooding from Surface Water)

2.16.3 Groundwater

Through the centre of the site there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-41). Groundwater conditions should be investigated further as part of a site-specific FRA. Within the north and south of the site there is no risk of groundwater emergence.

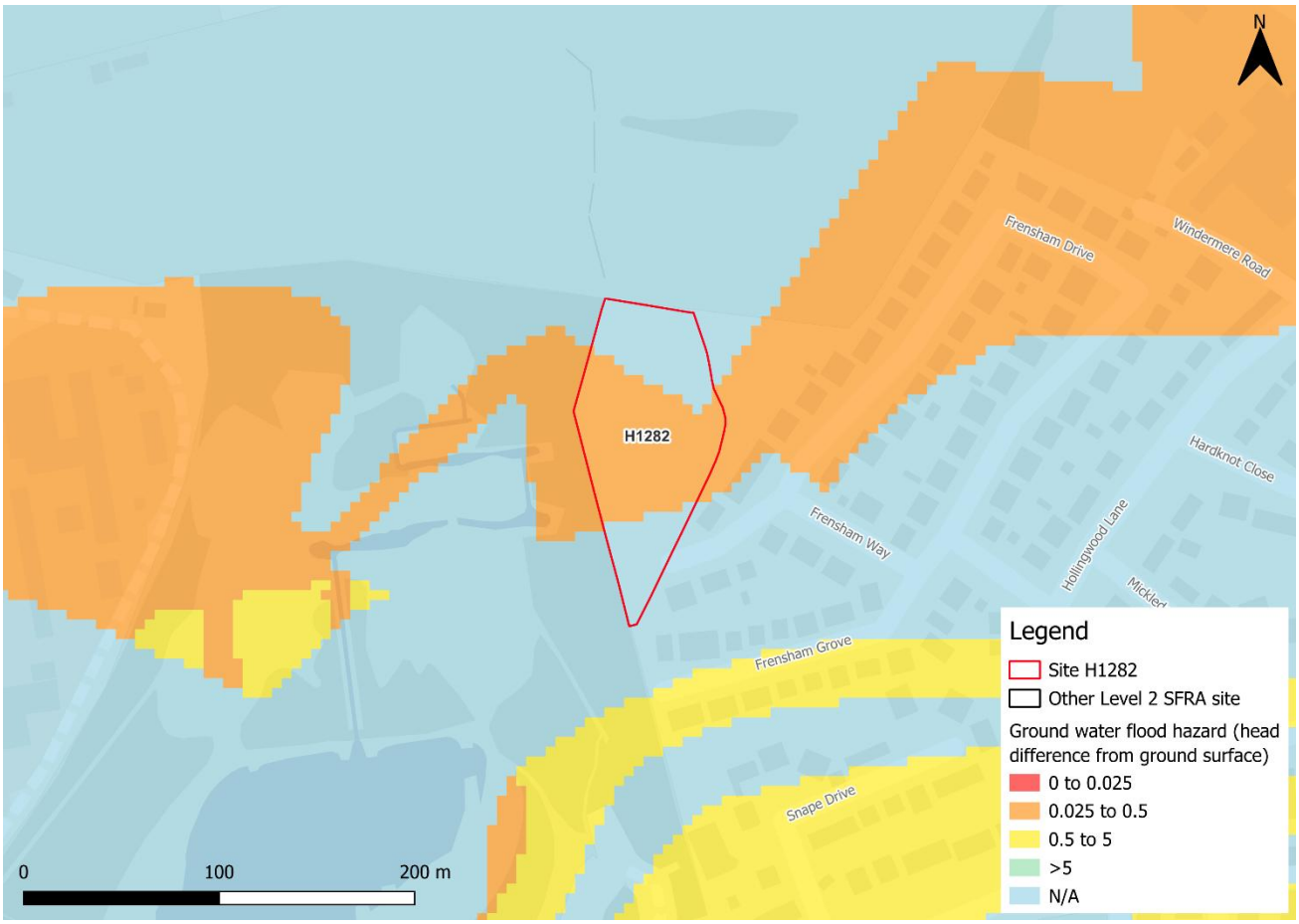


Figure 2-41: JBA 5m Groundwater Emergence Map (H1282)

2.16.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions should be explored further through a site-specific FRA.

2.17 H256

Site summary (Figure 2-42)	
Location	Wapping Road, Bolton Road
Existing site use	Pub and greenfield
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.4 hectares

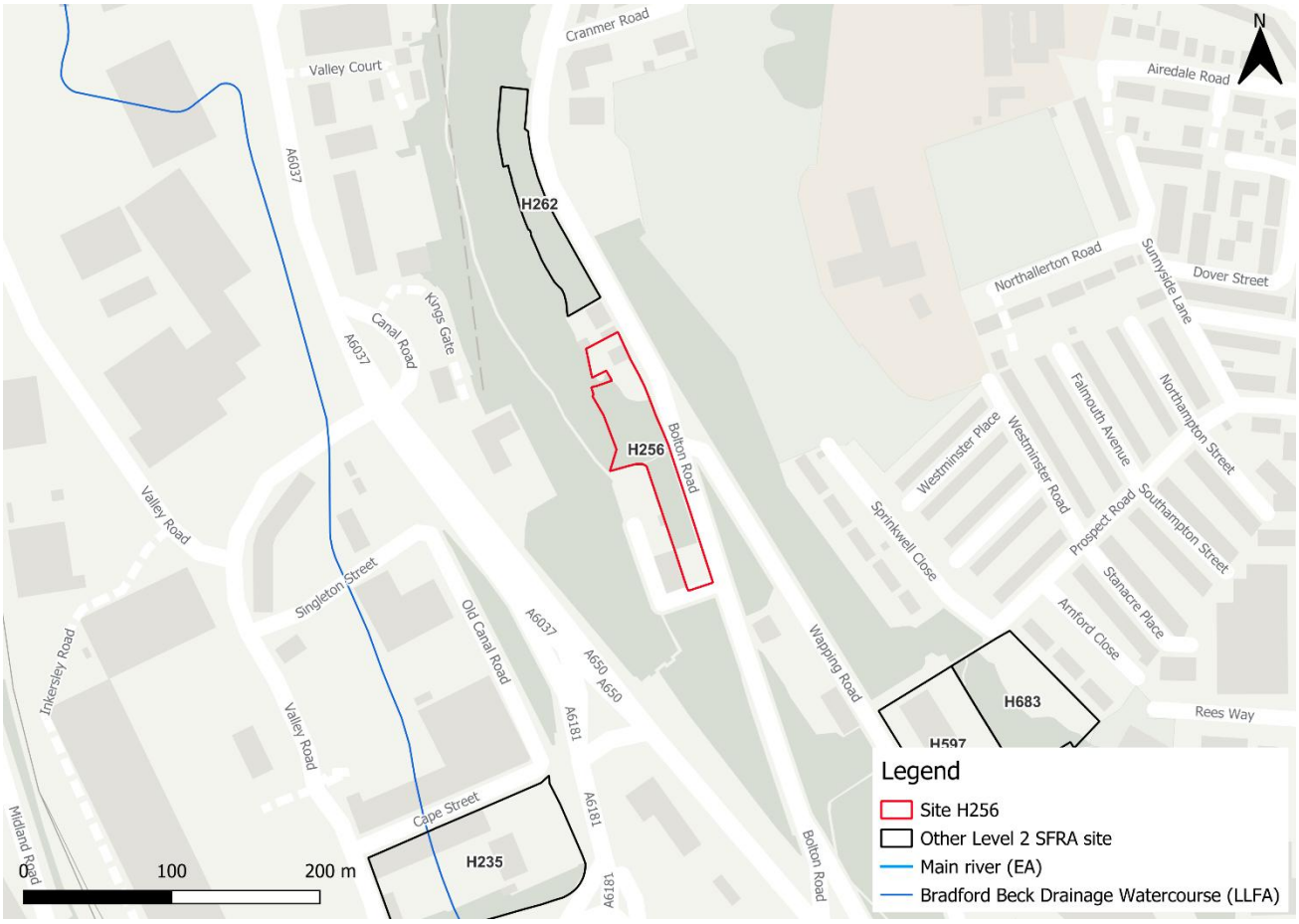


Figure 2-42: H256 site location boundary

2.17.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.17.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-17). Surface water risk is confined to a shallow flow path through the centre of the site. Maximum depths within the site are between 0.15 and 0.3 m (Figure 2-43). This area of risk is modelled to increase in extent in the medium risk event +45% climate change, with an additional flow path emerging within the south of the site, however depths remain low.

Based on available information, safe access and escape may be challenging to achieve in the low risk event given flood depths along Bolton Road.

Table 2-17: Existing surface water flood risk within H256 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
73	21	5	1



Figure 2-43: Medium risk event surface water flood depths within H256 (Risk of Flooding from Surface Water)

2.17.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.17.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Safe access and escape routes may be challenging to achieve in the low risk surface water event therefore must be considered further at the site-specific FRA stage.

2.18 H262

Site summary (Figure 2-44)	
Location	Bolton Road
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.3 hectares

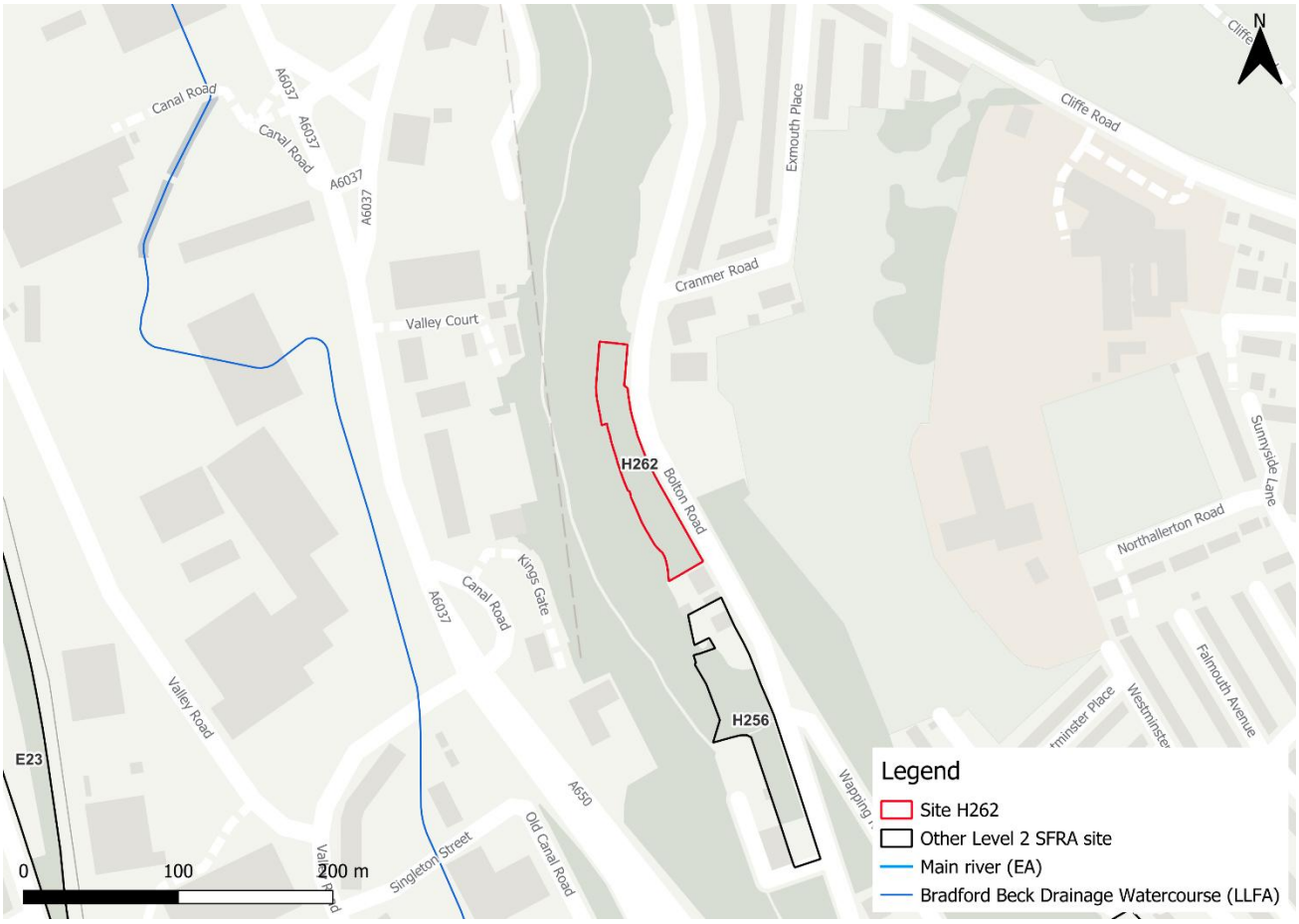


Figure 2-44: H262 site location boundary

2.18.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.18.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-18). In all events, surface water risk is confined to the eastern boundary of the site. Maximum depths within the site are < 0.15 m (Figure 2-45). This area of risk is modelled to increase very slightly in extent in the medium risk event +45% climate change, however depths remain low.

Based on available information, safe access and escape may be challenging to achieve in the low risk event given flood depths along Bolton Road.

Table 2-18: Existing surface water flood risk within H262 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	4	1	0

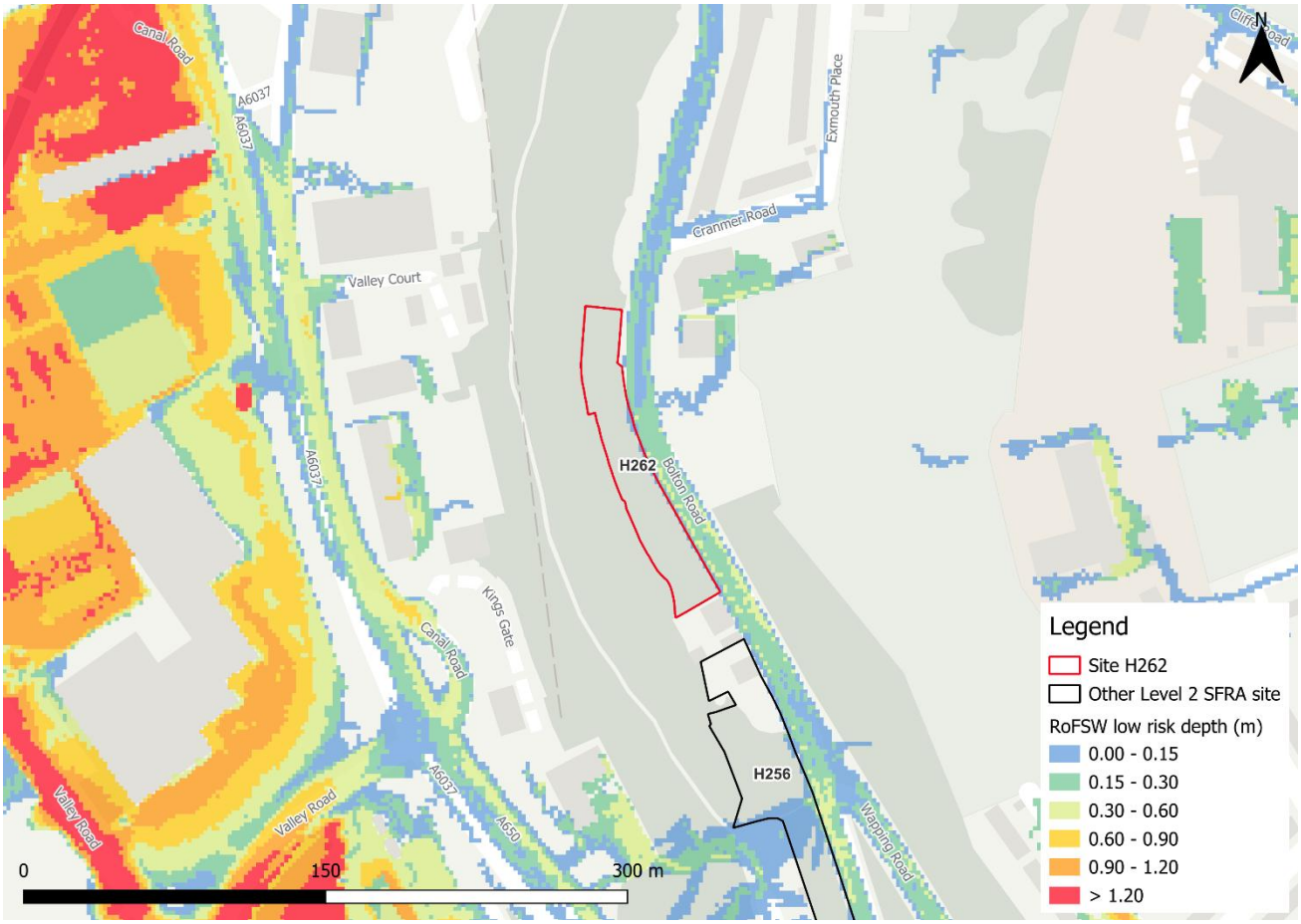


Figure 2-45: Low risk event surface water flood depths within H262 (Risk of Flooding from Surface Water)

2.18.3 Groundwater

The entirety of the site is in an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.18.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Safe access and escape routes may be challenging to achieve in the low risk surface water event therefore must be considered further at the site-specific FRA stage.

2.19 H585

Site summary (Figure 2-46)	
Location	Roundwood Avenue
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	3.9 hectares

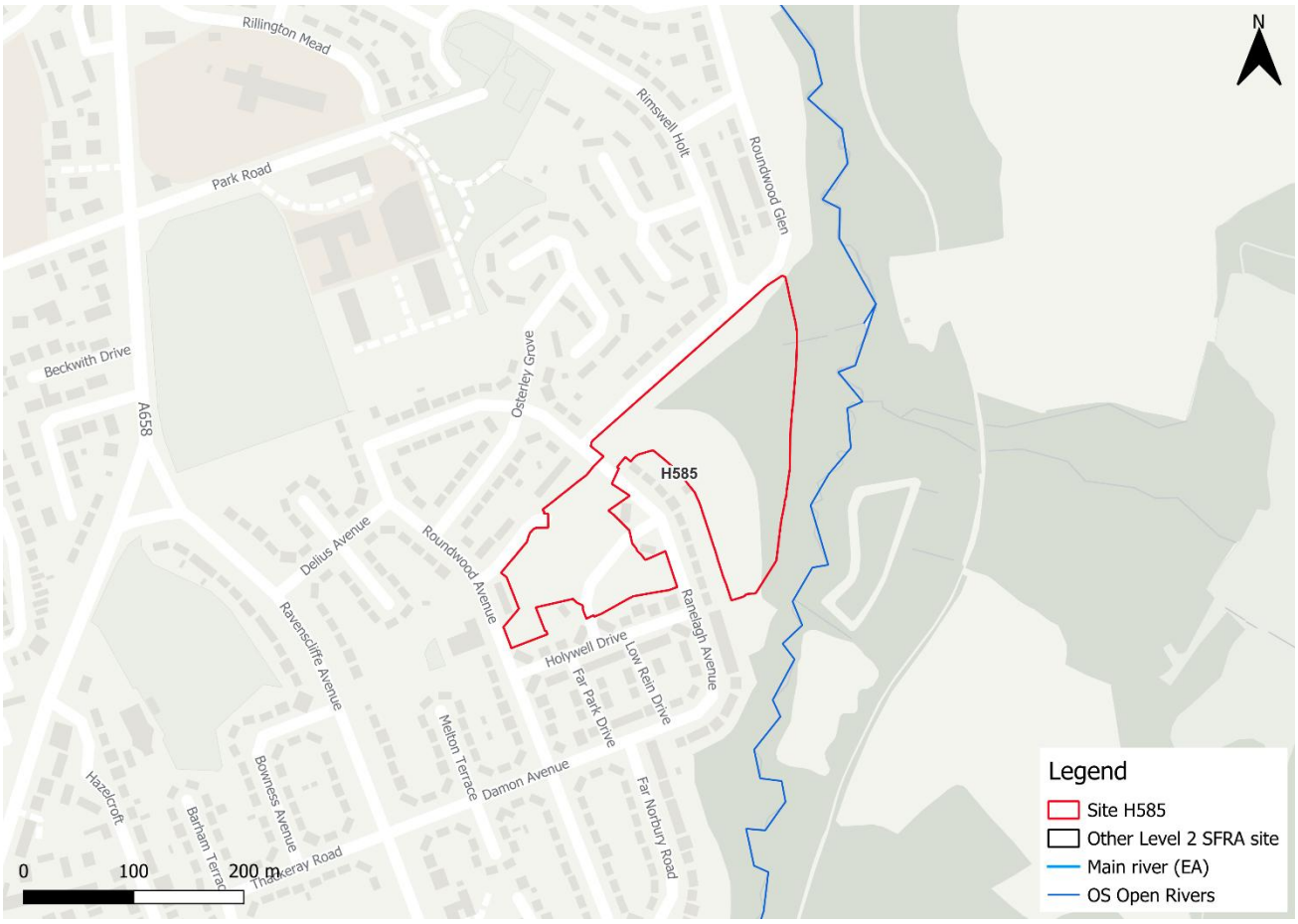


Figure 2-46: H585 site location boundary

2.19.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's Flood Map for Planning. The site is located adjacent to the unmodelled Carr Beck. It is recommended that this watercourse is modelled for climate change as part of the site-specific FRA to understand any potential risk posed to the site.

2.19.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-19). Surface water risk is confined to a short flow path within the south of the site. Maximum depths within the site are < 0.15 m (Figure 2-47). This area of risk is modelled to increase in extent and depth in the medium risk event +45% climate change, with some additional flow paths through the north of the site however depths remain low.

Based on available information, safe access and escape should be possible via multiple points surrounding the site.

Table 2-19: Existing surface water flood risk within H585 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
92	6	1	1

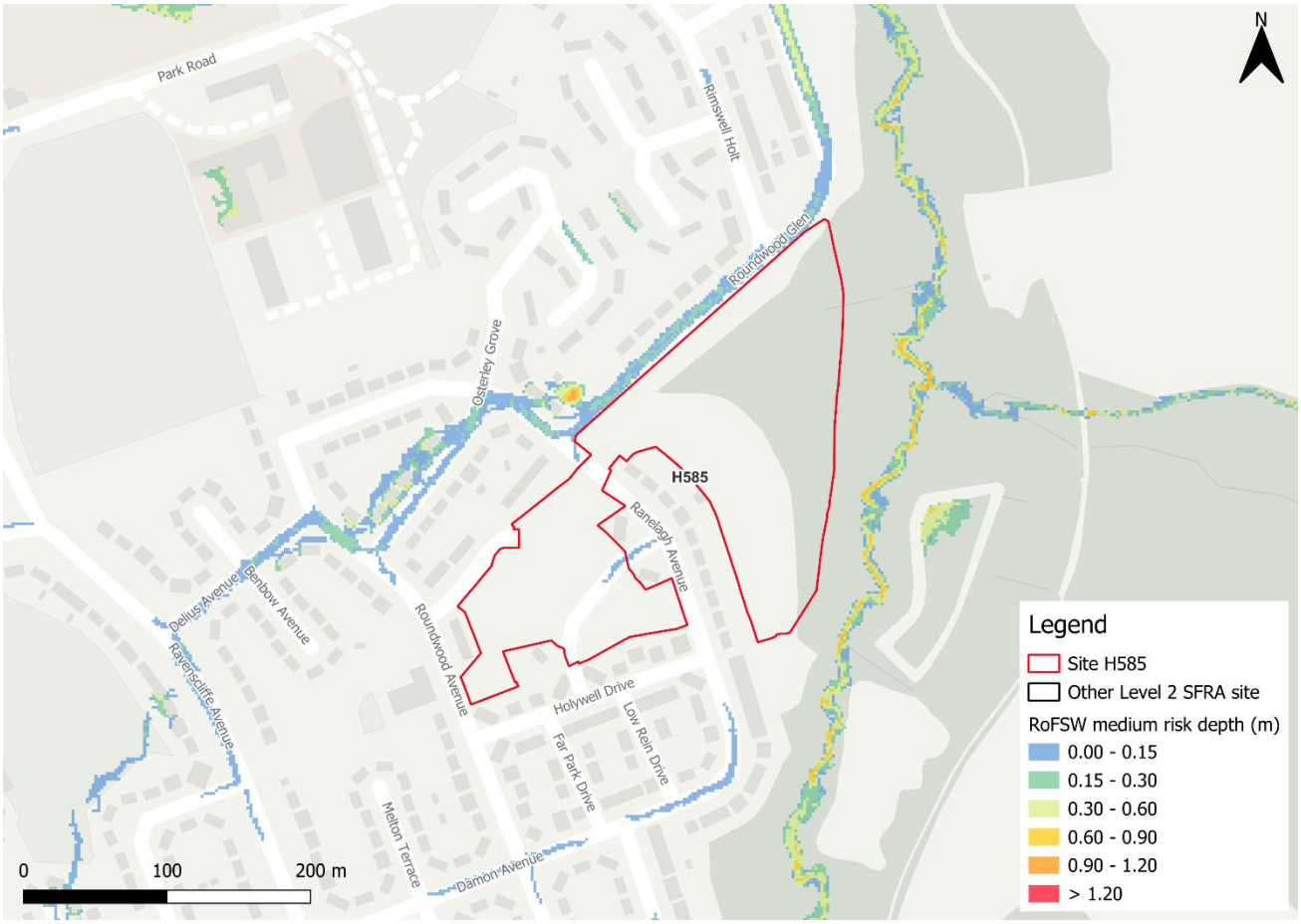


Figure 2-47: Medium risk event surface water flood depths within H585 (Risk of Flooding from Surface Water)

2.19.3 Groundwater

The majority of the site is in an area where there is no risk of groundwater emergence. There is a small area to the north of the site where groundwater emergence is unlikely. Groundwater conditions may therefore be suited to infiltration SuDS.

2.19.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- It is recommended that Carr Brook is modelled for climate change as part of the site-specific FRA to understand any potential future fluvial risk posed to the site.

2.20 H597

Site summary (Figure 2-48)	
Location	Wapping Road
Existing site use	Education
Existing site vulnerability	More vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.5 hectares

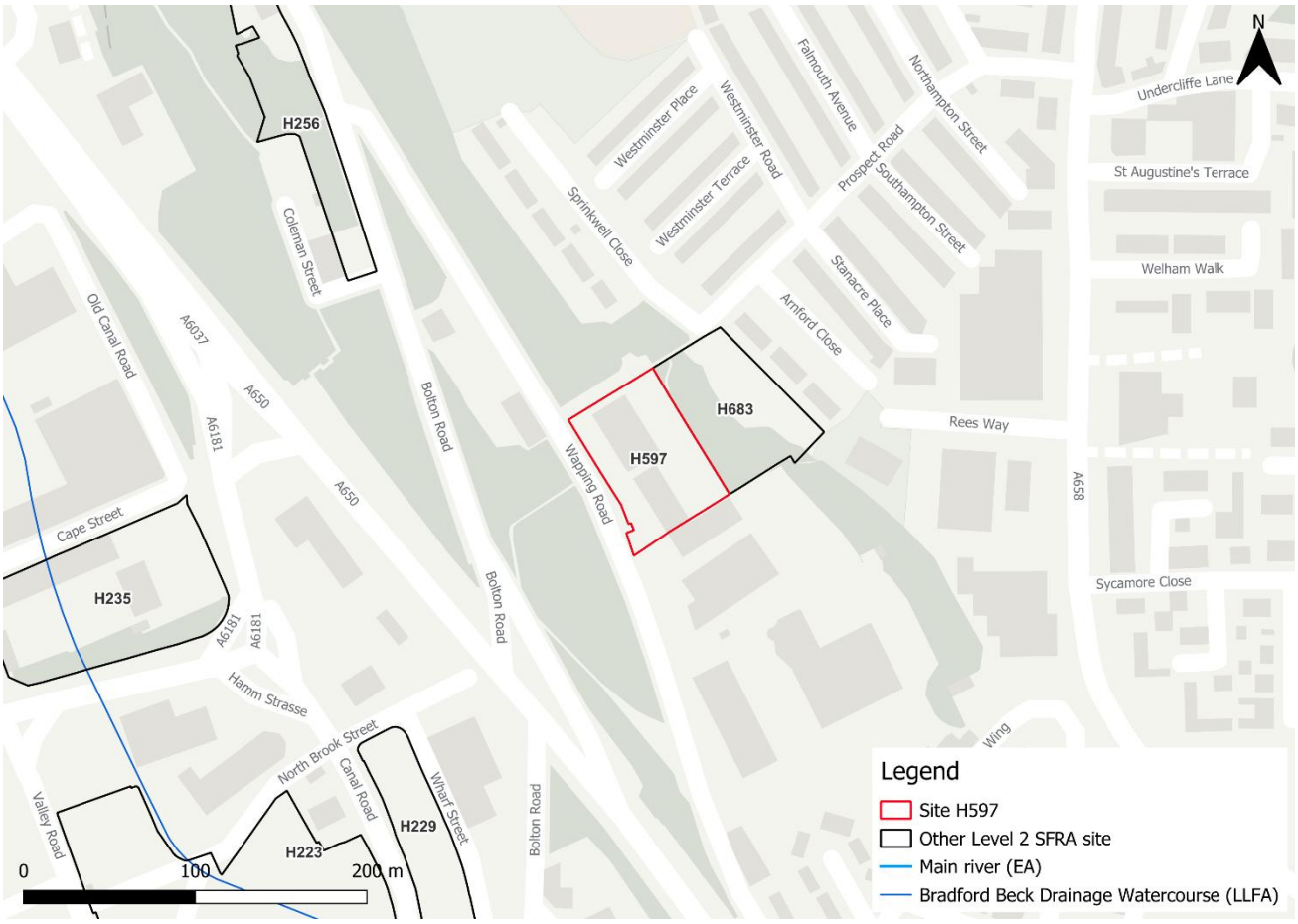


Figure 2-48: H597 site location boundary

2.20.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.20.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-20). Surface water risk is confined to the boundaries of the site in all events. Maximum depths within the site in the low risk event are < 0.15 m (Figure 2-49). Two flowpaths through the centre of the site emerge in the medium risk event +45% climate change, with depths of > 1.2 m, and are constrained by the existing development within the site.

Based on available information, safe access and escape routes should be achievable via Wapping Road in the high and medium risk events. Safe access and escape may be challenging to achieve via this route in the low risk event given surface water depths of up to 0.6 m.

Table 2-20: Existing surface water flood risk within H597 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0

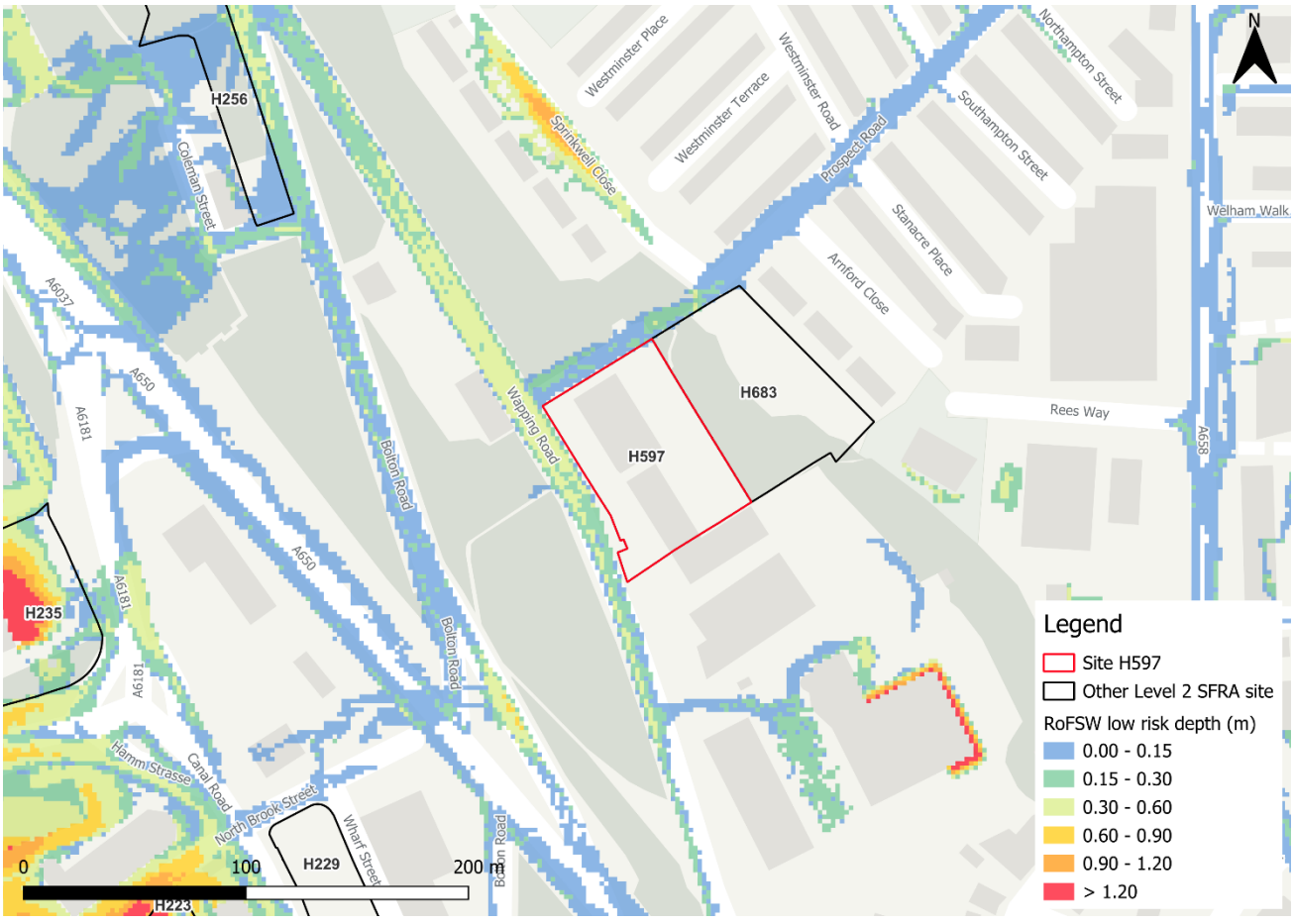


Figure 2-49: Low risk event surface water flood depths within H597 (Risk of Flooding from Surface Water)

2.20.3 Groundwater

Along the western boundary of the site there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-50). Groundwater conditions should be investigated further as part of a site-specific FRA. Across the rest of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas.

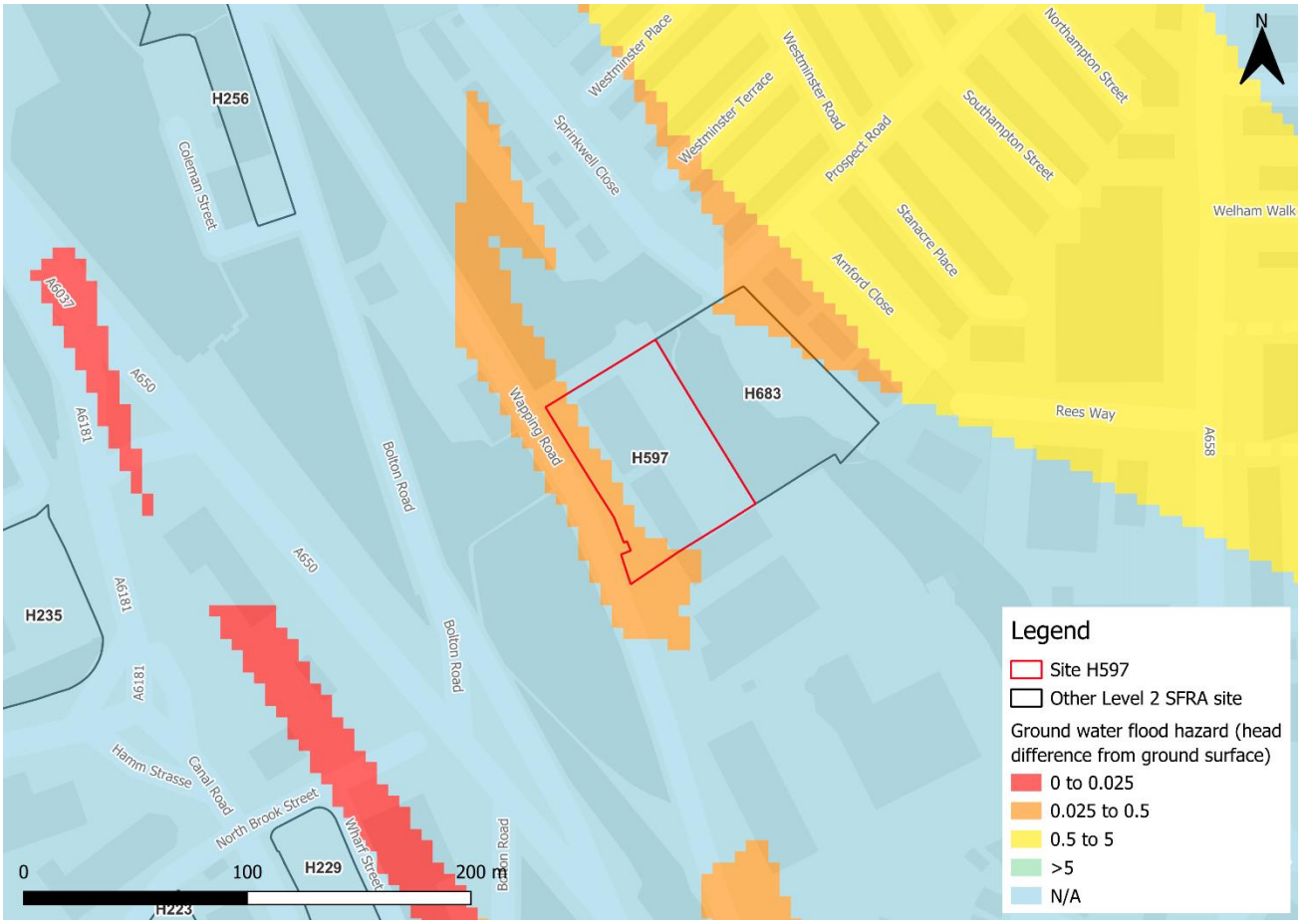


Figure 2-50: JBA 5m Groundwater Emergence Map (H597)

2.20.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

- Future surface water risk is constrained by the area of existing development within the site. Any change in site layout where current buildings are to be demolished will require detailed surface water modelling.
- Safe access and escape routes in the low risk surface water event should be considered further through a site-specific FRA.

2.21 H624

Site summary (Figure 2-51)	
Location	Leeds Road, Thackley
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.3 hectares

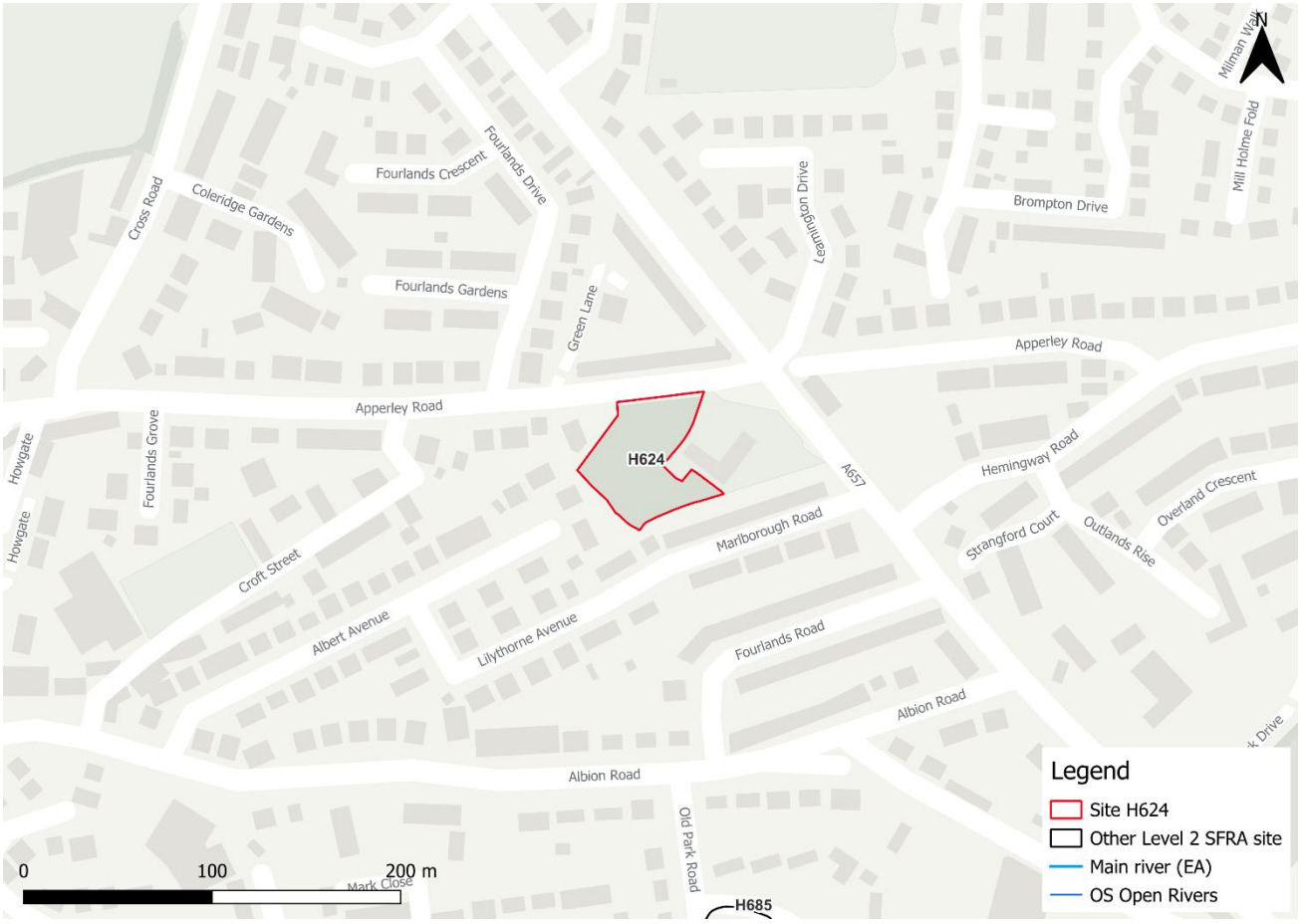


Figure 2-51: H624 site location boundary

2.21.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.21.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-21). Surface water risk is confined to the northern boundary of the site in the high and medium risk events. In the low risk event, there is a small area of shallow ponding along the eastern boundary of the site. Maximum depths within the site in the low risk event are < 0.15 m (Figure 2-52). The area of ponding along the eastern boundary of the site increases in extent in the medium risk event +45% climate change, however maximum depths remain < 0.15 m.

Based on available information, safe access and escape routes should be achievable via Apperley Road in the high and medium risk events. Safe access and escape may be challenging to achieve via this route in the low risk event given the moderate to significant surface water hazards.

Table 2-21: Existing surface water flood risk within H624 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
97	2	1	0

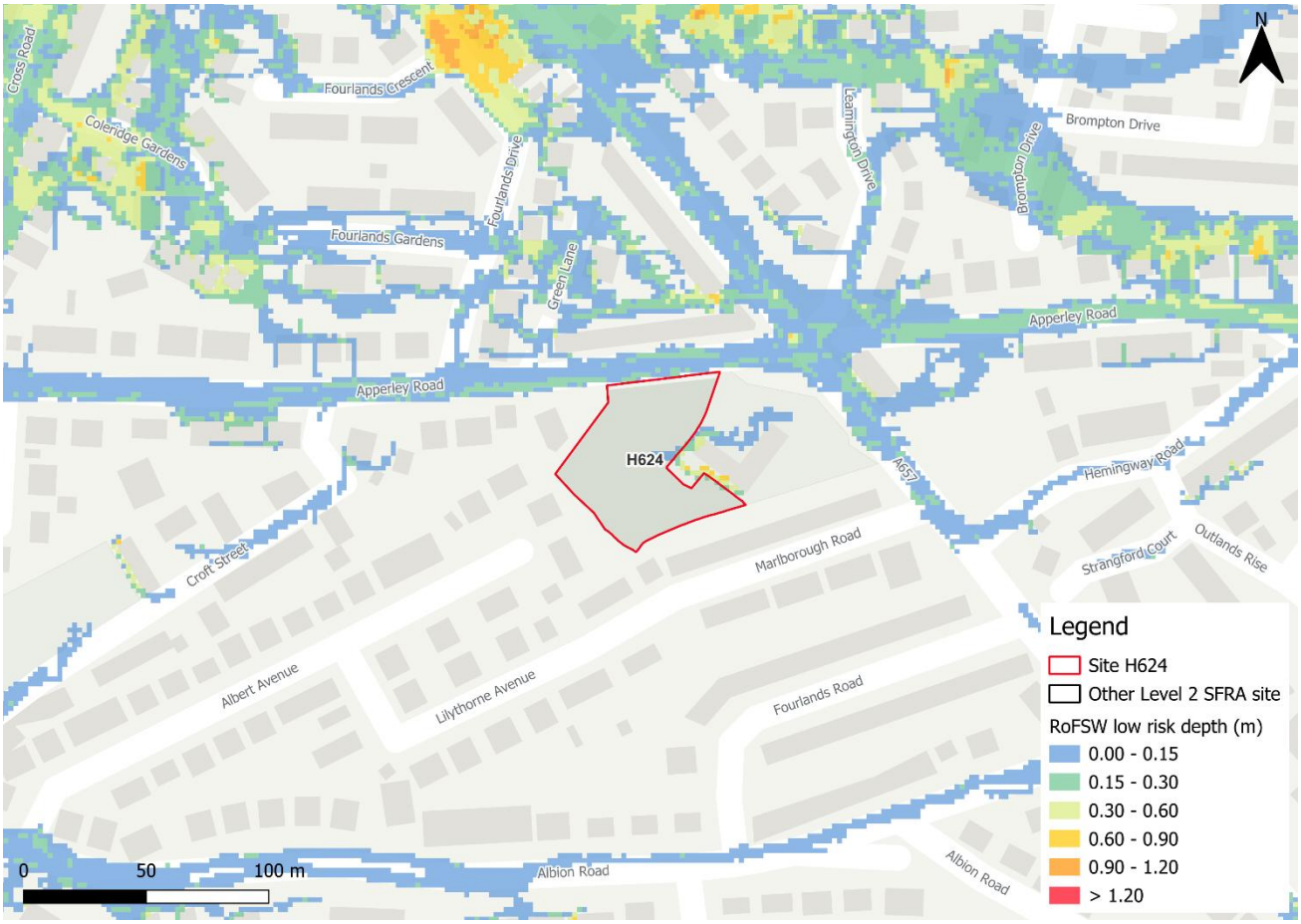


Figure 2-52: Low risk event surface water flood depths within H624 (Risk of Flooding from Surface Water)

2.21.3 Groundwater

Across the majority of the site, risk of groundwater emergence is unlikely. There is no risk of groundwater emergence across the rest of the site. Groundwater conditions may therefore be suited to infiltration SuDS.

2.21.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Safe access and escape routes in the low risk surface water event should be considered further through a site-specific FRA.

2.22 H647

Site summary (Figure 2-53)	
Location	Site of Ashfield Mills
Existing site use	Commercial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.9 hectares



Figure 2-53: H647 site location boundary

2.22.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.22.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-22). Surface water risk is confined to the northern boundary of the site in all events and is constrained by the existing development within the site boundary. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-54). The area at risk along the northern boundary of the site increases in both extent and depth in the medium risk event +45% climate change, with maximum depths of between 0.6 and 0.9 m.

Based on available information, safe access and escape routes should be achievable via the A657 to the east of the site.

Table 2-22: Existing surface water flood risk within H647 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
92	2	3	3



Figure 2-54: Medium risk event surface water flood depths within H647 (Risk of Flooding from Surface Water)

2.22.3 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.22.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Surface water risk is constrained by the area of existing development within the site. Any change in site layout where current buildings are to be demolished will require detailed surface water modelling.

2.23 H675

Site summary (Figure 2-55)	
Location	Rawson Avenue, Thornbury
Existing site use	Brownfield
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.1 hectares



Figure 2-55: H675 site location boundary

2.23.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.23.2 Surface water

The site is predominantly at low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-23). In the medium risk event, surface water risk is confined to an area of shallow ponding within the south of the site. The majority of the site is inundated in the low risk surface water event to depths of up to 0.3 m (Figure 2-56). The present day low risk event is similar in both extent and depth to the medium risk event +45% climate change, indicating a significant risk across the site in the long term.

Based on available information, safe access and escape routes should be achievable via Rushton Avenue to the south of the site.

Table 2-23: Existing surface water flood risk within H675 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
37	60	3	0

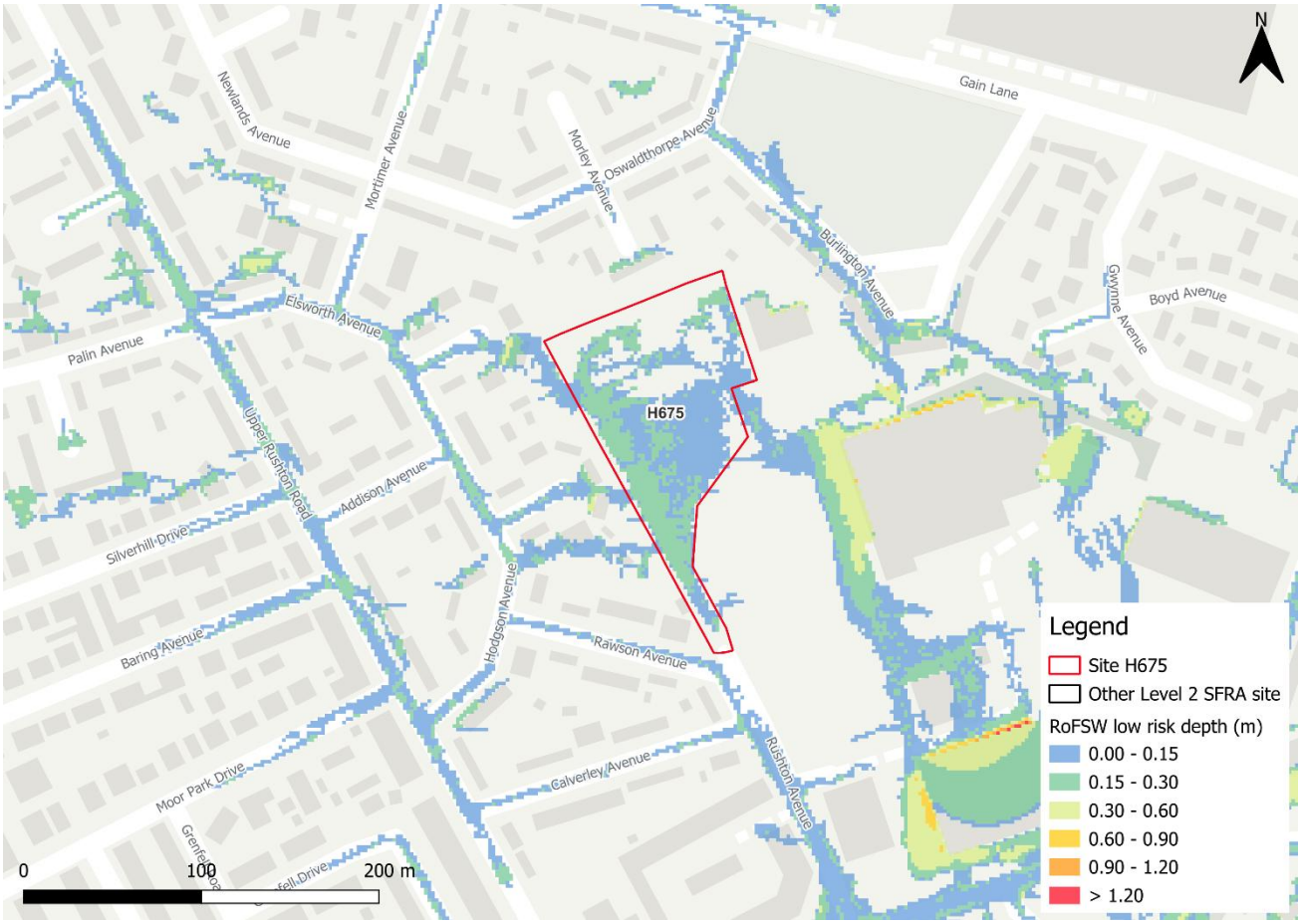


Figure 2-56: Low risk event surface water flood depths within H675 (Risk of Flooding from Surface Water)

2.23.3 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.23.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- The site is modelled to be at significant additional surface water risk as a result of climate change.
- A full drainage strategy would be required to ensure there is no increase in surface water flood risk elsewhere as a result of new development. This will require surface water modelling based on layout plans and detailed design and full consultation with the LLFA.

2.24 H678

Site summary (Figure 2-57)	
Location	Kyme Mills - Napier Terrace - Moorside Lane
Existing site use	Commercial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.9 hectares

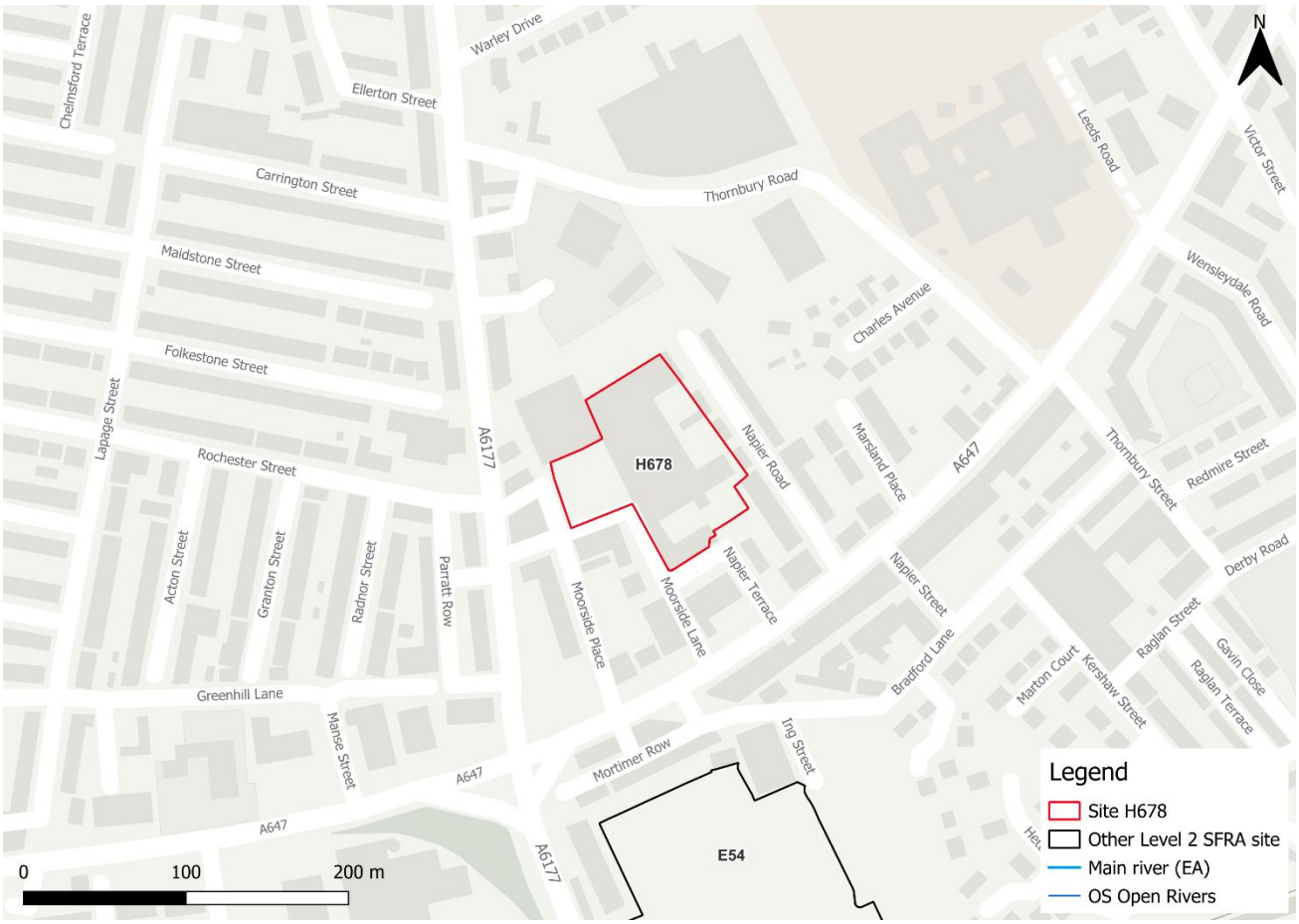


Figure 2-57: H678 site location boundary

2.24.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.24.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-24). In the medium risk event, surface water risk is confined to a very small area along the northern boundary of the site. In the low risk event, there are some areas of surface water ponding within the east and south of the site and are constrained by the existing development within the site boundary. Maximum depths within the site in the low risk event are between 0.3 and 0.6 m (Figure 2-58). The area at risk in the medium risk event +45% climate change is similar in both extent and depth to the present day low risk event.

Based on available information, safe access and escape routes should be achievable via Scaley Street to the A6177.

Table 2-24: Existing surface water flood risk within H678 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
94	5	1	0

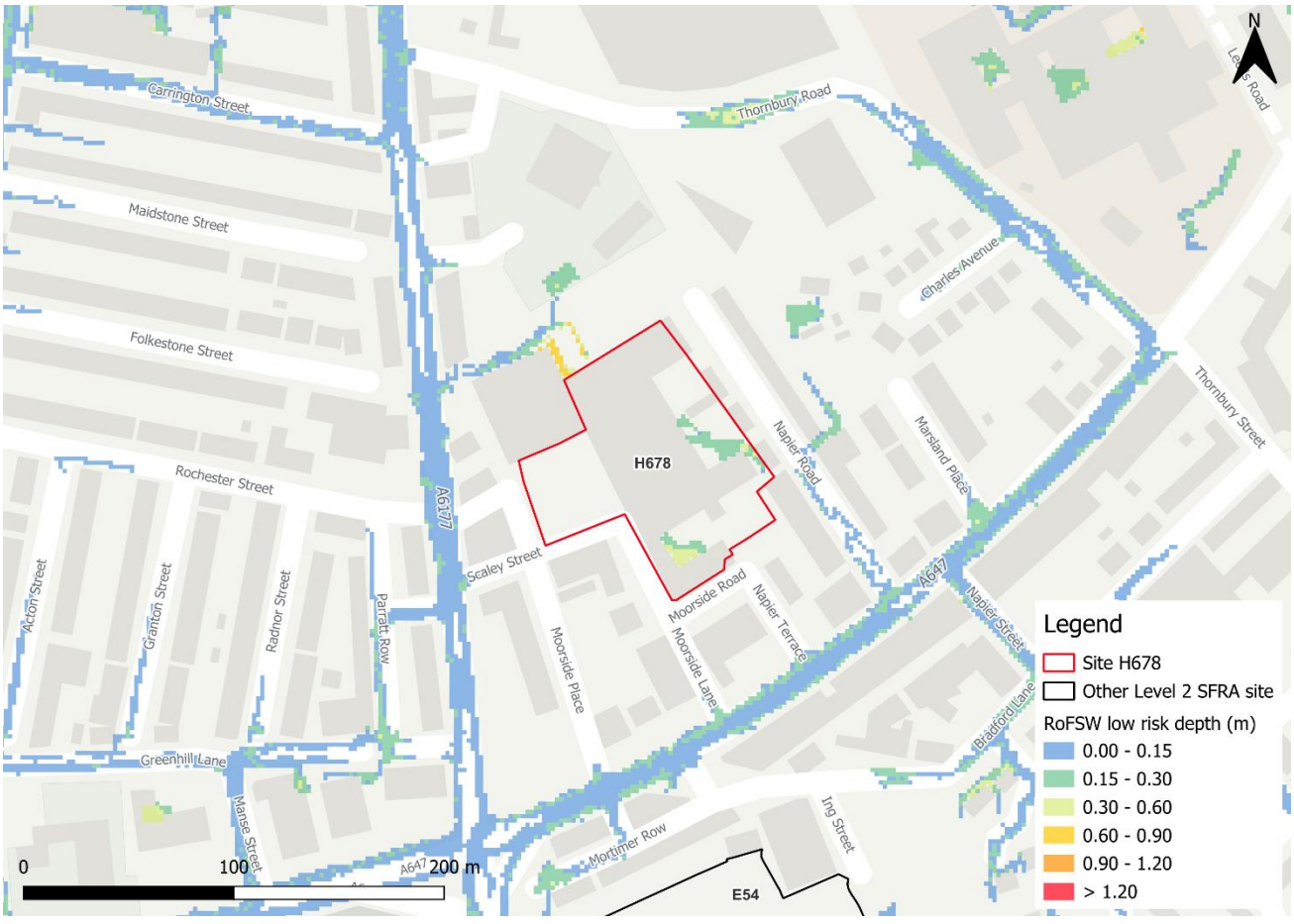


Figure 2-58: Low risk event surface water flood depths within H678 (Risk of Flooding from Surface Water)

2.24.3 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.24.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Surface water risk is constrained by the area of existing development within the site. Any change in site layout where current buildings are to be demolished will require detailed surface water modelling.

2.25 H683

Site summary (Figure 2-59)	
Location	Prospect Road
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.5 hectares

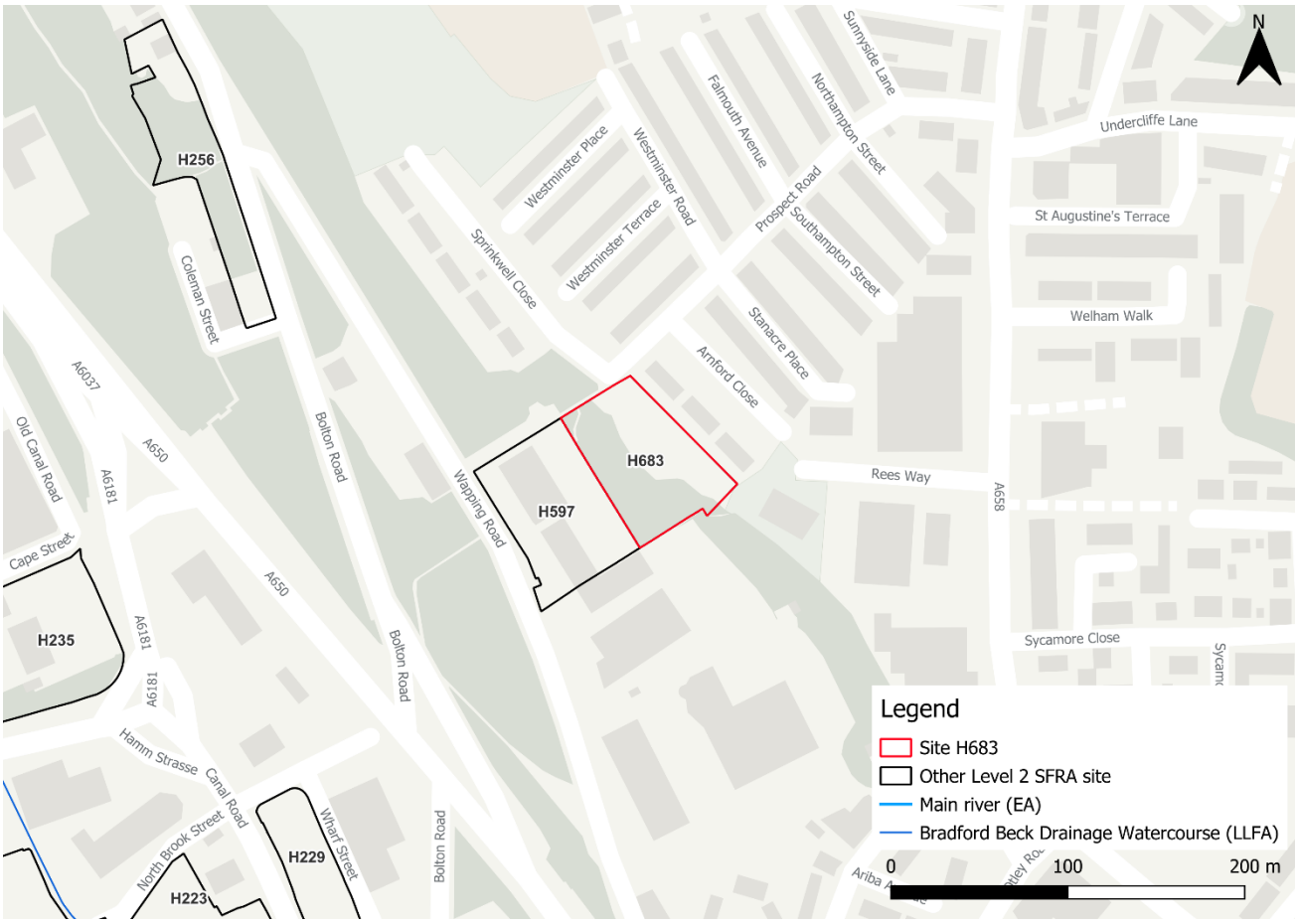


Figure 2-59: H683 site location boundary

2.25.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.25.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-25). In all events, including the medium risk event +45% climate change, surface water risk is confined to a flow path extending from Prospect Road adjacent to the northern boundary of the site. Maximum depths within the site in the medium risk event are < 0.15 m (Figure 2-60).

Based on available information, safe access and escape routes should be achievable via Prospect Road in the high and medium risk events given the low depths and hazards along this route. Safe access and escape routes may be challenging to achieve in the low risk present day and medium risk plus climate change events given the modelled flood hazard in this area.

Table 2-25: Existing surface water flood risk within H683 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0



Figure 2-60: Medium risk event surface water flood depths within H683 (Risk of Flooding from Surface Water)

2.25.3 Groundwater

Along the northeastern boundary of the site there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-61). Groundwater conditions should be investigated further as part of a site-specific FRA. Across the rest of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas.

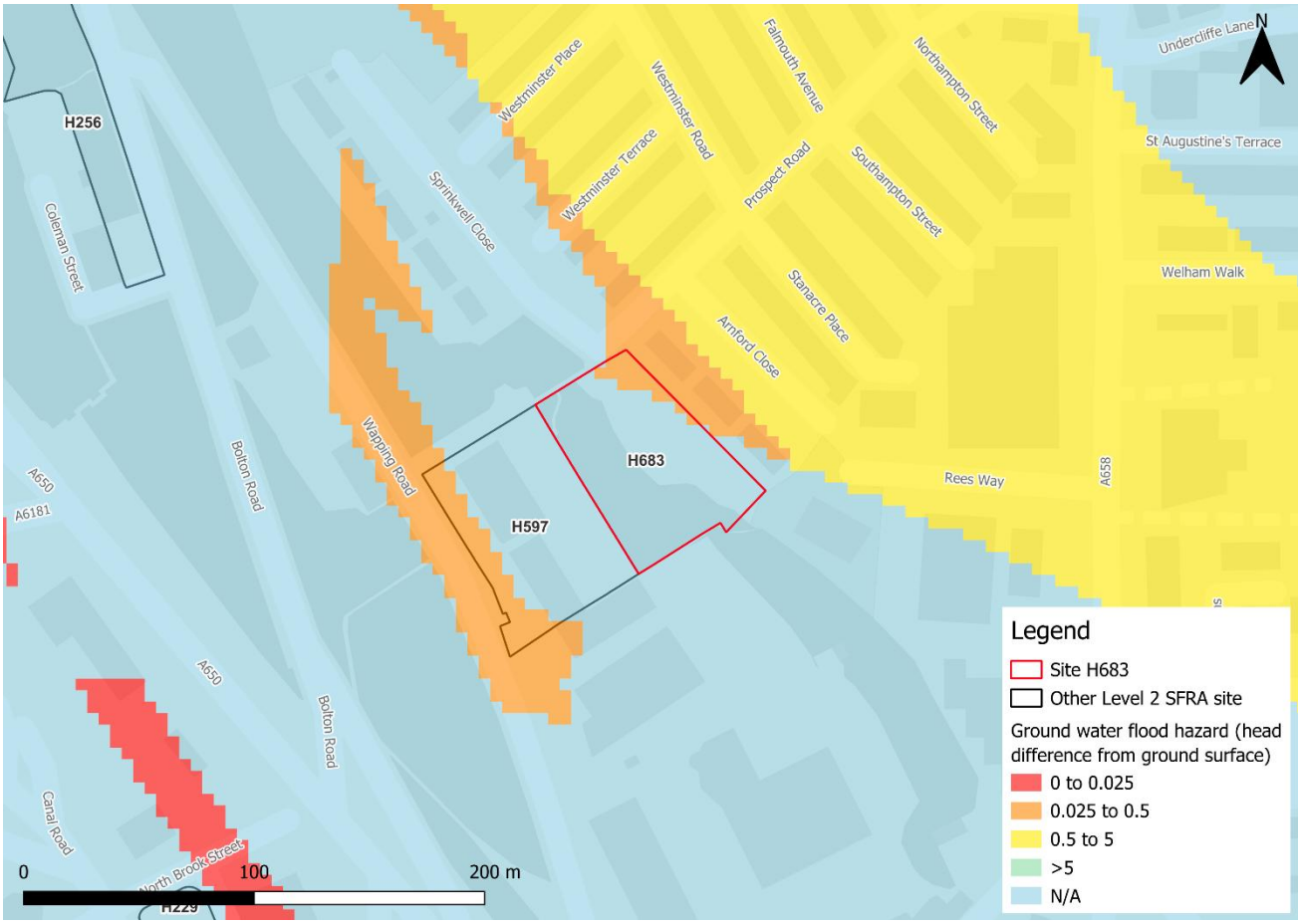


Figure 2-61: JBA 5m Groundwater Emergence Map (H683)

2.25.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.

- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Safe access and escape routes in the low risk surface water event should be considered further through a site-specific FRA.

2.26 H685

Site summary (Figure 2-62)	
Location	Old Park Road, Thorpe Edge
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.5 hectares

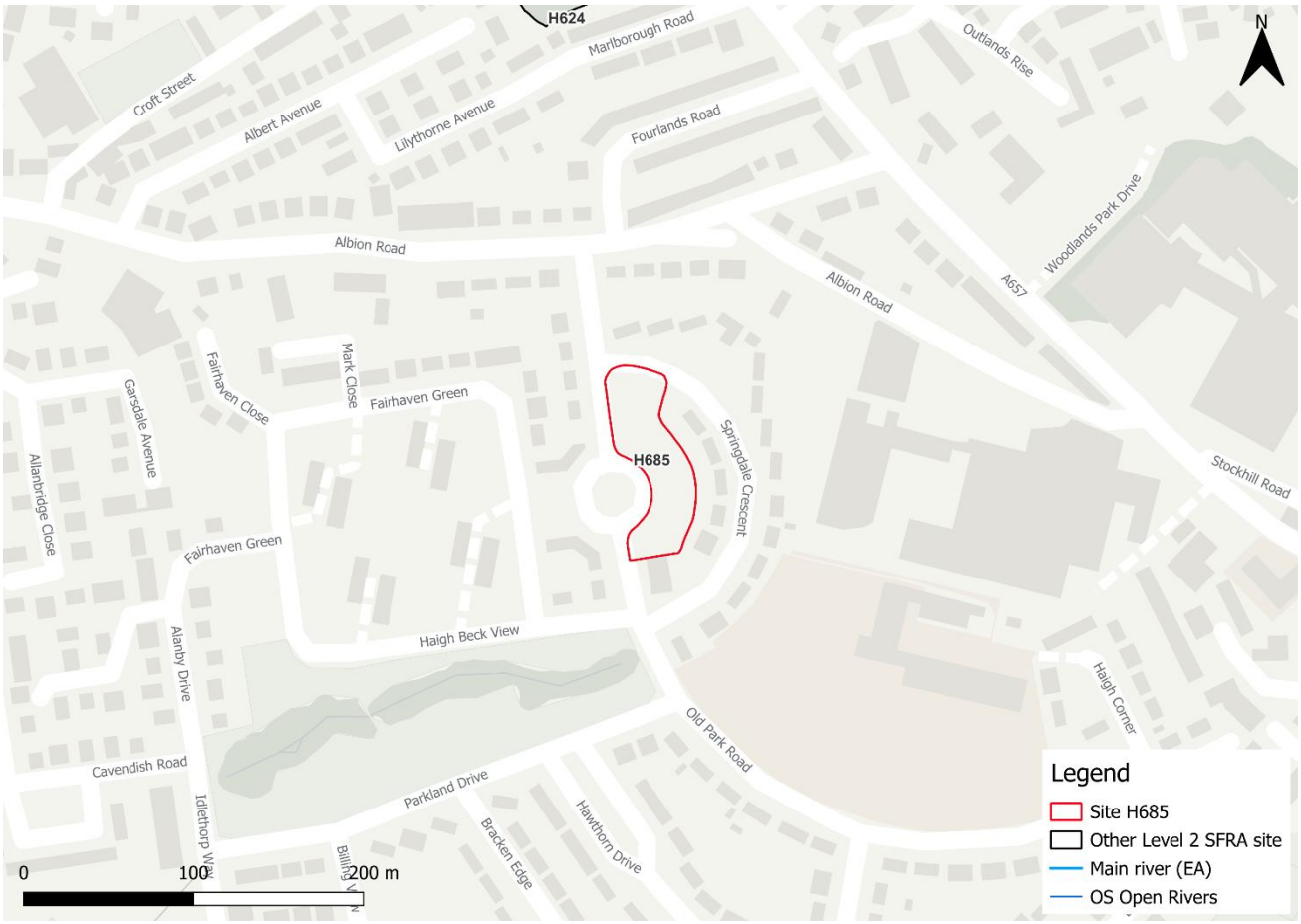


Figure 2-62: H685 site location boundary

2.26.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.26.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-26). Surface water risk is confined to the boundaries of the site in the high and medium risk events. In the low risk event, surface water risk is confined to a shallow flow path within the north of the site. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-63). The area at risk within the north of the site increases in both extent and depth in the medium risk event +45% climate change, with maximum depths of between 0.15 and 0.3 m.

Based on available information, safe access and escape routes should be achievable via the Old Park Road to the north of the site.

Table 2-26: Existing surface water flood risk within H685 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
71	28	1	0

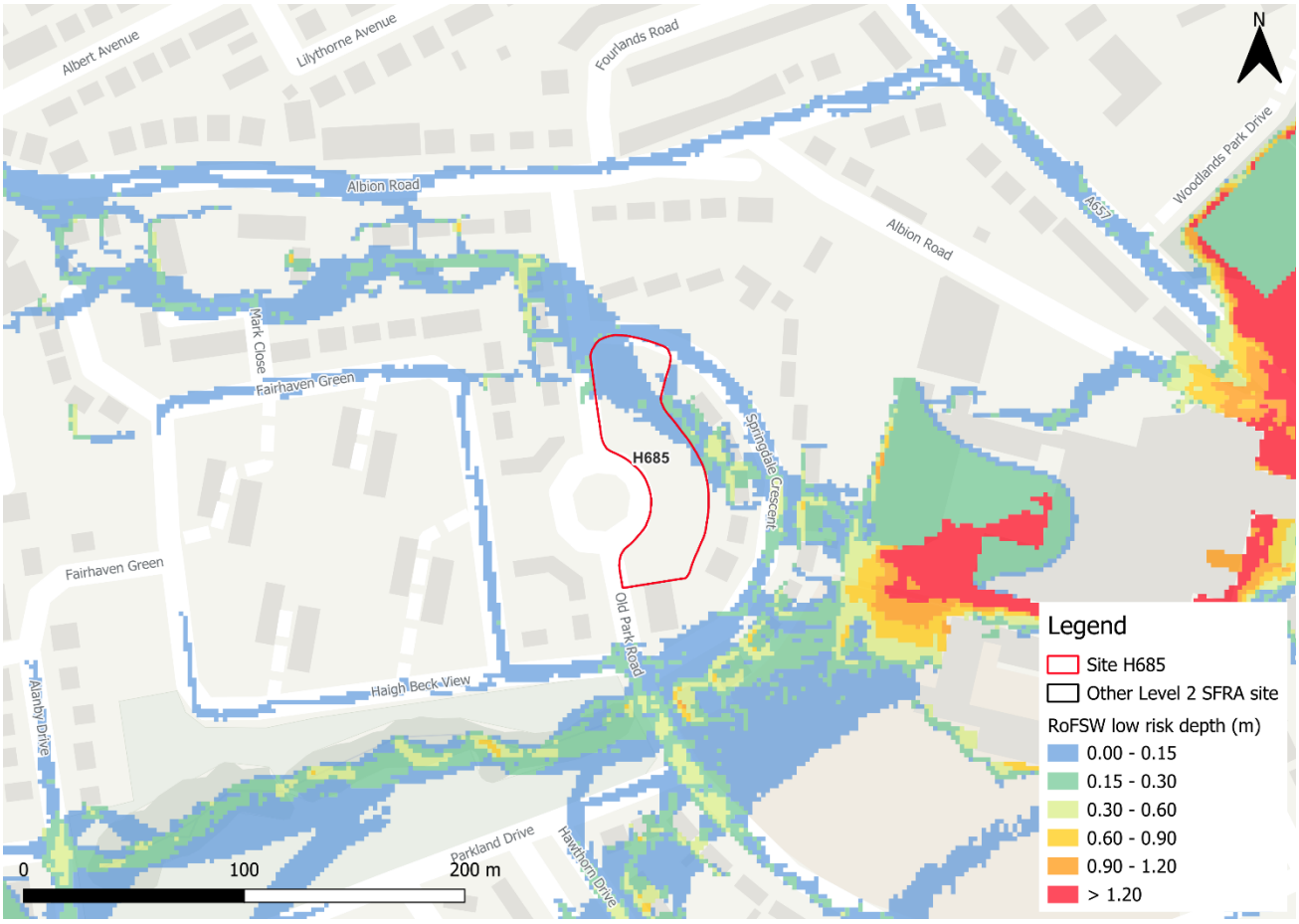


Figure 2-63: Low risk event surface water flood depths within H685 (Risk of Flooding from Surface Water)

2.26.3 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.26.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.27 H686

Site summary (Figure 2-64)	
Location	Arthur Street, Idle
Existing site use	Industrial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1 hectare

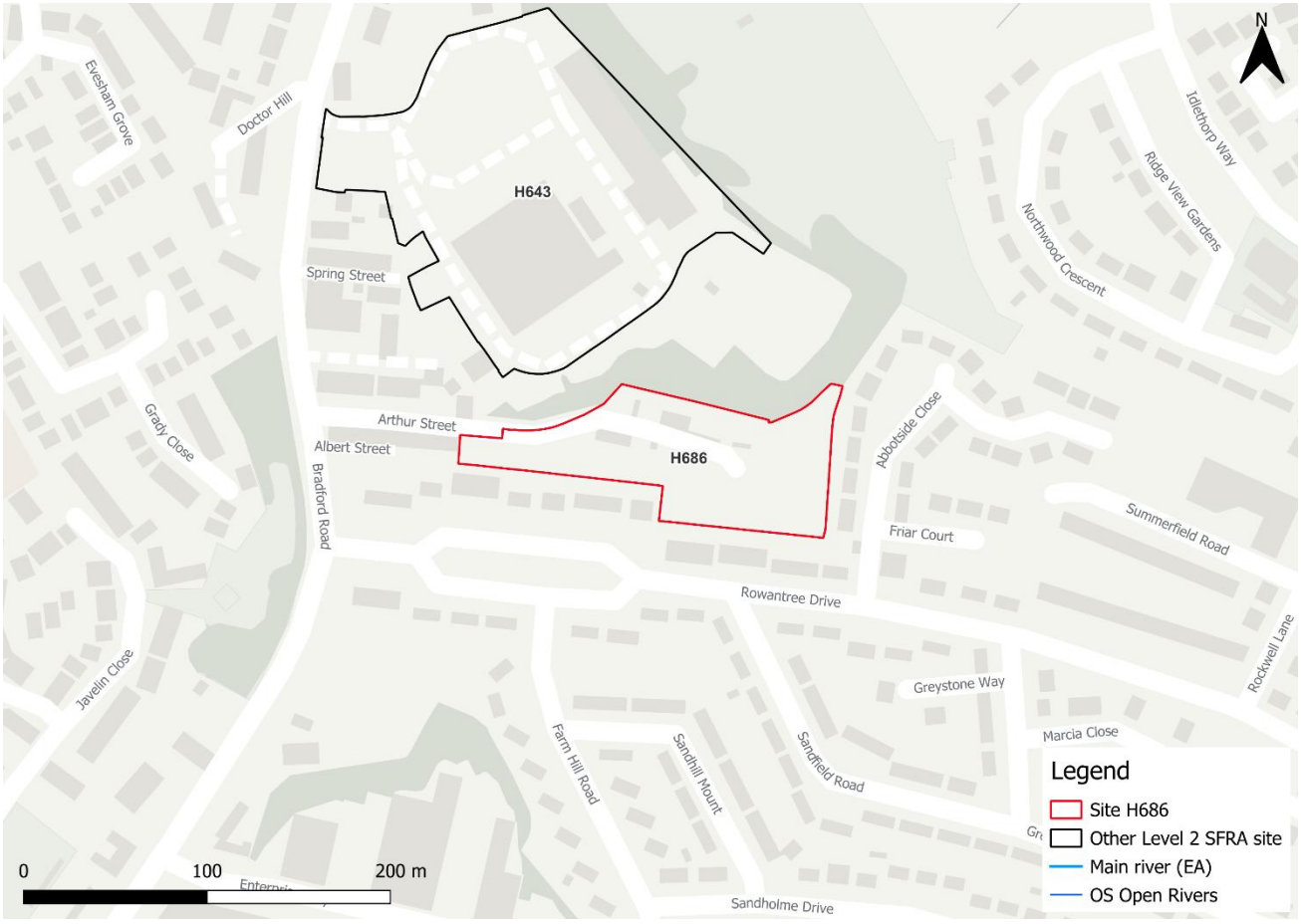


Figure 2-64: H686 site location boundary

2.27.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.27.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-27). Surface water risk is confined to a flow path through the west of the site in all events. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-65). The flow path within the west of the site increases in both extent and depth in the medium risk event +45% climate change, with maximum depths of between 0.3 and 0.6 m.

Based on available information, safe access and escape routes should be achievable via the Arthur Street to the west of the site.

Table 2-27: Existing surface water flood risk within H686 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
87	8	5	3

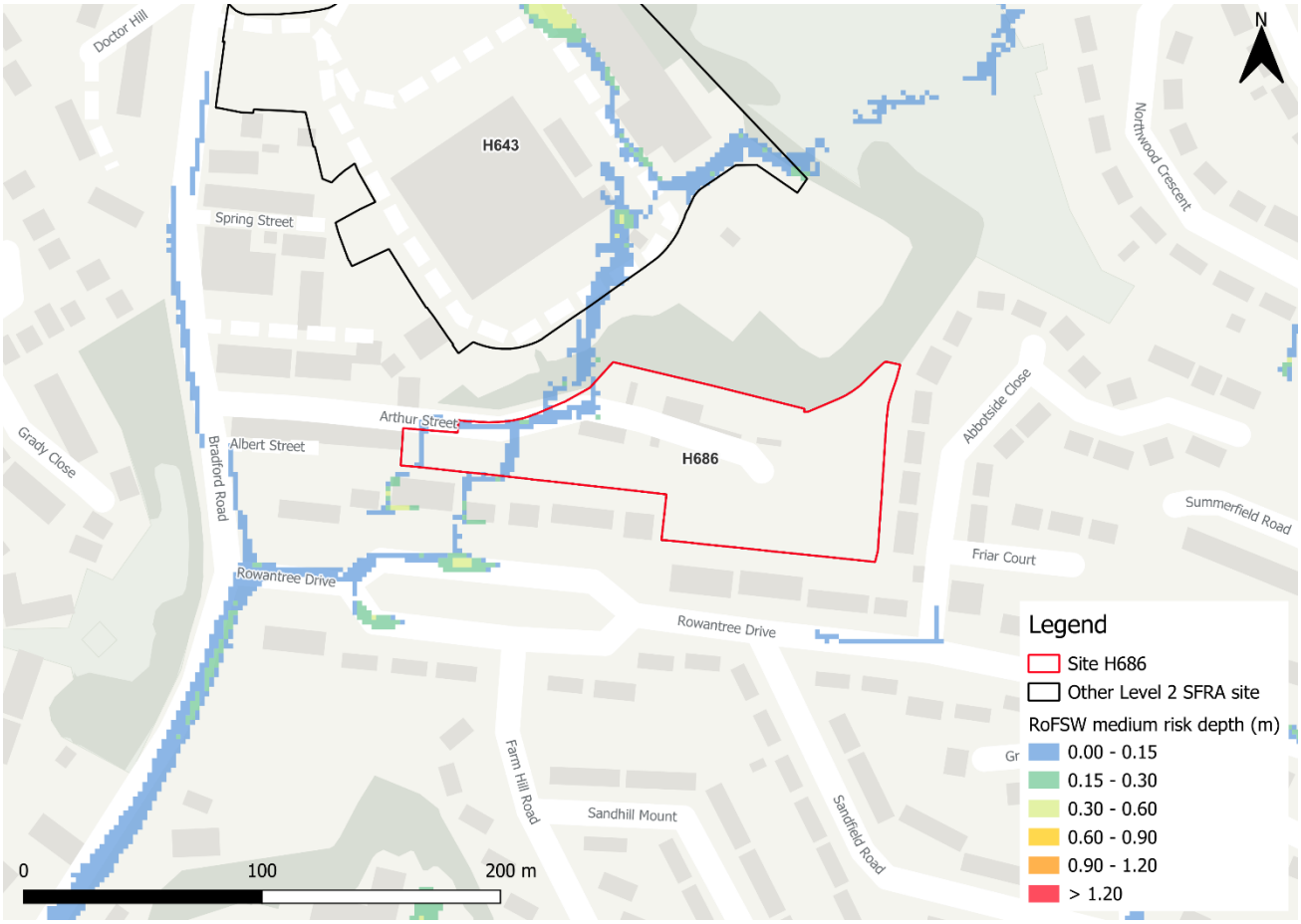


Figure 2-65: Medium risk event surface water flood depths within H686 (Risk of Flooding from Surface Water)

2.27.3 Groundwater

Across the majority of the site, risk of groundwater emergence is unlikely. There is no risk of groundwater emergence across the rest of the site. Groundwater conditions may therefore be suited to infiltration SuDS.

2.27.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.28 H694

Site summary (Figure 2-66)	
Location	Haworth Road, Sandy Lane
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	7.6 hectares

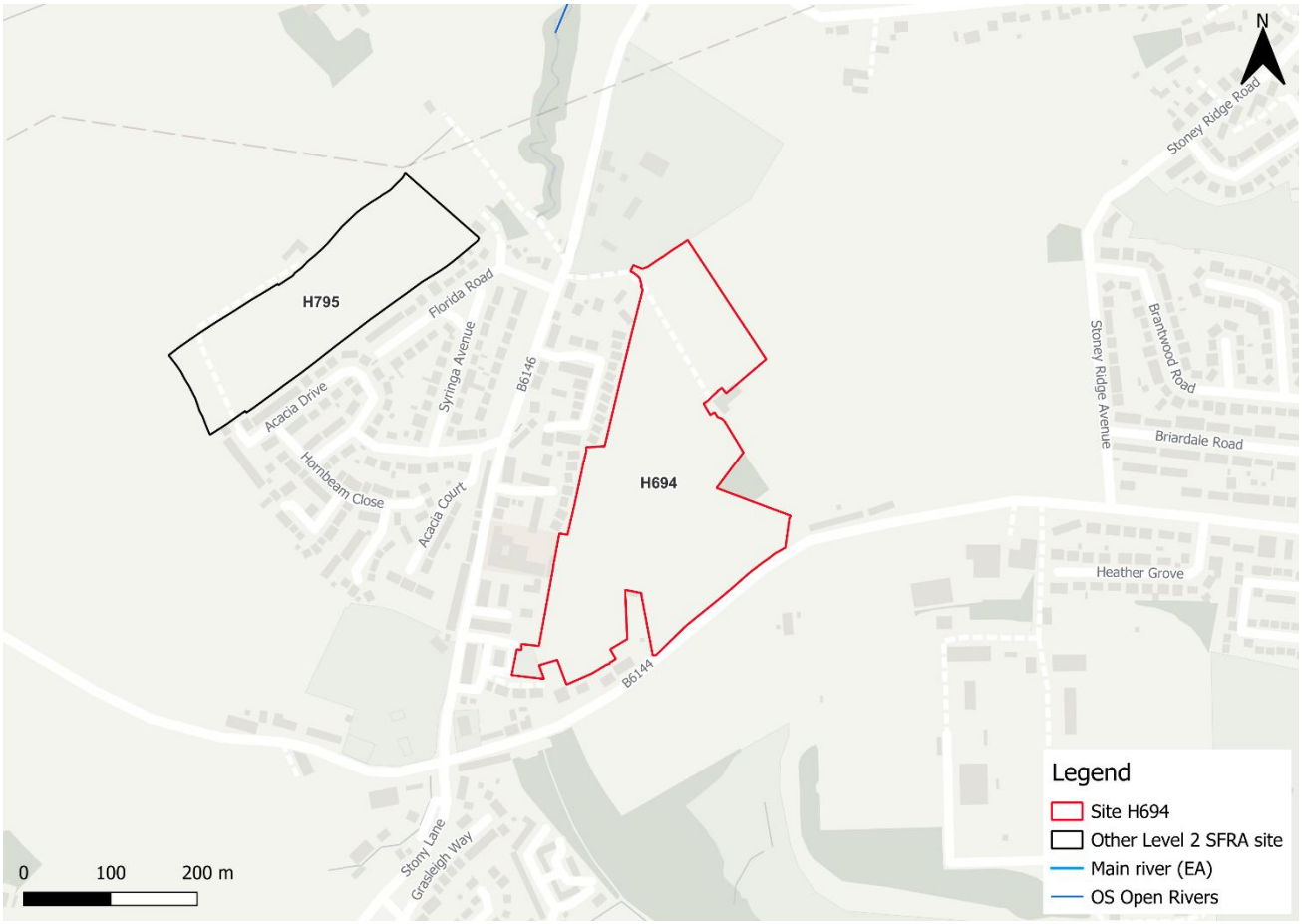


Figure 2-66: H694 site location boundary

2.28.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.28.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-28). Surface water risk is confined to a small area of ponding along the eastern boundary of the site. Maximum depths within the site in the medium risk event are between 0.6 and 0.9 m (Figure 2-67). The area at risk along the eastern boundary of the site increases in extent in the medium risk event +45% climate change, with maximum depths of between 0.6 and 0.9 m, with an additional shallow flow path within the south of the site.

Based on available information, safe access and escape routes should be achievable via the B6144 to the south of the site.

Table 2-28: Existing surface water flood risk within H694 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	3	1	1

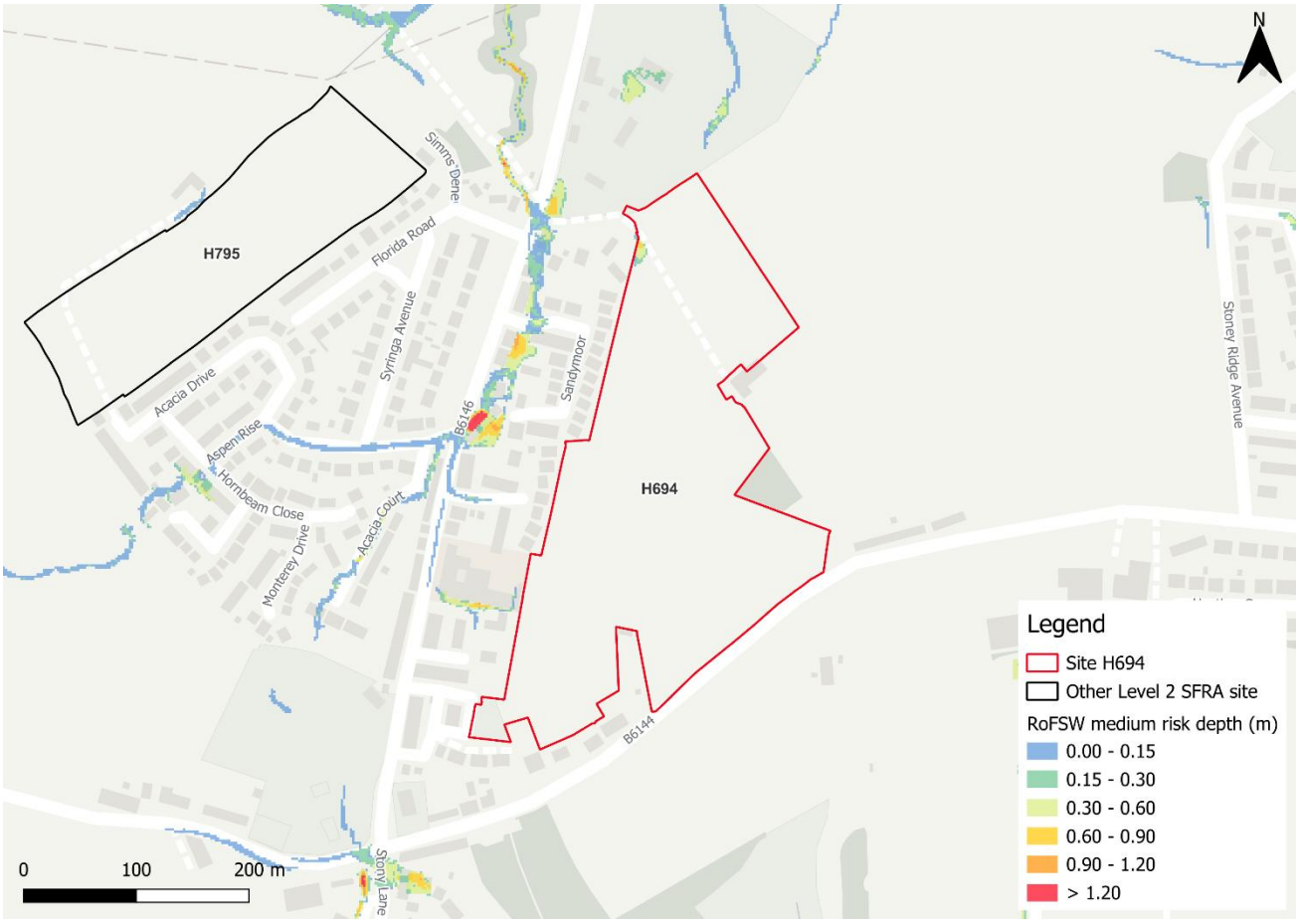


Figure 2-67: Medium risk event surface water flood depths within H694 (Risk of Flooding from Surface Water)

2.28.3 Groundwater

Within the east of the site there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-68). Groundwater conditions should be investigated further as part of a site-specific FRA. Across the rest of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas.

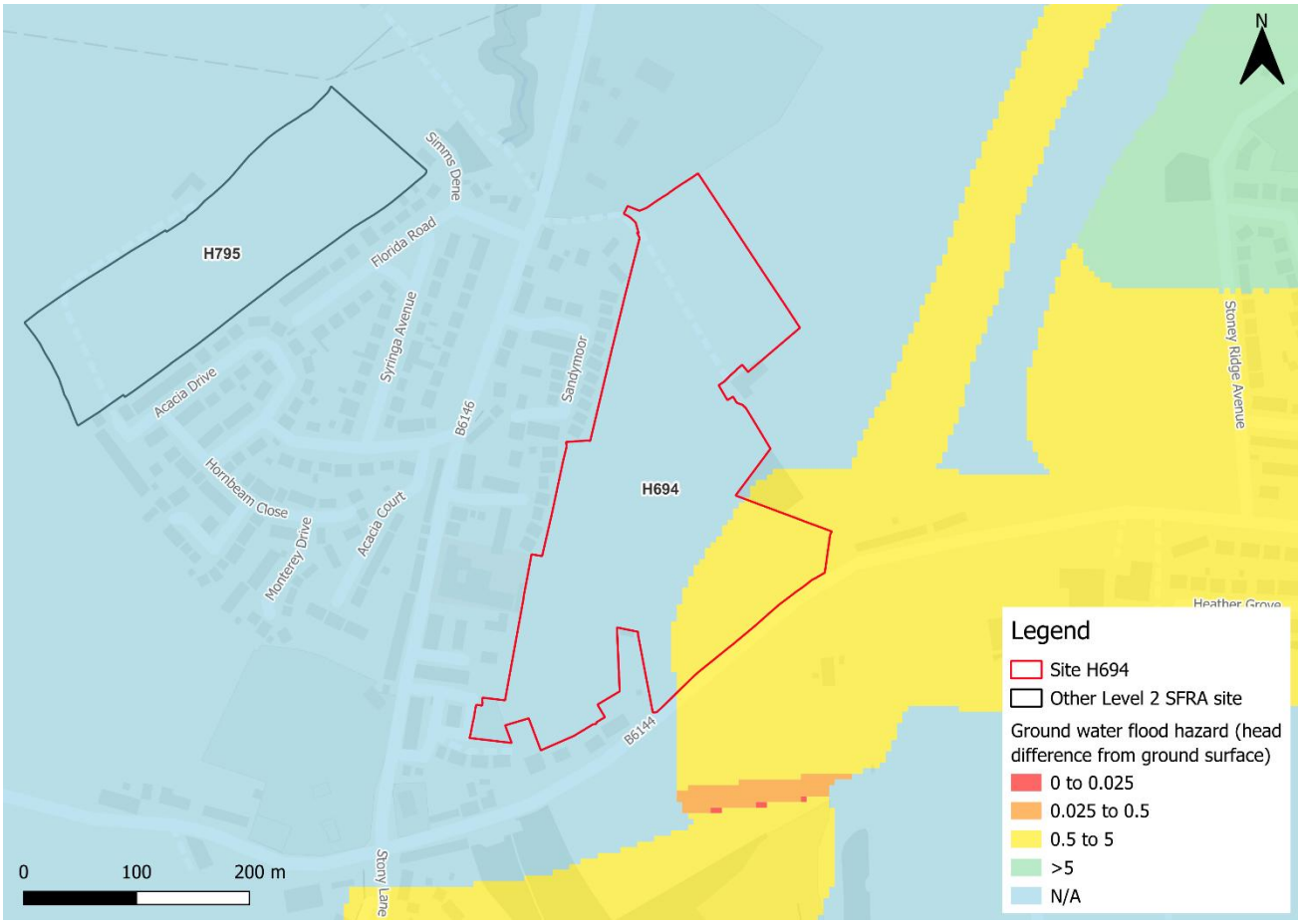


Figure 2-68: JBA 5m Groundwater Emergence Map (H694)

2.28.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.29 H699

Site summary (Figure 2-69)	
Location	Ivy Lane
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	3.4 hectares



Figure 2-69: H699 site location boundary

2.29.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.29.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-29). Surface water risk is largely confined to an area of ponding in a topographic low spot within the north of the larger site parcel. There is an additional area of shallow ponding within the south of the larger site parcel. Maximum depths within the site in the medium risk event are > 1.2 m (Figure 2-70). The deep area of ponding within the larger site parcel develops into a flow path in the medium risk event +45% climate change, with maximum depths of > 1.2 m.

Based on available information, safe access and escape routes should be achievable via Ivy Lane to the southwest of the site.

Table 2-29: Existing surface water flood risk within H699 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
92	4	2	2

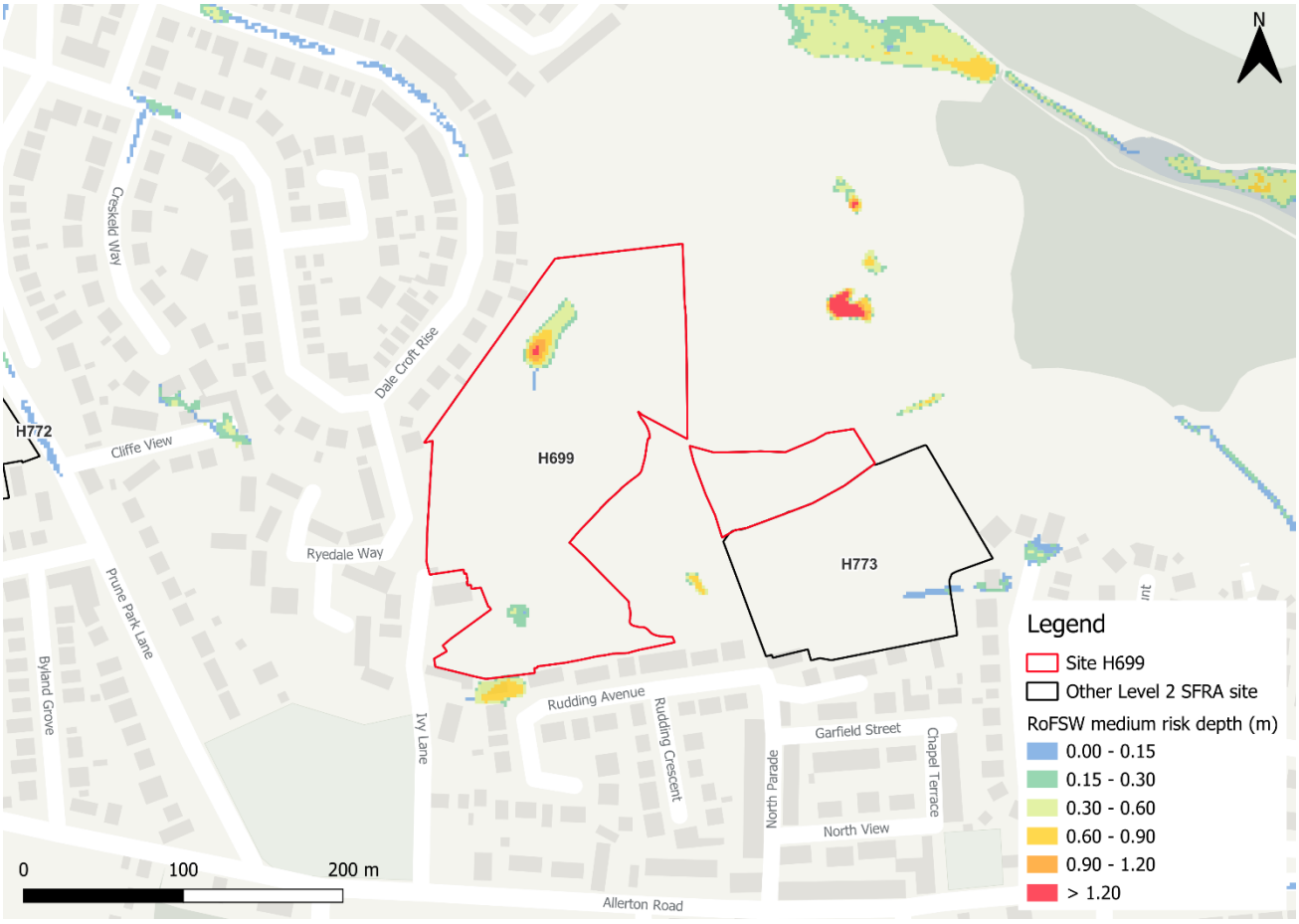


Figure 2-70: Medium risk event surface water flood depths within H699 (Risk of Flooding from Surface Water)

2.29.3 Groundwater

Almost the entirety of the larger site parcel, and the northern half of the smaller site parcel, are in an area where there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-71). Groundwater conditions should be investigated further as part of a site-specific FRA. Across the rest of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas

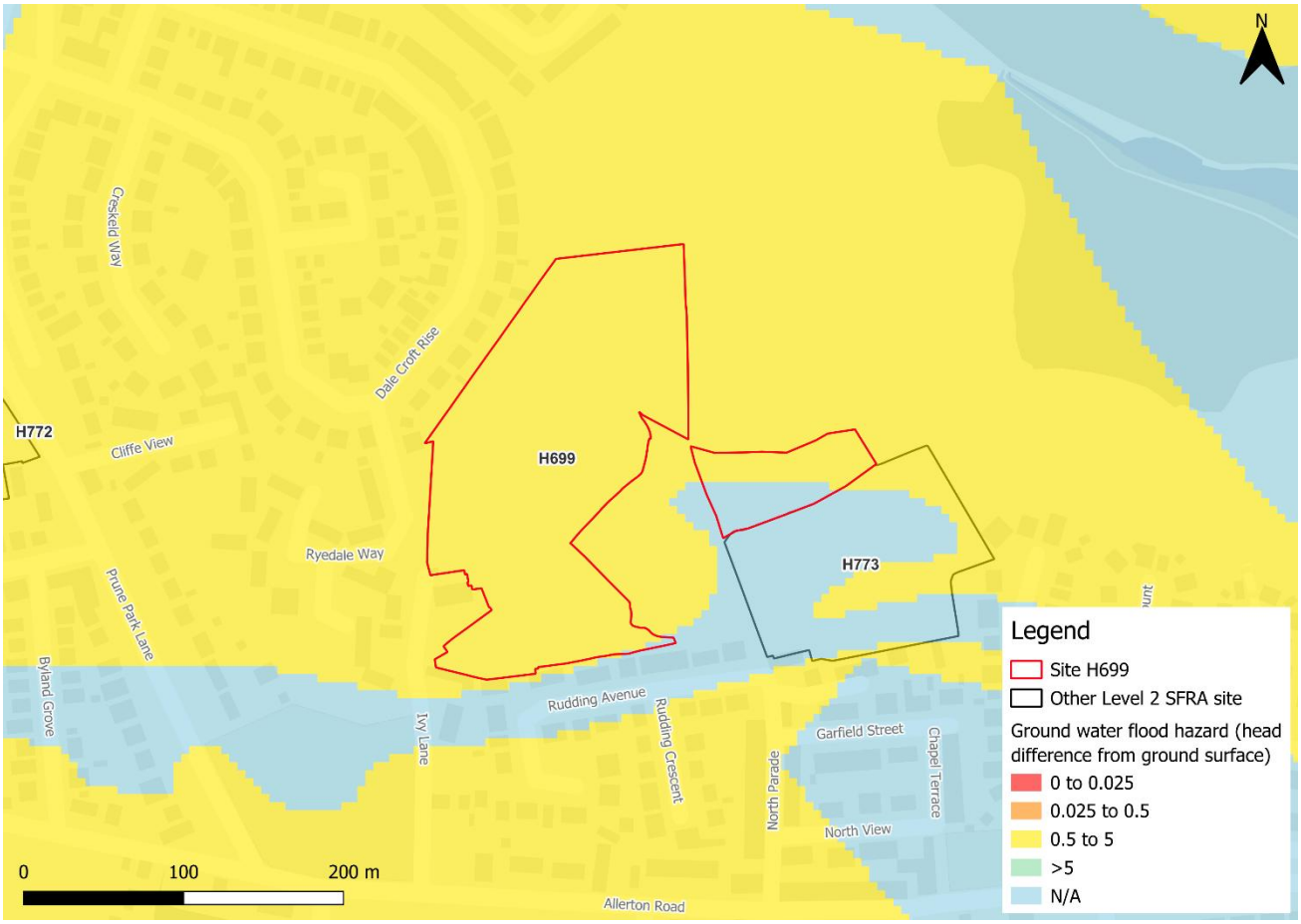


Figure 2-71: JBA 5m Groundwater Emergence Map (H699)

2.29.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.

- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Topographic flow routes and depressions should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.30 H704

Site summary (Figure 2-72)	
Location	Whitburn Way
Existing site use	Brownfield
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.4 hectares

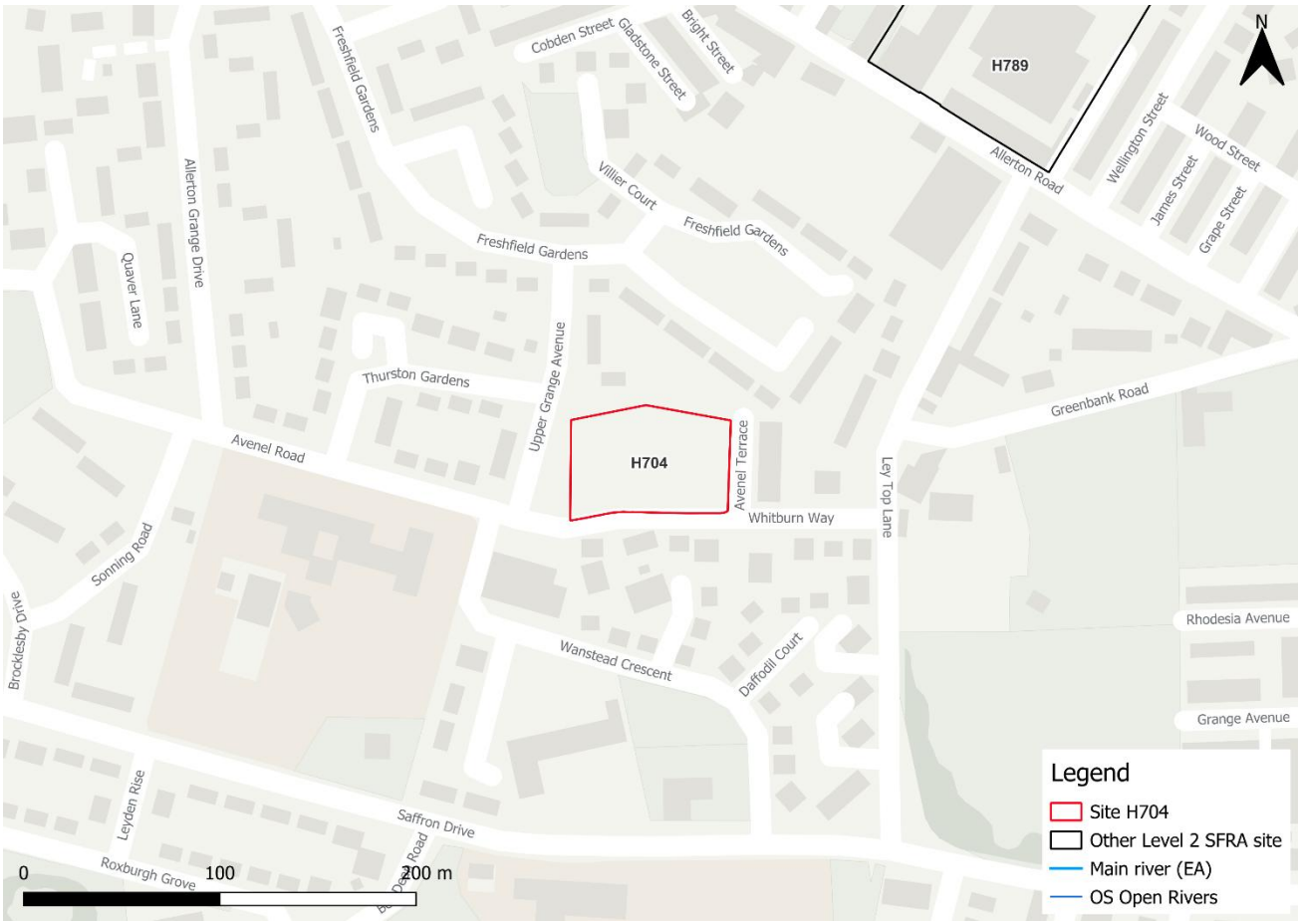


Figure 2-72: H704 site location boundary

2.30.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.30.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-30). Surface water risk is confined to a very small area along the southern boundary of the site in the medium risk event. In the low risk event, there is a small area of shallow ponding within the centre of the site. Maximum depths within the site in the low risk event are between 0.3 and 0.6 m (Figure 2-73). The area of ponding within the centre of the site increases in extent in the medium risk event +45% climate change, with maximum depths of between 0.3 and 0.6 m.

Based on available information, safe access and escape routes should be achievable via the Whitburn Way to the south of the site.

Table 2-30: Existing surface water flood risk within H704 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
96	3	1	0



Figure 2-73: Low risk event surface water flood depths within H704 (Risk of Flooding from Surface Water)

2.30.3 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.30.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.31 H772

Site summary (Figure 2-74)	
Location	Allerton Road, Prune Park Lane
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	6.2 hectares

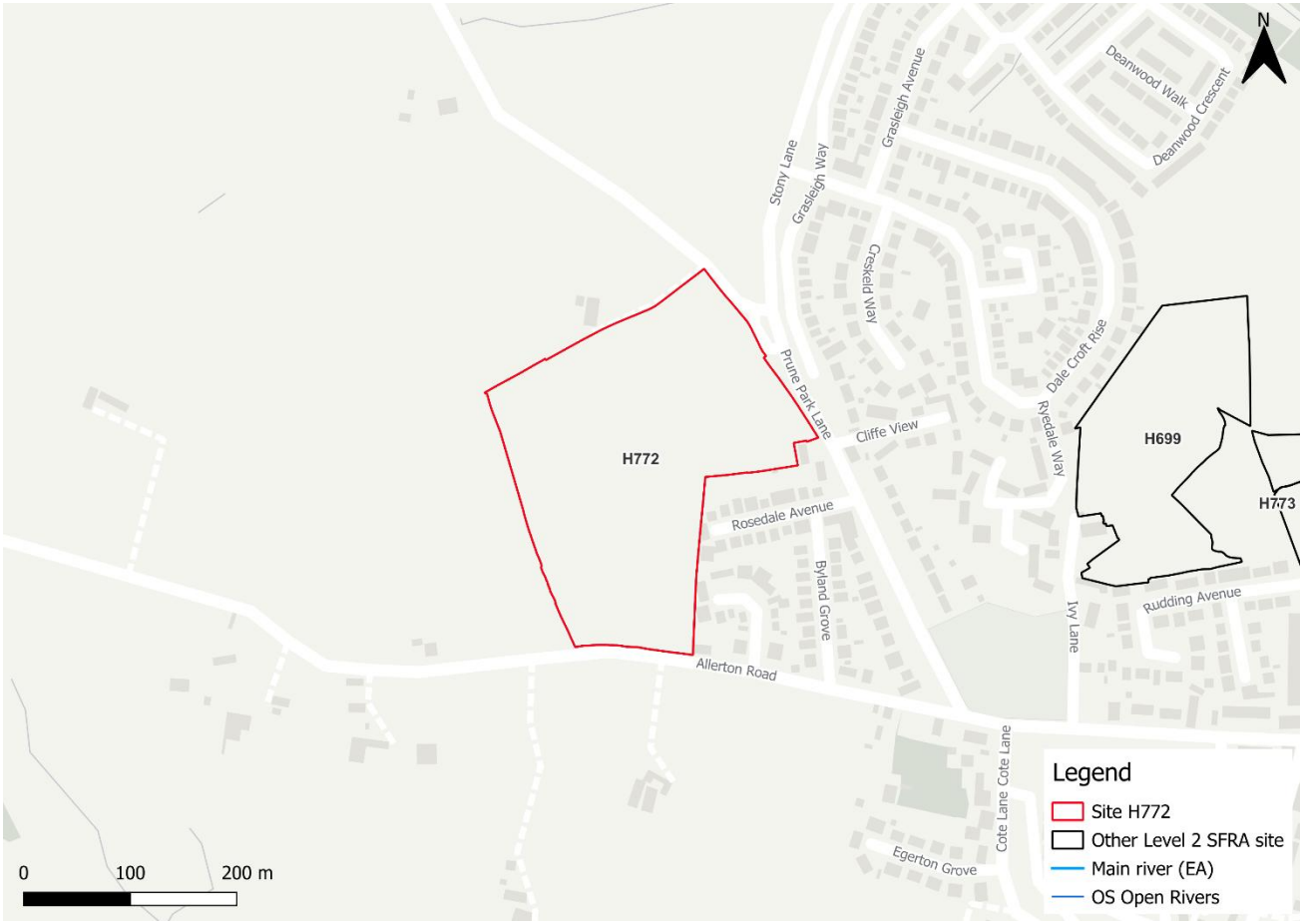


Figure 2-74: H772 site location boundary

2.31.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.31.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-31). Surface water risk is confined to the boundaries of the site in all events. Maximum depths within the site in the medium risk event are between 0.6 and 0.9 m (Figure 2-75). The area at risk along the boundaries increases in extent in the medium risk event +45% climate change, with some additional shallow flow paths within the north of the site and maximum depths of between 0.6 and 0.9 m.

Based on available information, safe access and escape routes should be achievable via Allerton Road to the south of the site.

Table 2-31: Existing surface water flood risk within H772 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
96	2	1	1



Figure 2-75: Medium risk event surface water flood depths within H772 (Risk of Flooding from Surface Water)

2.31.3 Groundwater

The majority of the site is in an area where there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-76).

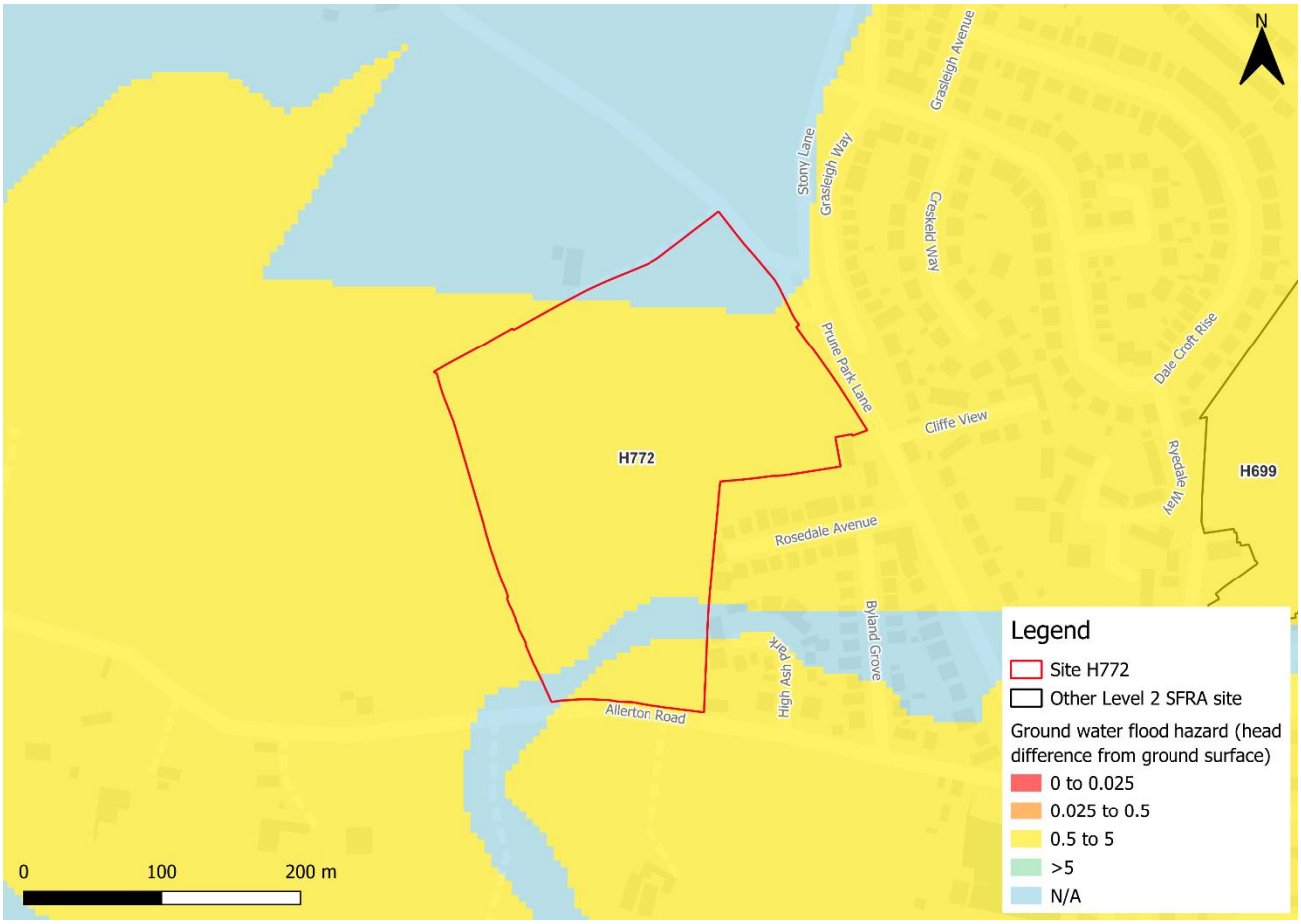


Figure 2-76: JBA 5m Groundwater Emergence Map (H772)

2.31.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.32 H773

Site summary (Figure 2-77)	
Location	North Parade, Allerton
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.4 hectares

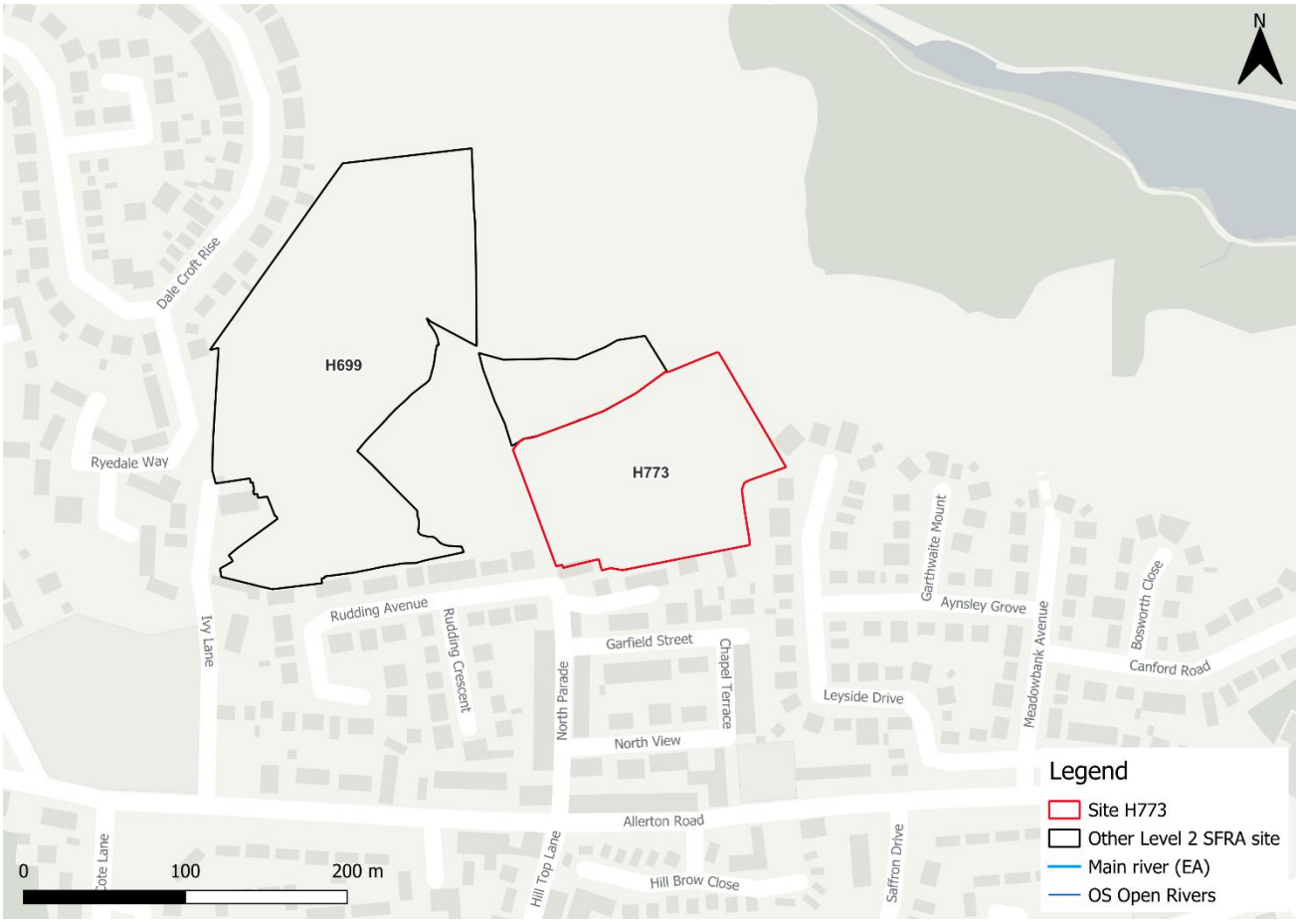


Figure 2-77: H773 site location boundary

2.32.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.32.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-32). Surface water risk is confined to a shallow flow path within the south of the site in all events. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-78). The area at risk within the south of the of the site develops into a shallow flow path extends through the south of the site in the medium risk event +45% climate change, with maximum depths of between 0.3 and 0.6 m.

Based on available information, safe access and escape routes should be achievable via North Parade to the south of the site.

Table 2-32: Existing surface water flood risk within H773 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
94	5	1	0

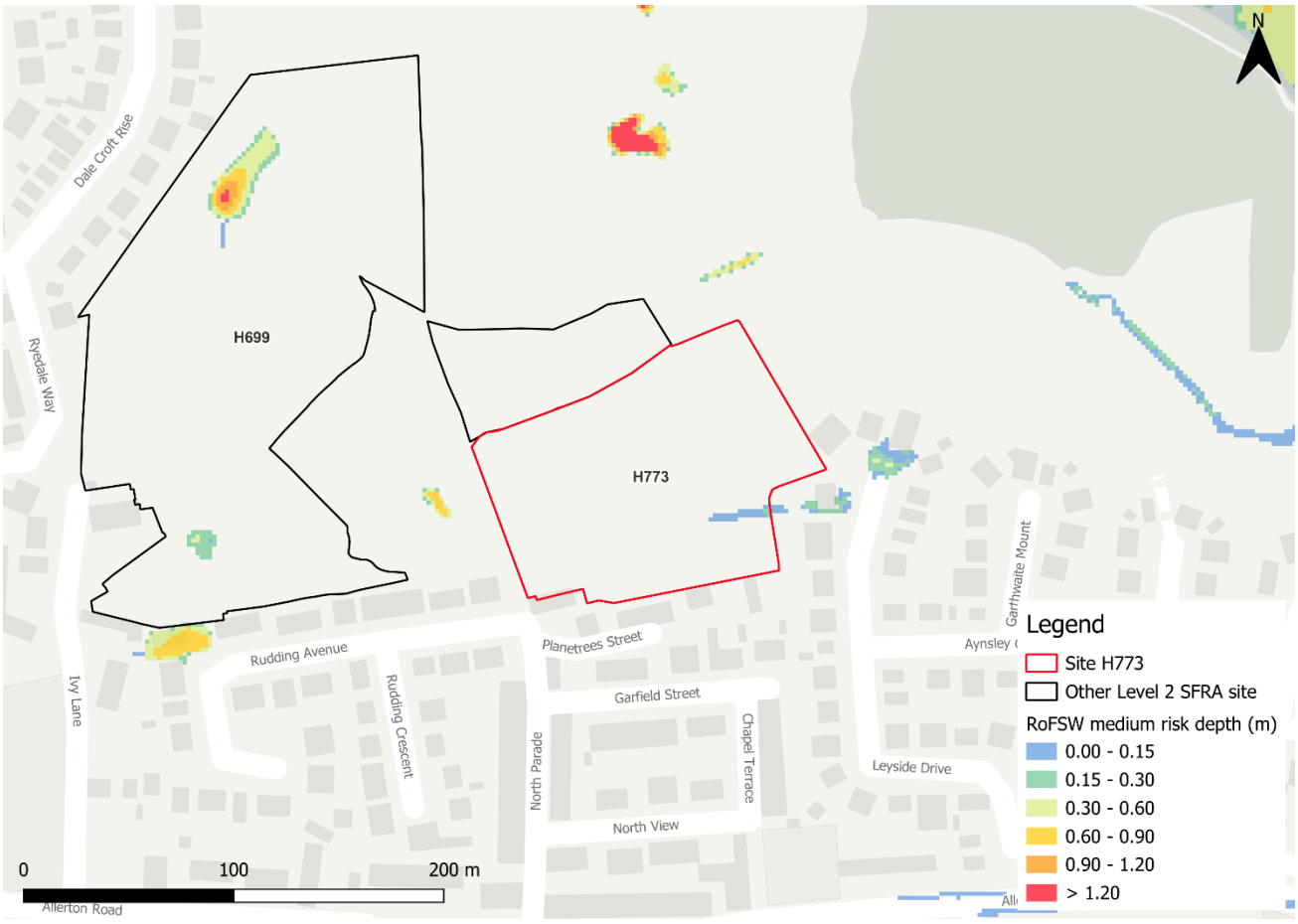


Figure 2-78: Medium risk event surface water flood depths within H773 (Risk of Flooding from Surface Water)

2.32.3 Groundwater

Within the majority of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these locations. Within the north east and some central areas of the site there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-79).

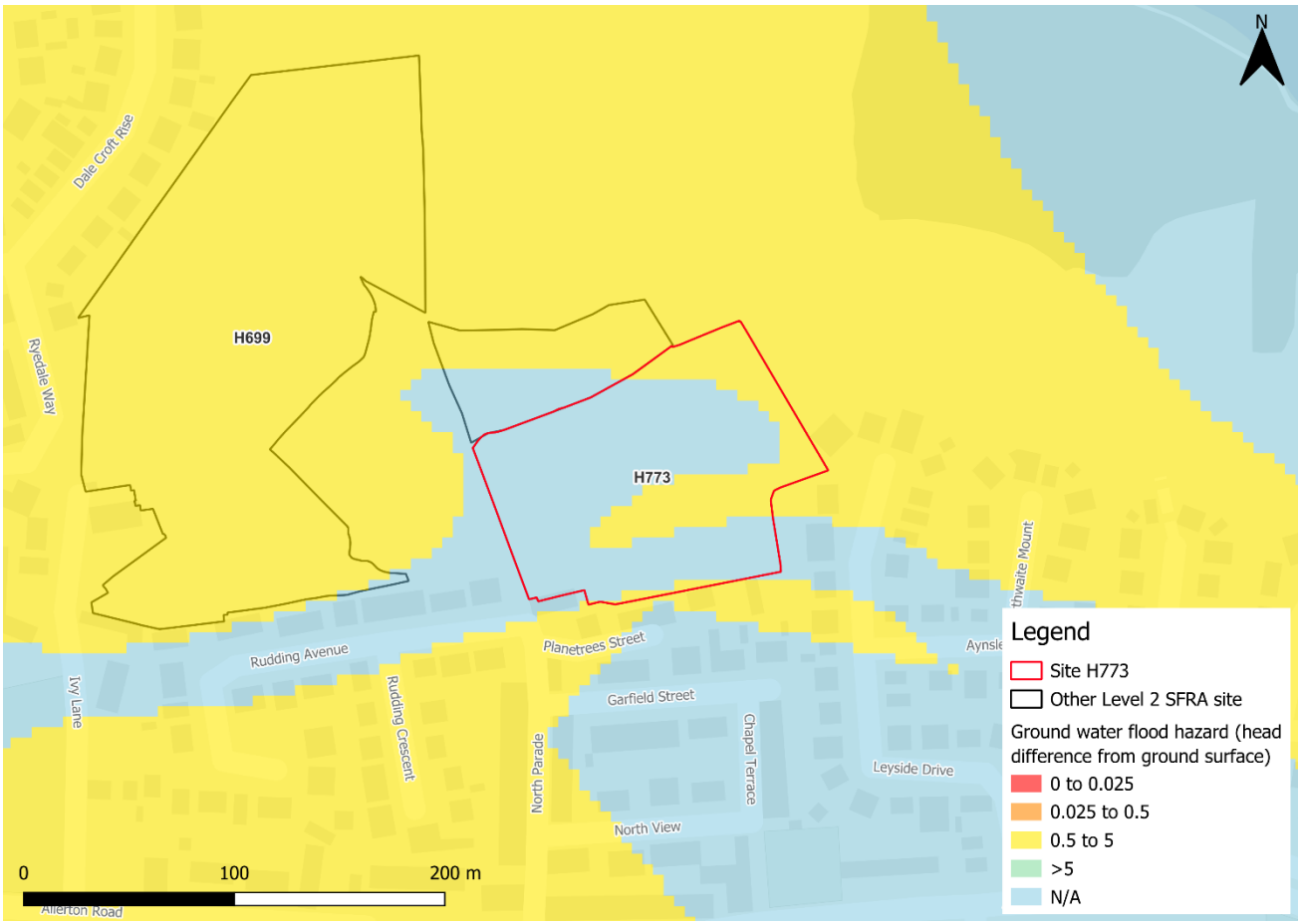


Figure 2-79: JBA 5m Groundwater Emergence Map (H773)

2.32.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Topographic flow routes should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.33 H776

Site summary (Figure 2-80)	
Location	Merrivale Road, Allerton
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.3 hectares

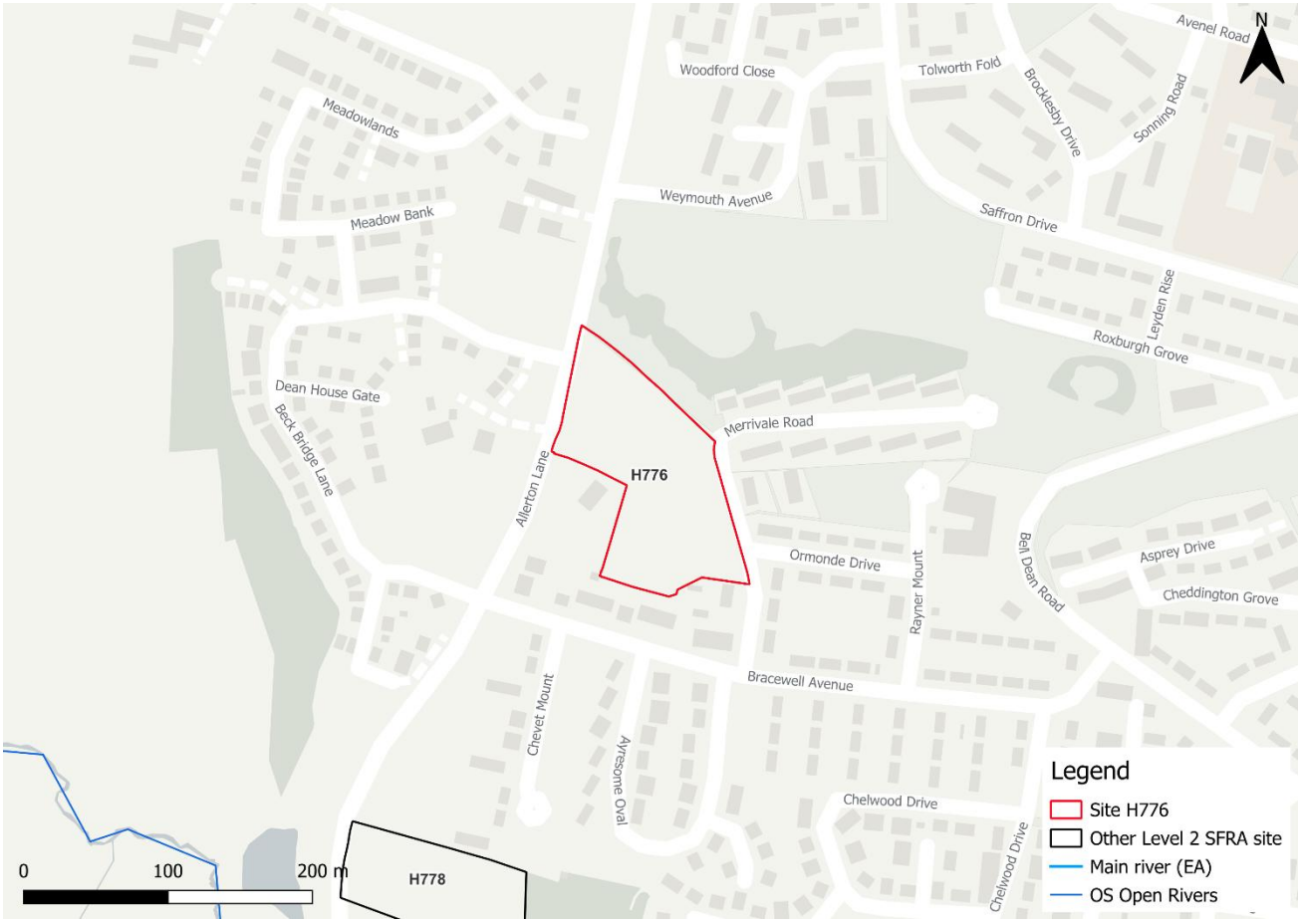


Figure 2-80: H776 site location boundary

2.33.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.33.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-33). Surface water risk is confined to the boundaries of the site in all events. Maximum depths within the site in the low risk event are < 0.15 m (Figure 2-81). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Allerton Lane to the west of the site given the shallow depths along this route.

Table 2-33: Existing surface water flood risk within H776 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	3	1	1

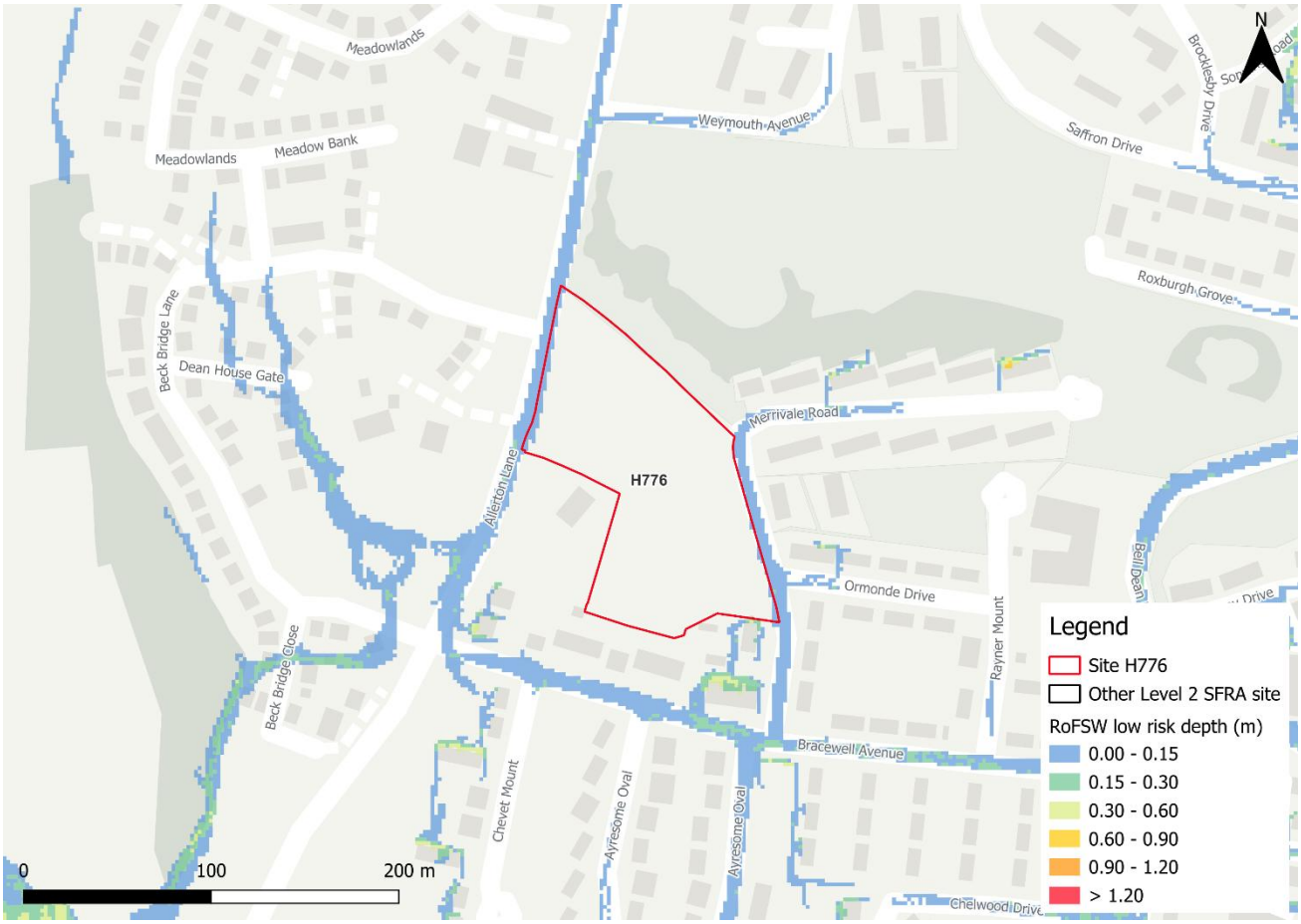


Figure 2-81: Low risk event surface water flood depths within H776 (Risk of Flooding from Surface Water)

2.33.3 Groundwater

Within the majority of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these locations. Within the north of the site there is a risk of groundwater emergence to both surface and subsurface assets

(Figure 2-82). Groundwater conditions in this area should be considered further as part of a site-specific FRA.

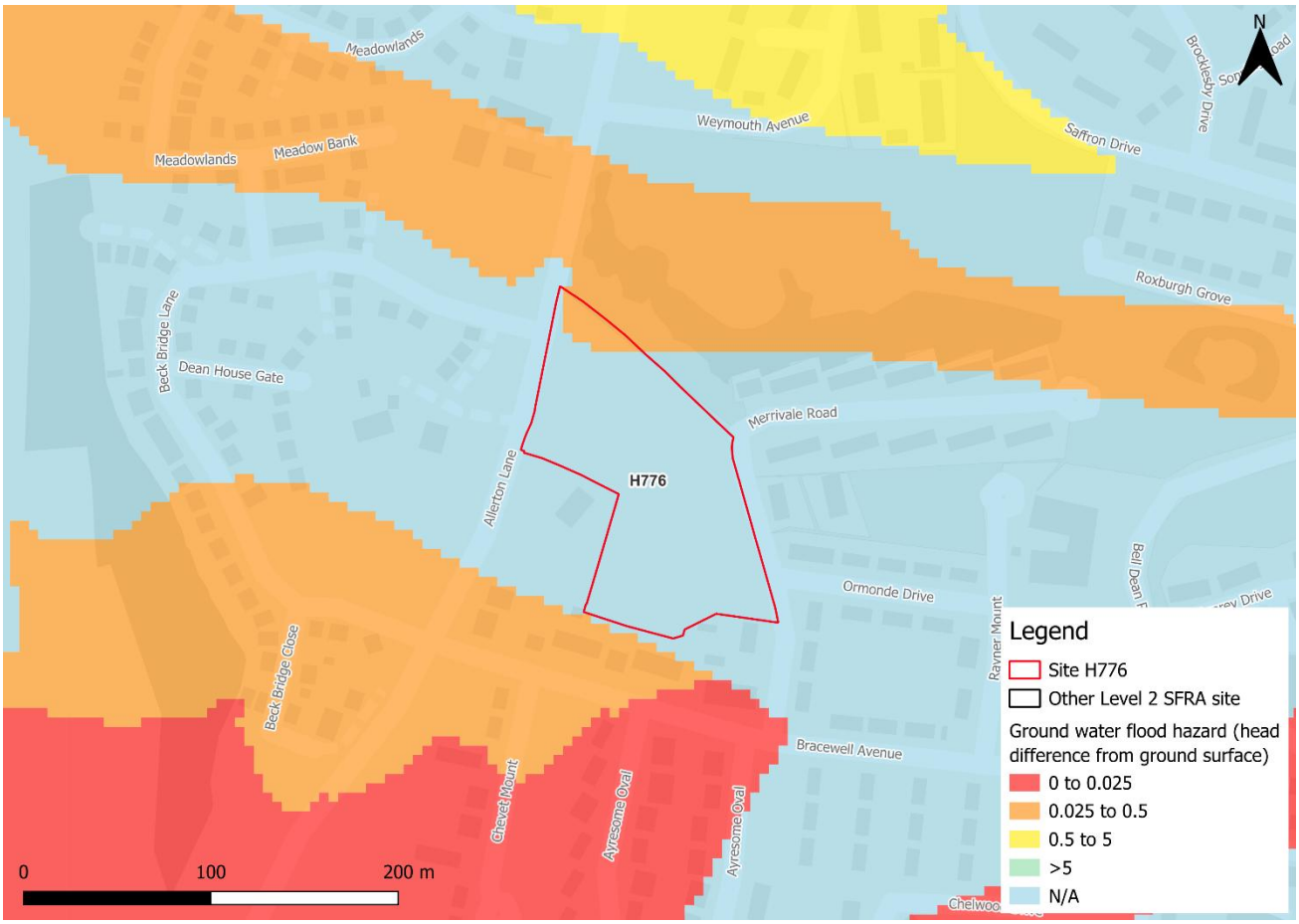


Figure 2-82: JBA 5m Groundwater Emergence Map (H776)

2.33.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions within the north of the site should be considered further as part of a site-specific FRA.

2.34 H778

Site summary (Figure 2-83)	
Location	Allerton Lane/Chevet Mount (2)
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.8 hectares



Figure 2-83: H778 site location boundary

2.34.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's Flood Map for Planning. Pitty Beck is an unmodelled watercourse located to the south of the site. Given the site is situated approximately 10m higher in elevation than the watercourse, it is unlikely to pose a fluvial risk to the site.

2.34.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-34). In all events, surface water risk is confined to an area of ponding within an area of lower elevation in the northeast of the site. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-84). This is consistent in location with the medium risk event +45% climate change, however maximum depths increase to between 0.6 and 0.9 m.

Based on available information, safe access and escape routes should be achievable via Allerton Lane to the west of the site.

Table 2-34: Existing surface water flood risk within H778 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	2	1	2

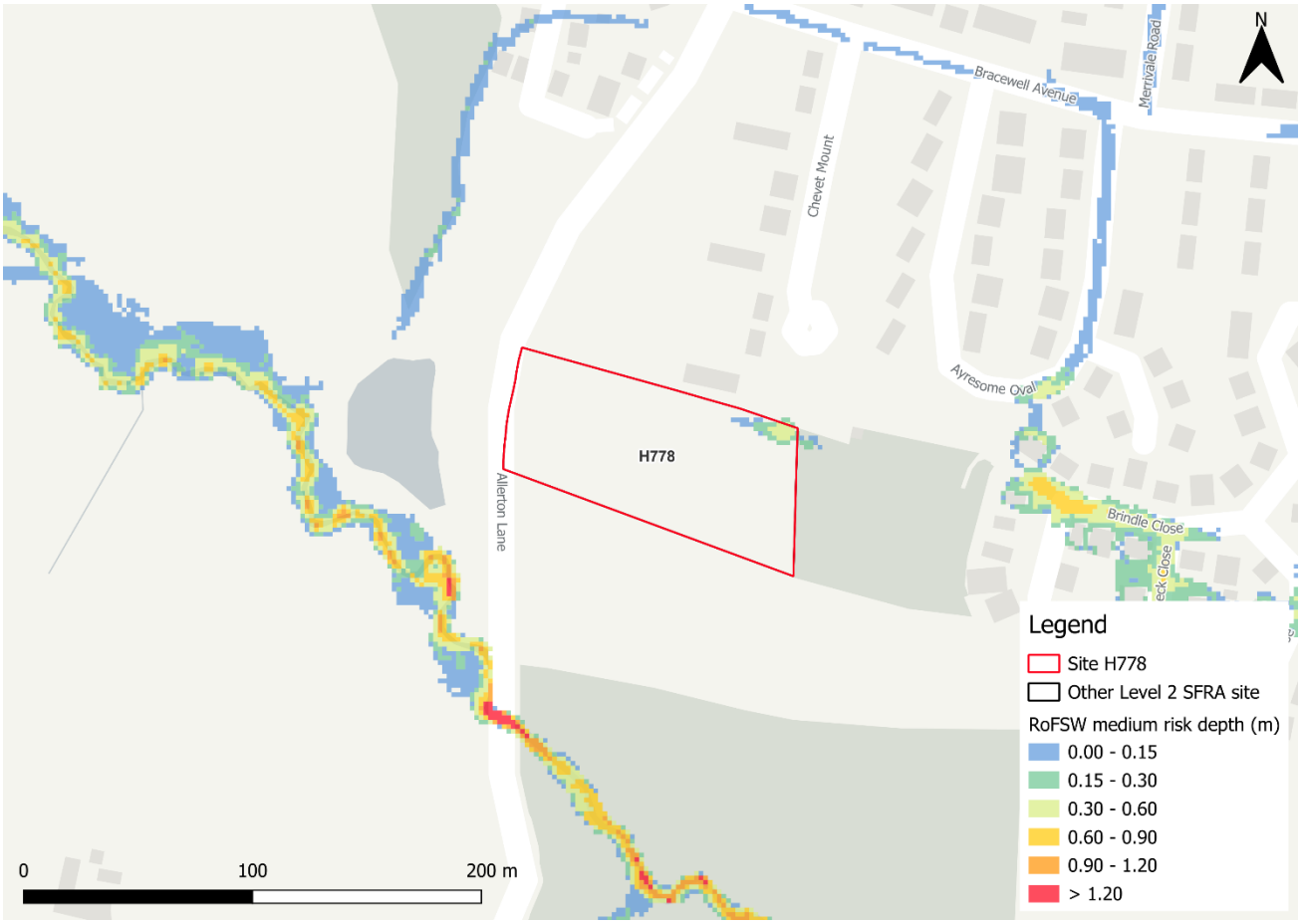


Figure 2-84: Medium risk event surface water flood depths within H778 (Risk of Flooding from Surface Water)

2.34.3 Groundwater

The entirety of the site is within an area where there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-85). Groundwater conditions in this area should be considered further as part of a site-specific FRA.

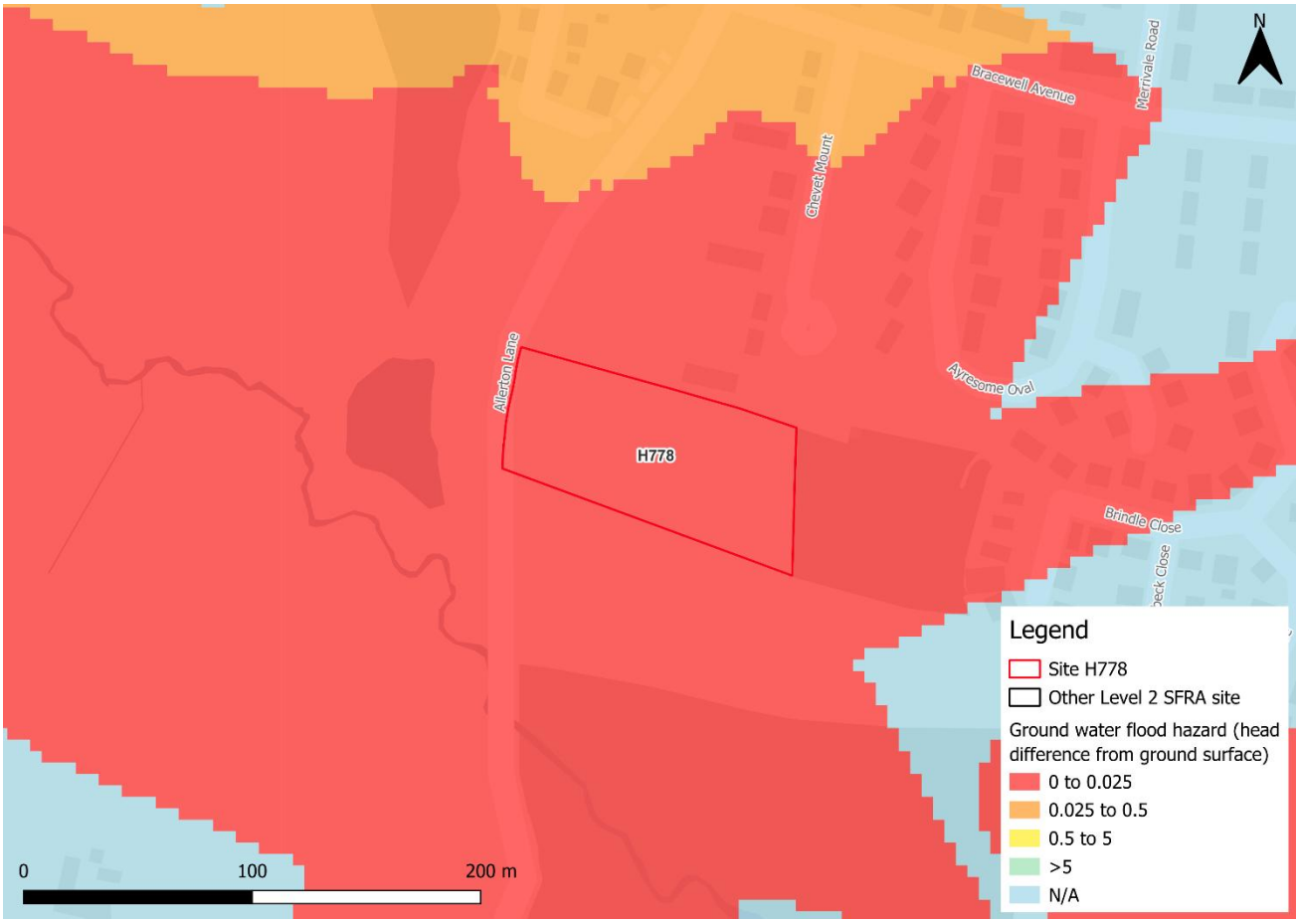


Figure 2-85: JBA 5m Groundwater Emergence Map (H778)

2.34.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions within the north of the site should be considered further as part of a site-specific FRA.

2.35 H779

Site summary (Figure 2-86)	
Location	Haworth Road, Playing fields, Heaton
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	5.6 hectares

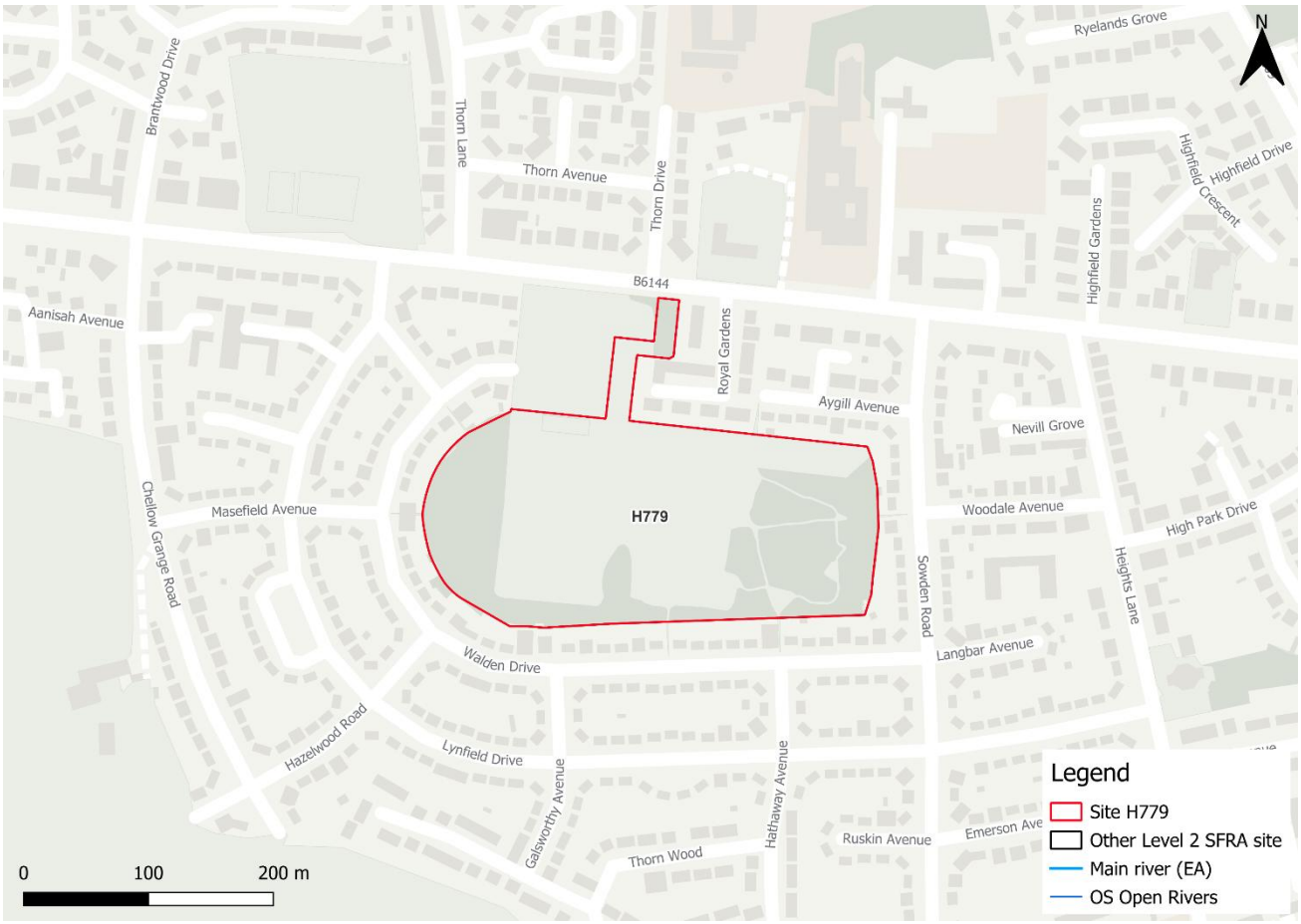


Figure 2-86: H779 site location boundary

2.35.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.35.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-35). In the medium risk event, surface water risk is confined to a flow path along the northern boundary and a small shallow area of ponding within the centre of the site. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-87). There is significantly greater surface water risk to the site in both the present day low risk event and the medium risk event +45% climate change (Figure 2-88). A flow path emerges from the southwest of the site flowing northwards and maximum depths remain between 0.3 and 0.6 m.

Based on available information, safe access and escape routes should be achievable via the B6144 to the north of the site.

Table 2-35: Existing surface water flood risk within H779 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
79	17	3	1

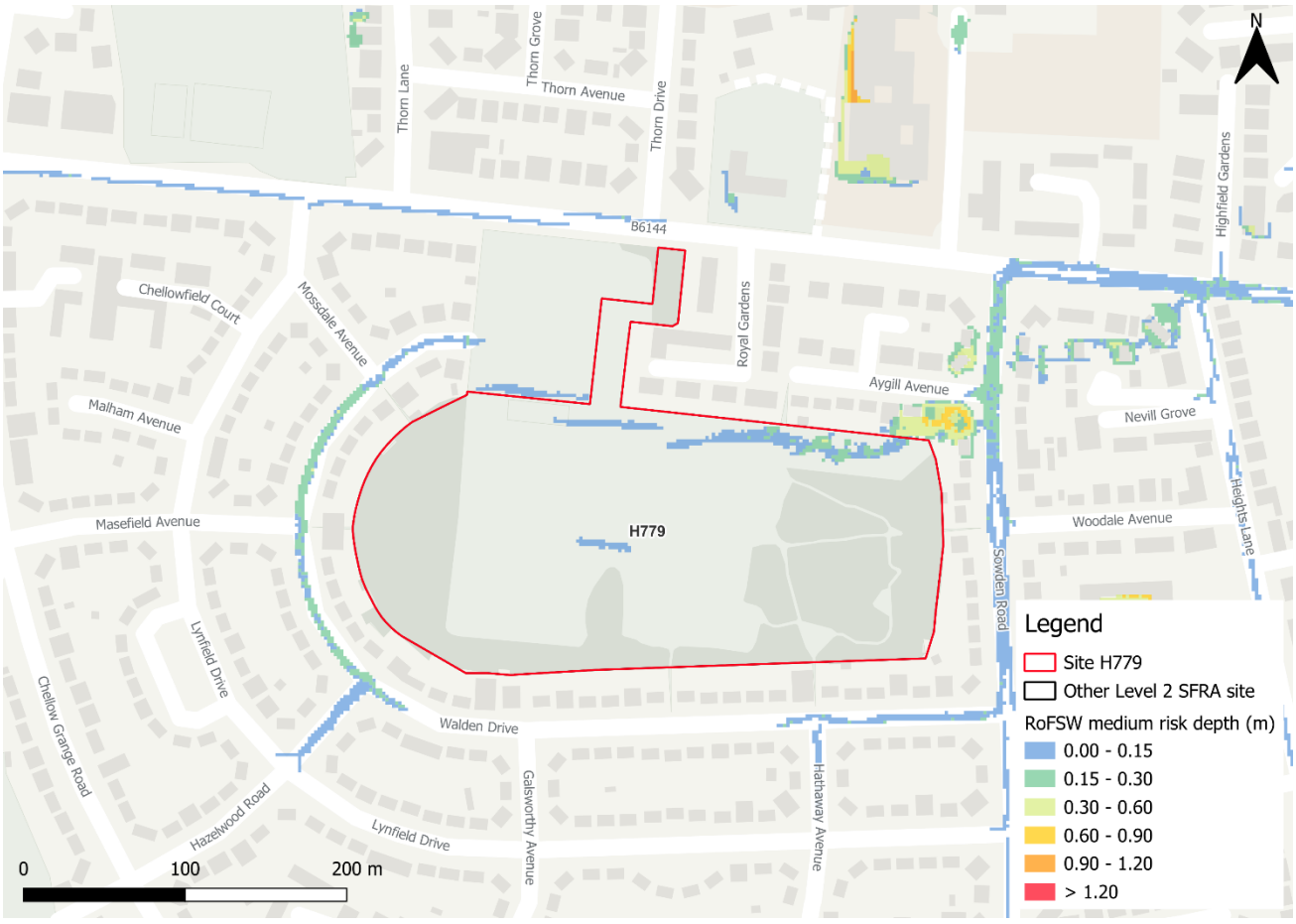


Figure 2-87: Medium risk event surface water flood depths within H779 (Risk of Flooding from Surface Water)

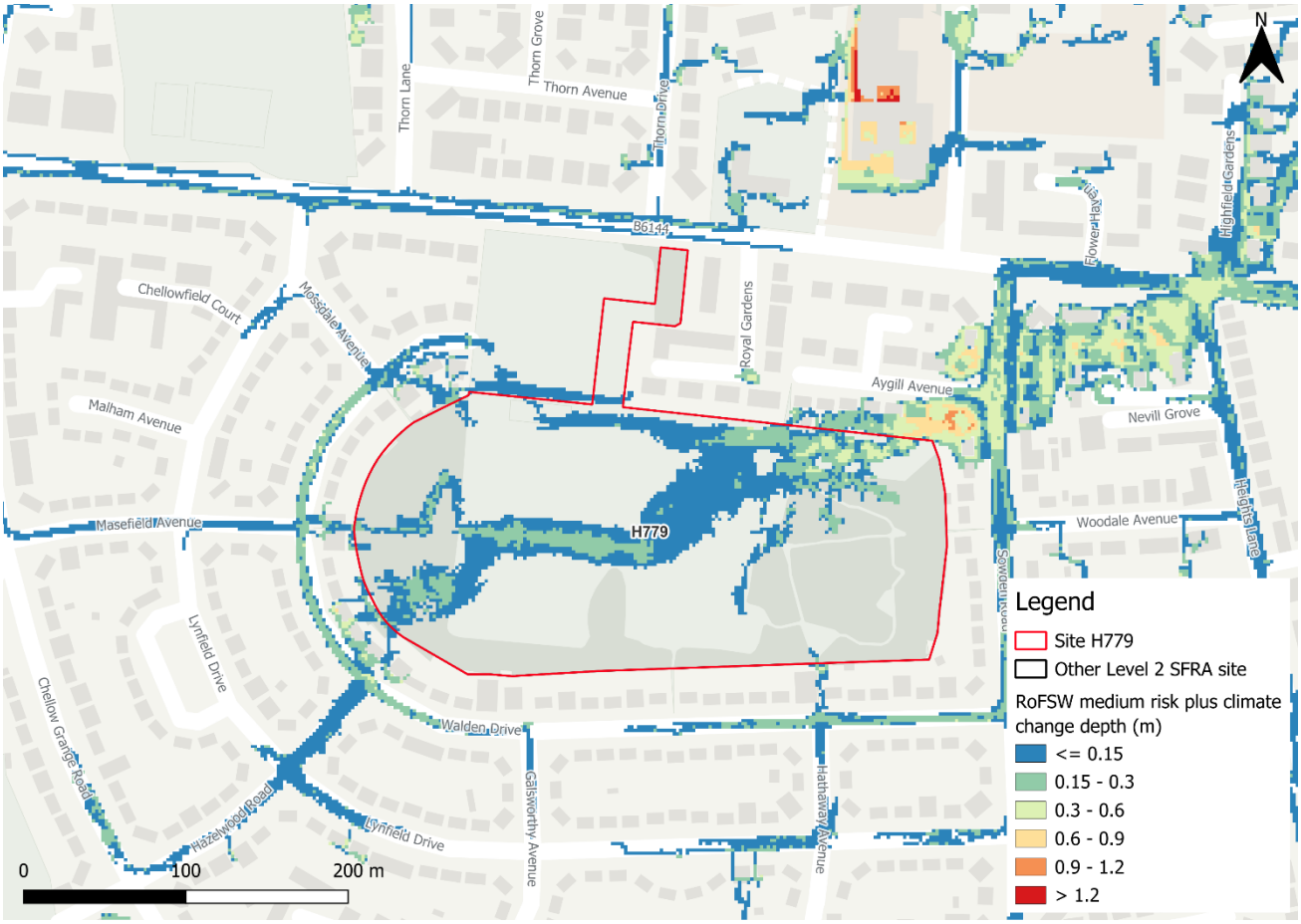


Figure 2-88: Medium risk event surface water flood depths plus 45% climate change within H779 (based on Risk of Flooding from Surface Water map)

2.35.3 Groundwater

Within the majority of the site there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-89). There is no risk of groundwater emergence within the southeast of the site. Groundwater conditions may therefore be suited to infiltration SuDS in these locations.

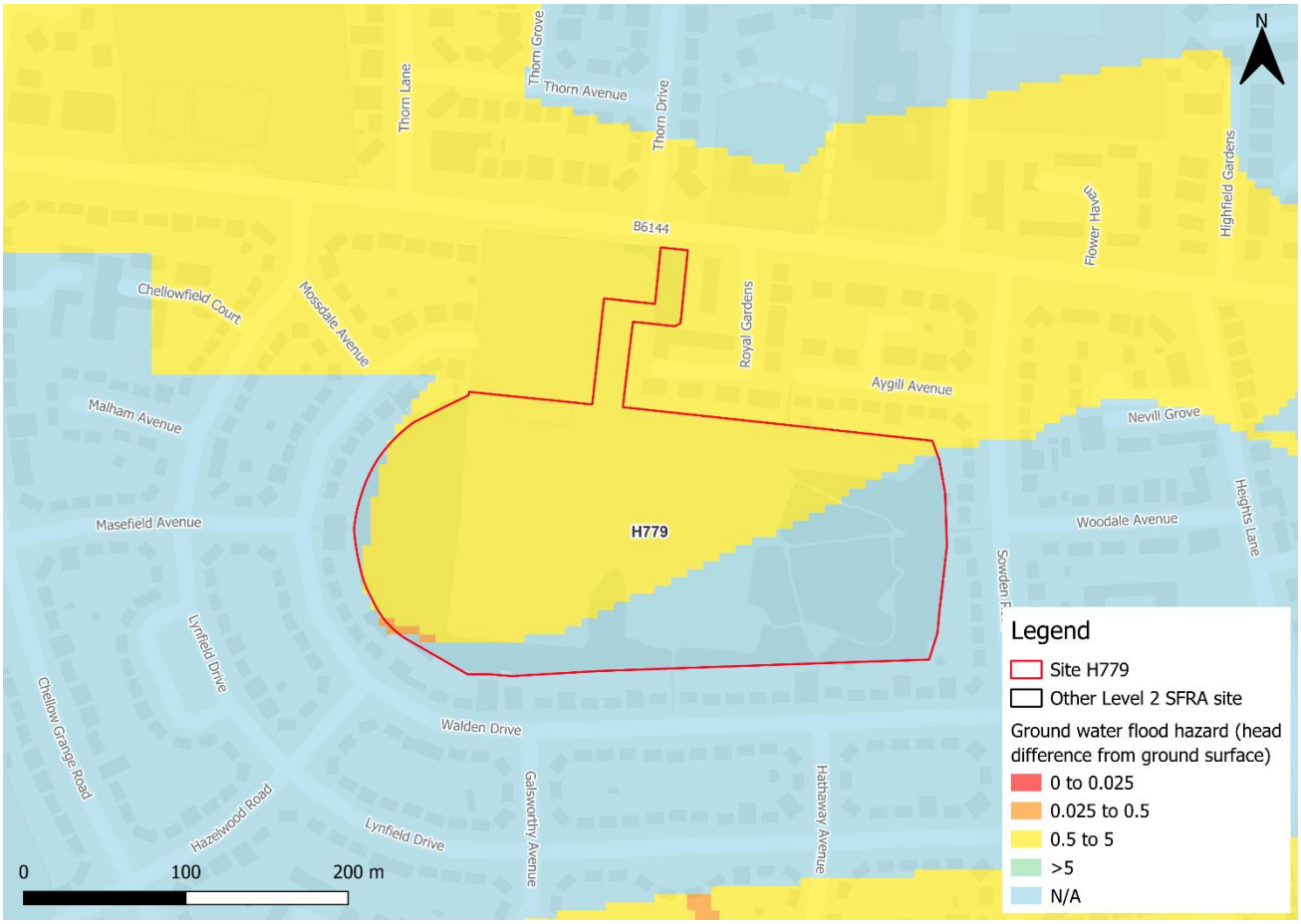


Figure 2-89: JBA 5m Groundwater Emergence Map (H779)

2.35.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial risk as a result of climate change.
- A significant flow path emerges through the centre of the site within the medium risk surface water event plus climate change. Topographic flow routes should be considered and included in site design and ideally left in place to flood naturally

when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.36 H780

Site summary (Figure 2-90)	
Location	Bingley Road/Long Lane, Heaton
Existing site use	Leisure
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	20.3 hectares

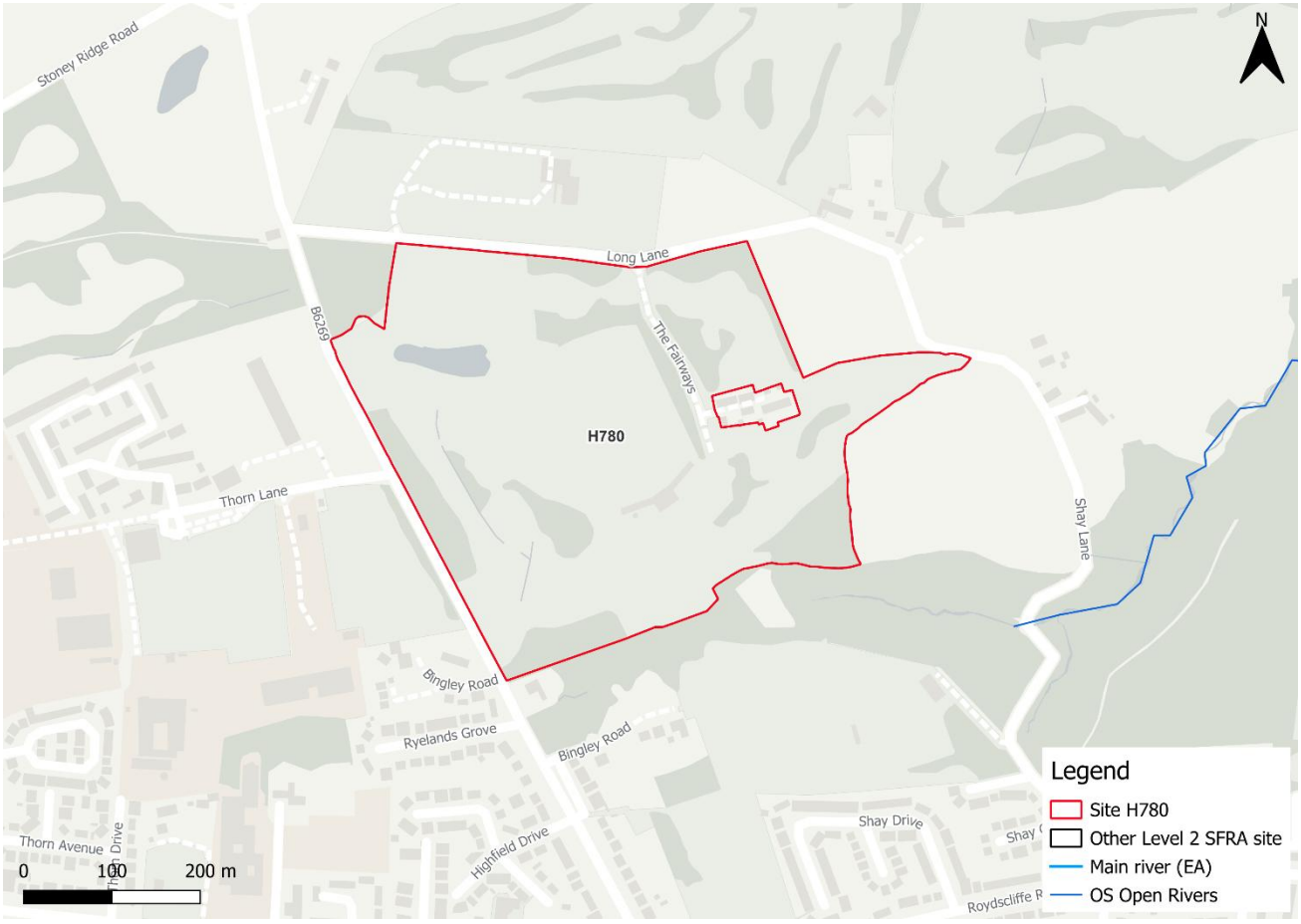


Figure 2-90: H780 site location boundary

2.36.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.36.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-36). Surface water risk in the medium risk event is confined to the southern boundary with some small areas of scattered ponding within topographic low spots across the site. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-91). The areas of ponding within the centre of the site increase in extent in the medium risk event +45% climate change, with some shallow flow paths emerging within the south of the site. Maximum depths remain between 0.3 and 0.6 m.

Based on available information, safe access and escape routes should be achievable via Long Lane to the north of the site.

Table 2-36: Existing surface water flood risk within H780 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
97	2	1	0

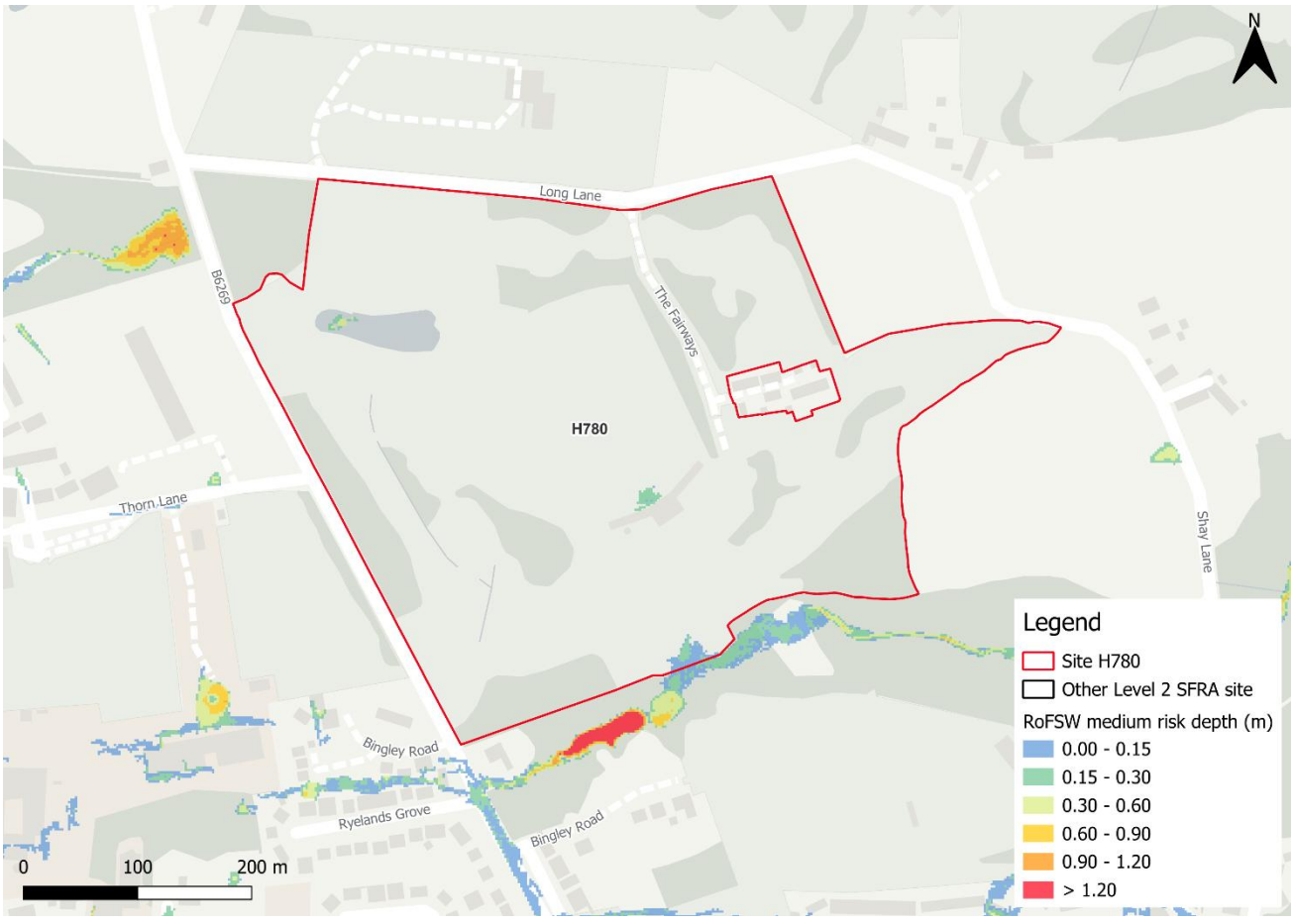


Figure 2-91: Medium risk event surface water flood depths within H780 (Risk of Flooding from Surface Water)

2.36.3 Groundwater

There is a small area within the south of the site where there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-92). Within the majority of the site, groundwater emergence is unlikely. There is no risk of groundwater emergence across the rest of the site. Groundwater conditions may therefore be suited to infiltration SuDS in these locations.

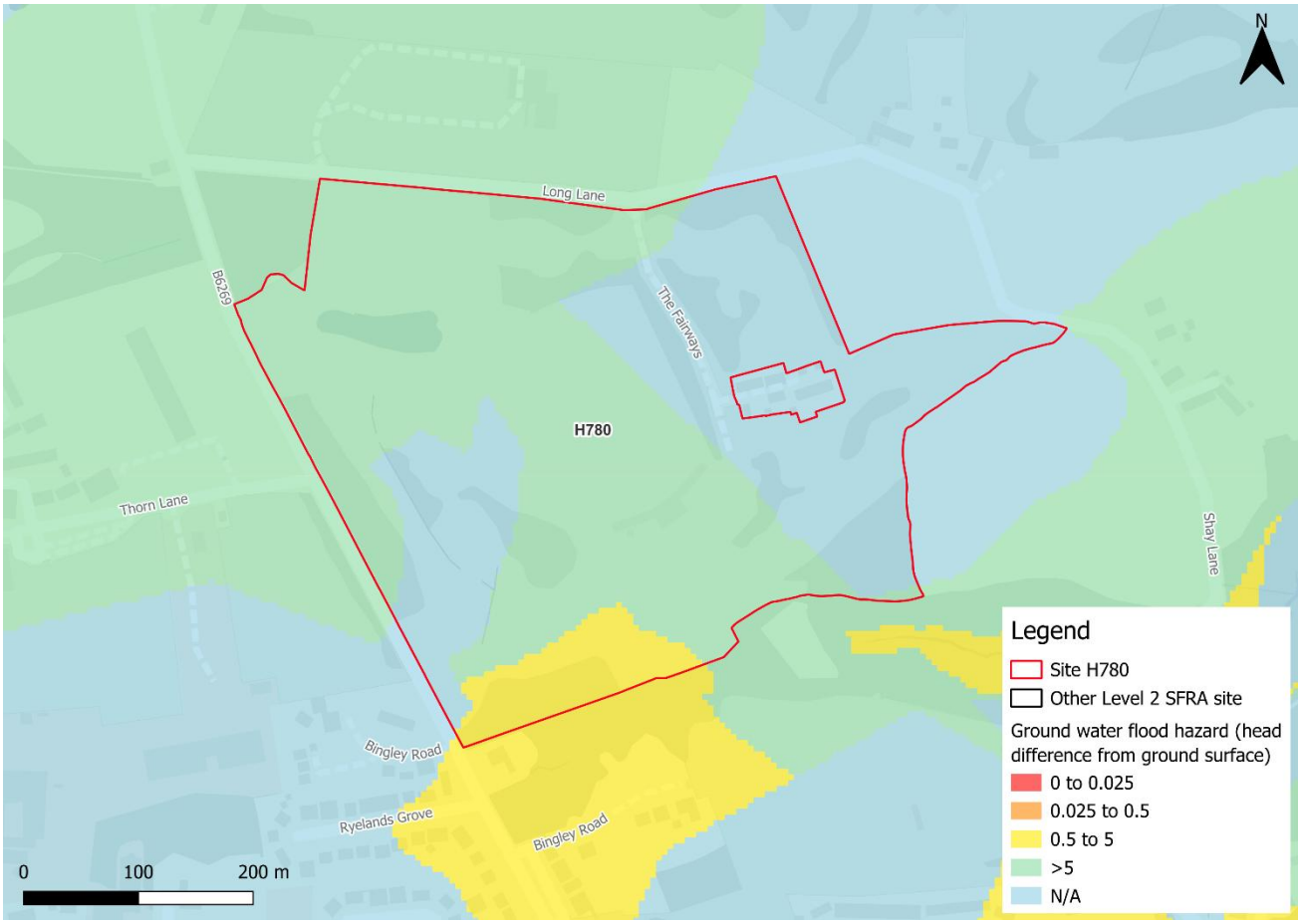


Figure 2-92: JBA 5m Groundwater Emergence Map (H780)

2.36.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.

- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.37 H782

Site summary (Figure 2-93)	
Location	Carlisle Road
Existing site use	Commercial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.1 hectares

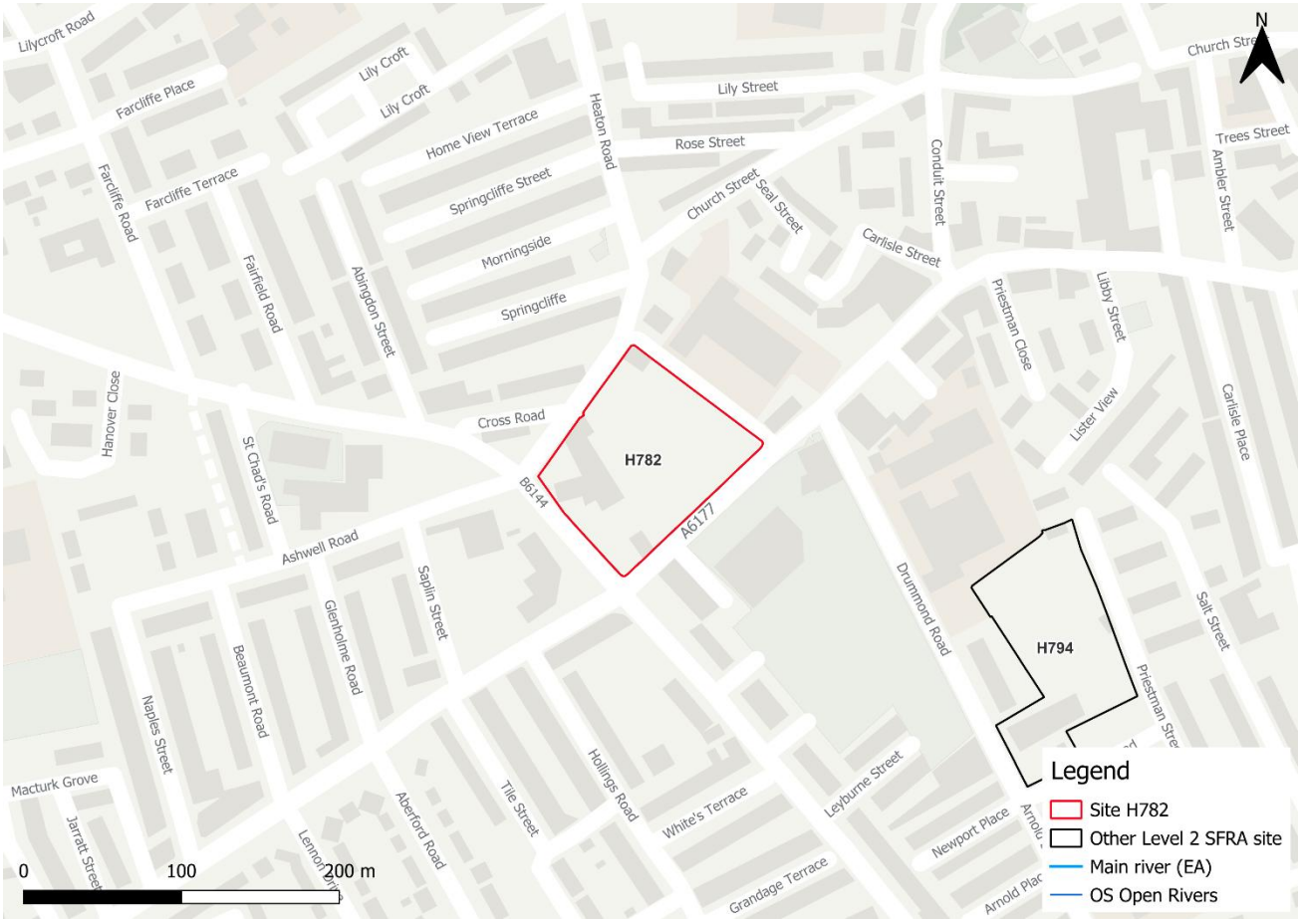


Figure 2-93: H782 site location boundary

2.37.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.37.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-37). Surface water risk in the medium risk event is confined to the west of the site and is constrained by the existing development within the site. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-94). The areas of ponding within the centre of the site increase slightly in extent in the medium risk event +45% climate change, with maximum depths of between 0.6 and 0.9 m.

Based on available information, safe access and escape routes should be achievable via Church Street to the north of the site.

Table 2-37: Existing surface water flood risk within H782 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	2	2	1



Figure 2-94: Medium risk event surface water flood depths within H782 (Risk of Flooding from Surface Water)

2.37.3 Groundwater

The entirety of the site is within an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.37.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Surface water risk is constrained by the area of existing development within the site. Any change in site layout where current buildings are to be demolished will require detailed surface water modelling.

2.38 H790

Site summary (Figure 2-95)	
Location	Lister Mill and Surrounds / Velvet Mill
Existing site use	Commercial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.9 hectares



Figure 2-95: H790 site location boundary

2.38.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.38.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-38). Surface water risk is confined to the boundaries of the site in all events. Maximum depths within the site in the low risk event are between 0.15 and 0.3 m (Figure 2-96). There are some small additional areas of scattered ponding within topographic low spots in the medium risk event +45% climate change, with maximum depths of between 0.15 and 0.3 m.

Based on available information, safe access and escape routes should be achievable via Heaton Road to the east of the site.

Table 2-38: Existing surface water flood risk within H790 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0

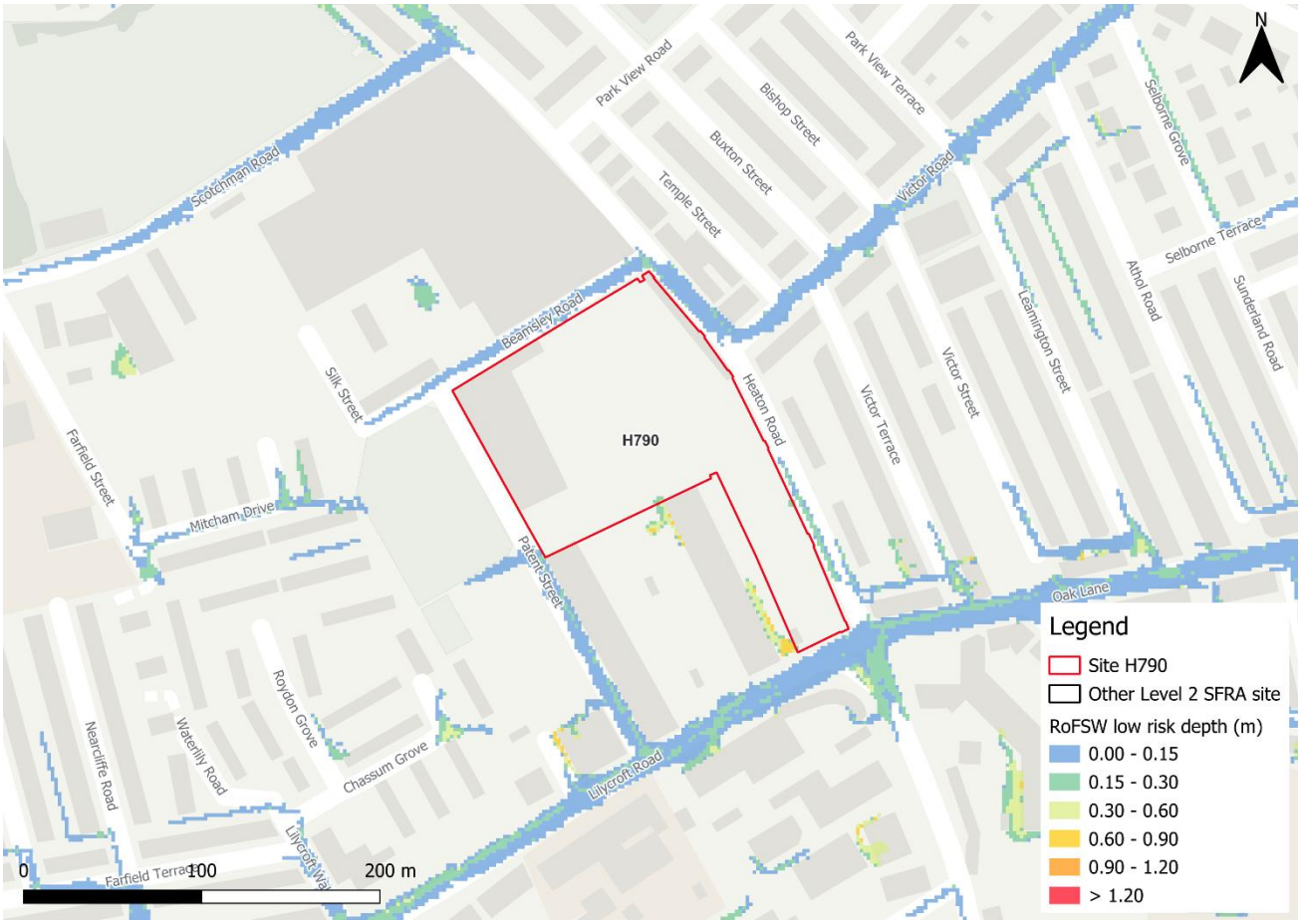


Figure 2-96: Low risk event surface water flood depths within H790 (Risk of Flooding from Surface Water)

2.38.3 Groundwater

Within the majority of the site there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-97). There is no risk

of groundwater emergence within the south of the site. Groundwater conditions may therefore be suited to infiltration SuDS in this location.

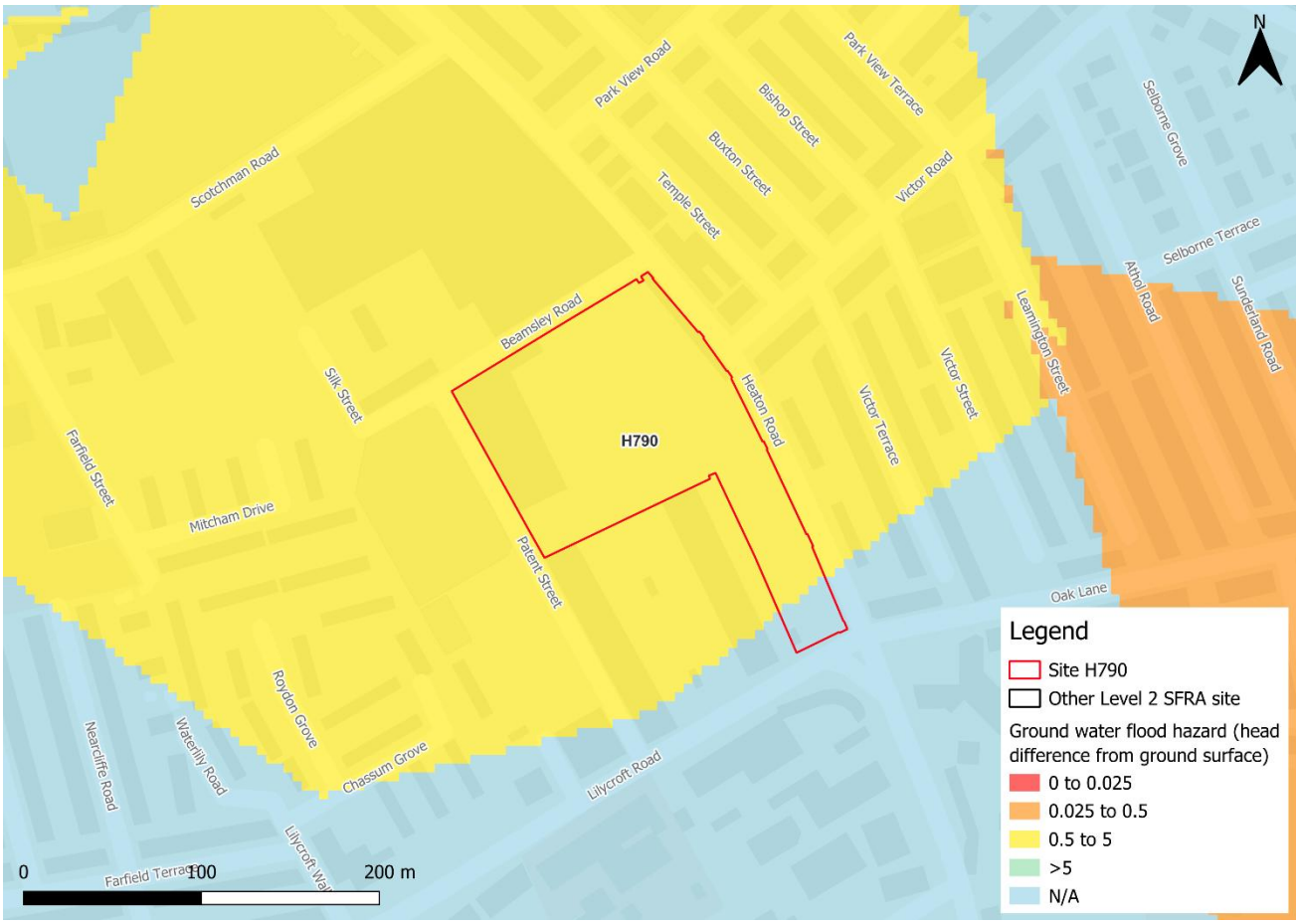


Figure 2-97: JBA 5m Groundwater Emergence Map (H790)

2.38.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.39 H794

Site summary (Figure 2-98)	
Location	Priestman Street
Existing site use	Commercial
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.9 hectares

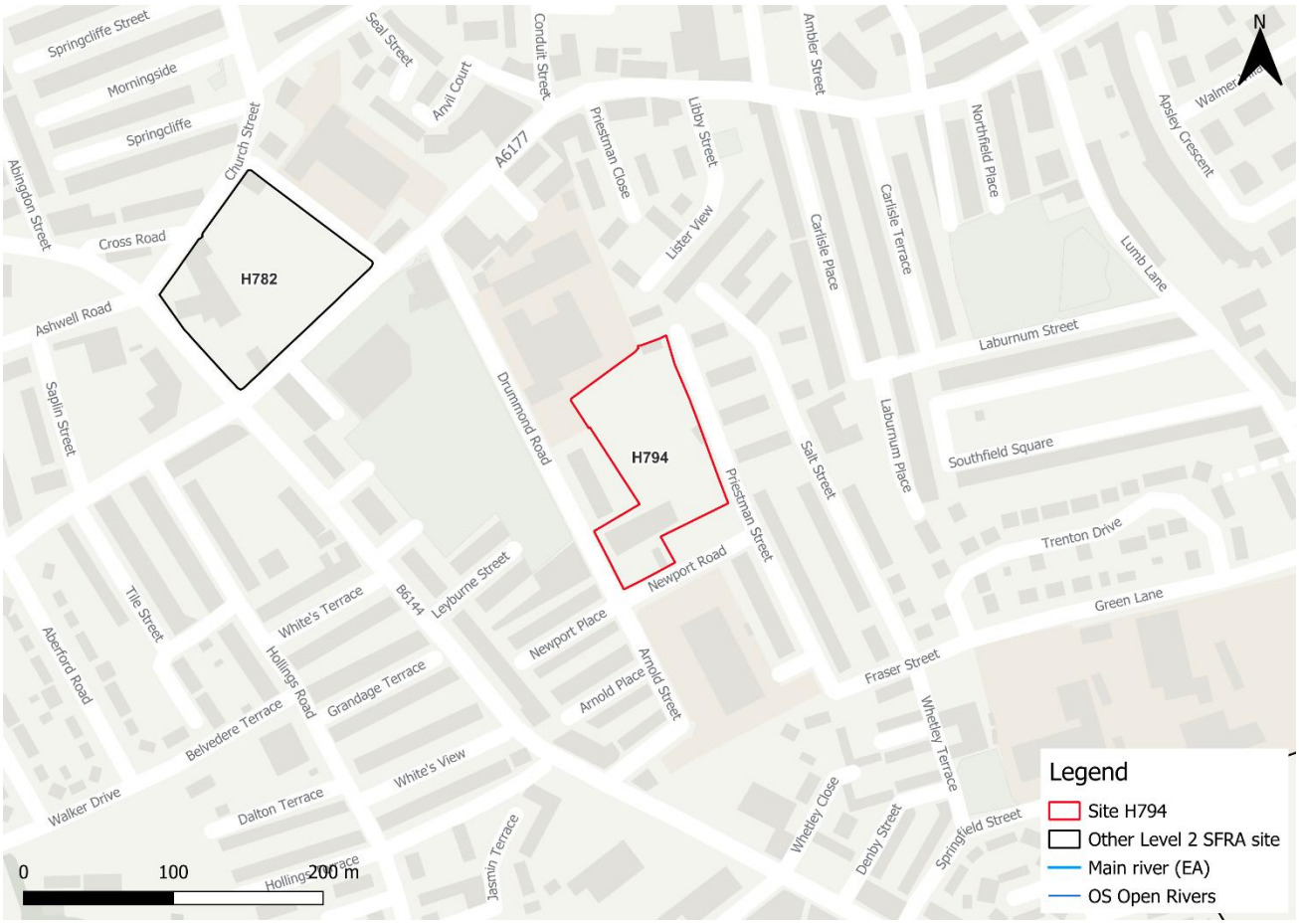


Figure 2-98: H794 site location boundary

2.39.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.39.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-39). Surface water risk in all events is confined to the west of the site and is constrained by the existing development within the site. Maximum depths within the site in the medium risk event are between 0.6 and 0.9 m (Figure 2-99). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Drummond Road to the west of the site given the shallow depths along this route.

Table 2-39: Existing surface water flood risk within H794 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
97	1	2	0

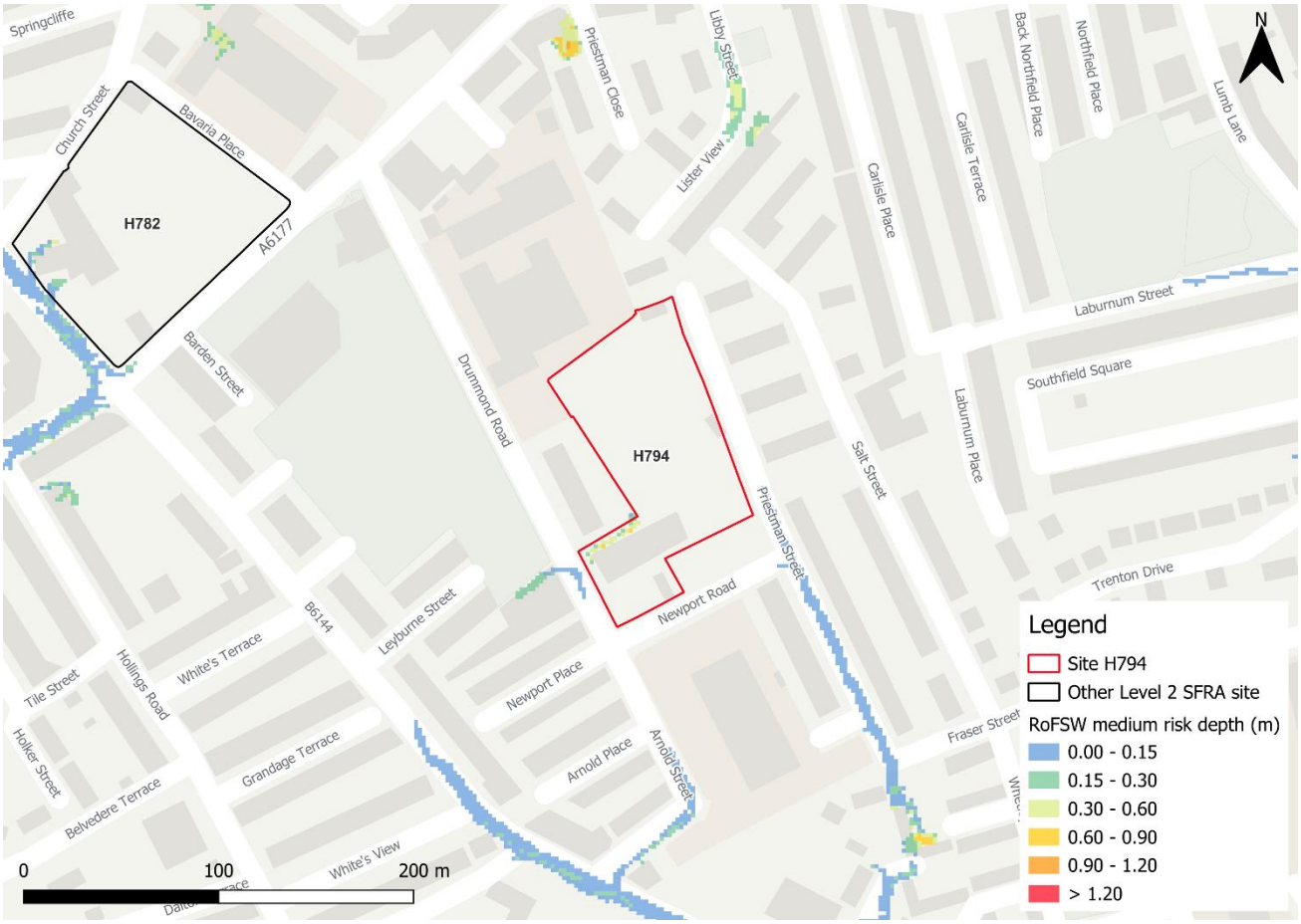


Figure 2-99: Medium risk event surface water flood depths within H794 (Risk of Flooding from Surface Water)

2.39.3 Groundwater

The entirety of the site is within an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.39.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Surface water risk is constrained by the area of existing development within the site. Any change in site layout where current buildings are to be demolished will require detailed surface water modelling.

2.40 H795

Site summary (Figure 2-100)	
Location	Acacia Drive, Sandy Lane
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	3.7 hectares

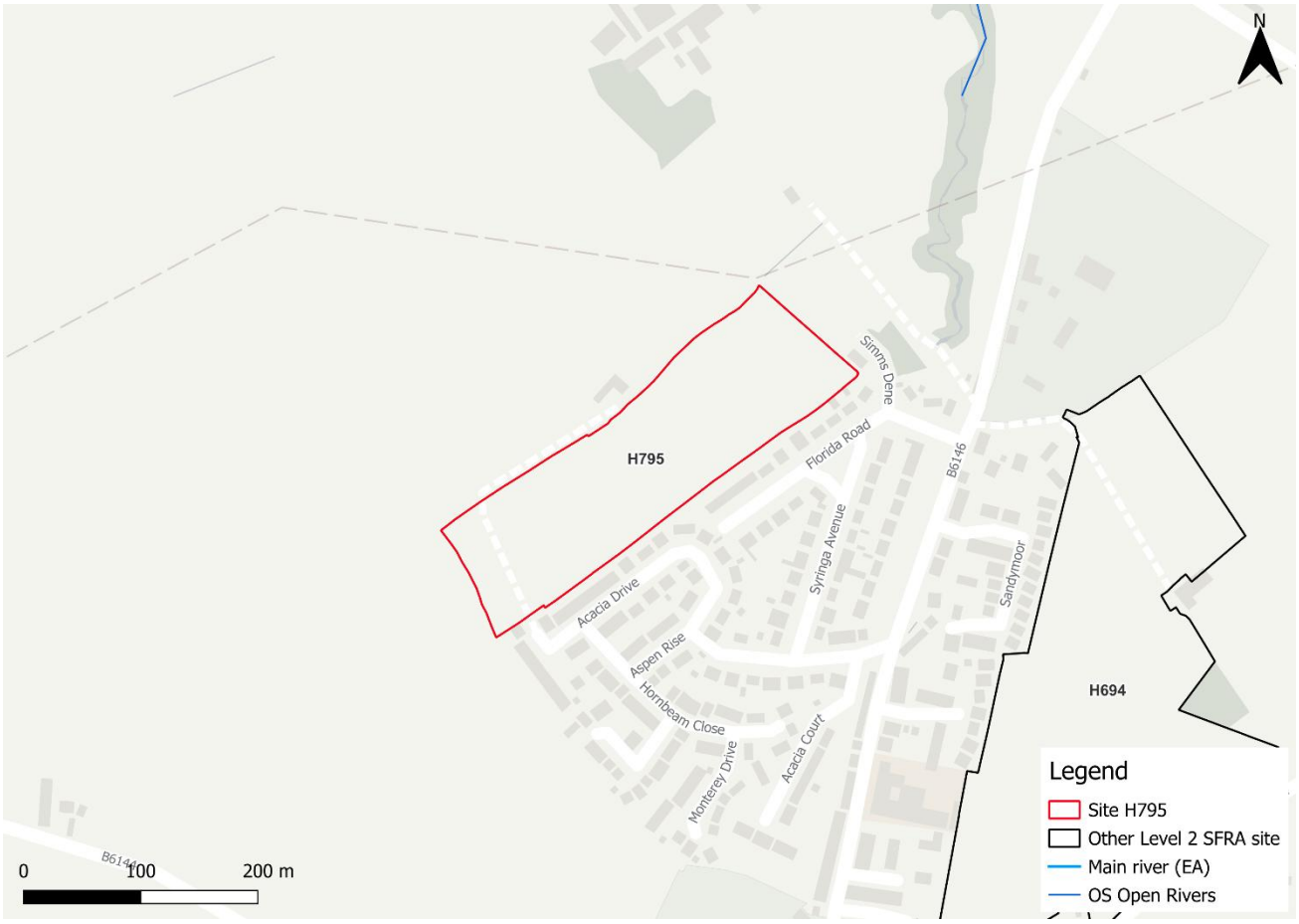


Figure 2-100: H795 site location boundary

2.40.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.40.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-40). Surface water risk in the medium risk event is confined to a very small area along the northern boundary of the site. In the low risk event, risk is present within small areas of ponding within topographic low spots in the north and south of the site. Maximum depths within the site in the low risk event are between 0.15 and 0.3 m (Figure 2-101). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Acacia Drive to the south of the site.

Table 2-40: Existing surface water flood risk within H795 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0

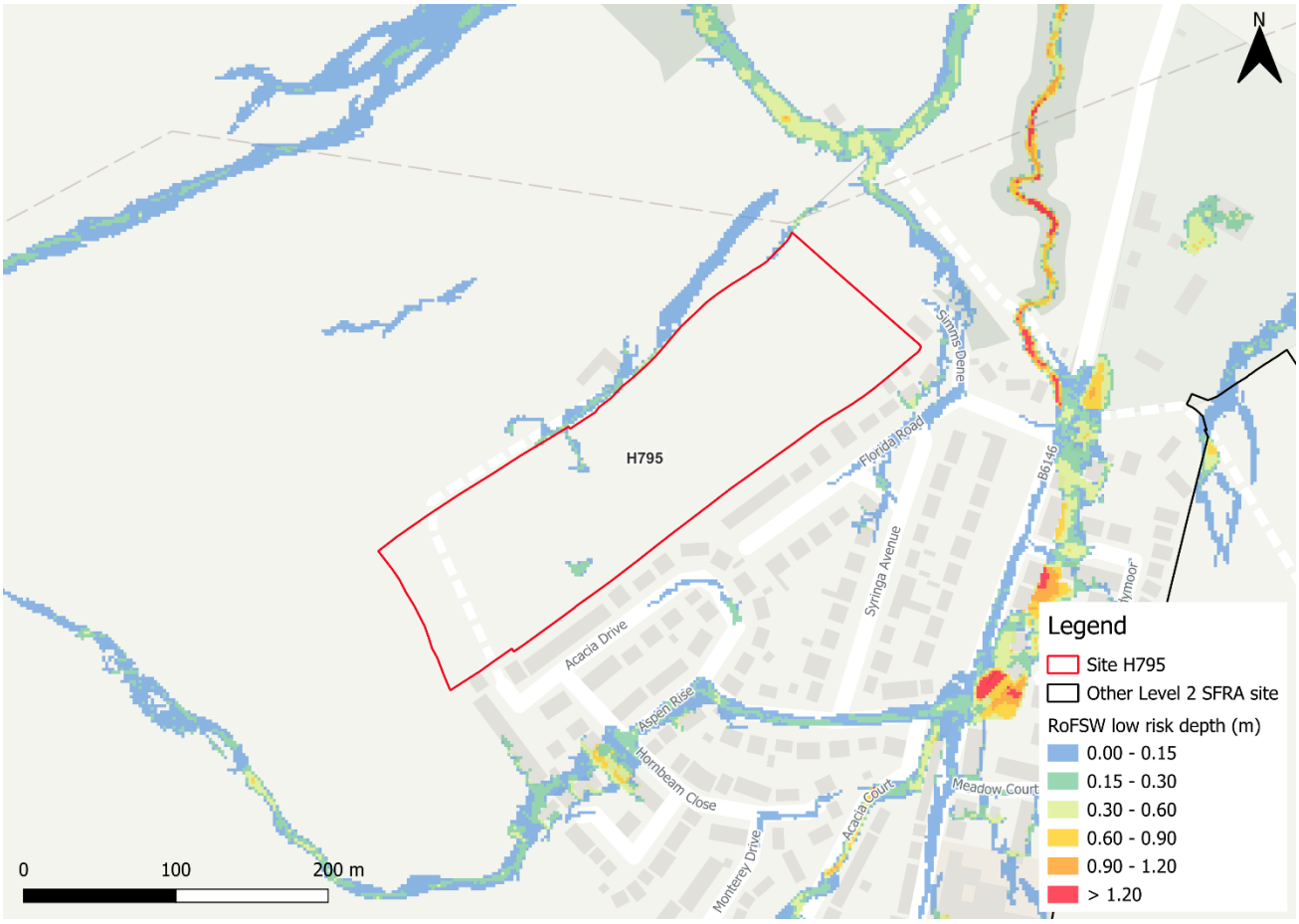


Figure 2-101: Low risk event surface water flood depths within H795 (Risk of Flooding from Surface Water)

2.40.3 Groundwater

The entirety of the site is within an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.40.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.41 H879

Site summary (Figure 2-102)	
Location	Spen View Lane / Shetcliffe Lane, Bierley
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.6 hectares



Figure 2-102: H879 site location boundary

2.41.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.41.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-41). Surface water risk in all events is confined to a flow path along the eastern boundary of the site. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-103). This area of risk is consistent with the medium risk event +45% climate change, with maximum depths of between 0.6 and 0.9 m.

Based on available information, safe access and escape routes should be achievable via Spen View Lane to the west of the site.

Table 2-41: Existing surface water flood risk within H879 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
94	2	2	2

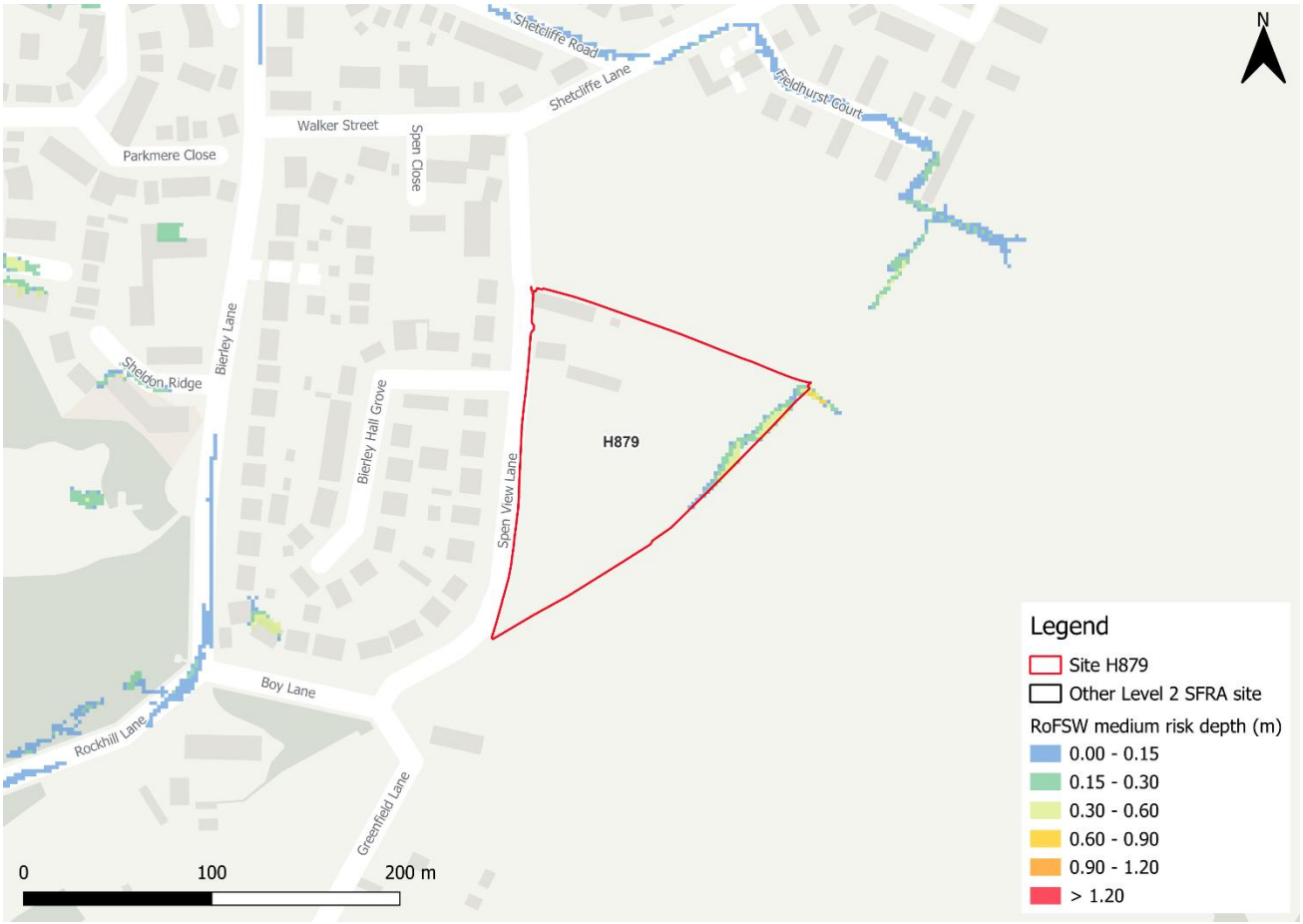


Figure 2-103: Medium risk event surface water flood depths within H879 (Risk of Flooding from Surface Water)

2.41.3 Groundwater

Almost the entire site is within an area where there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-104). Groundwater conditions in this area should be considered further as part of a site-specific FRA.

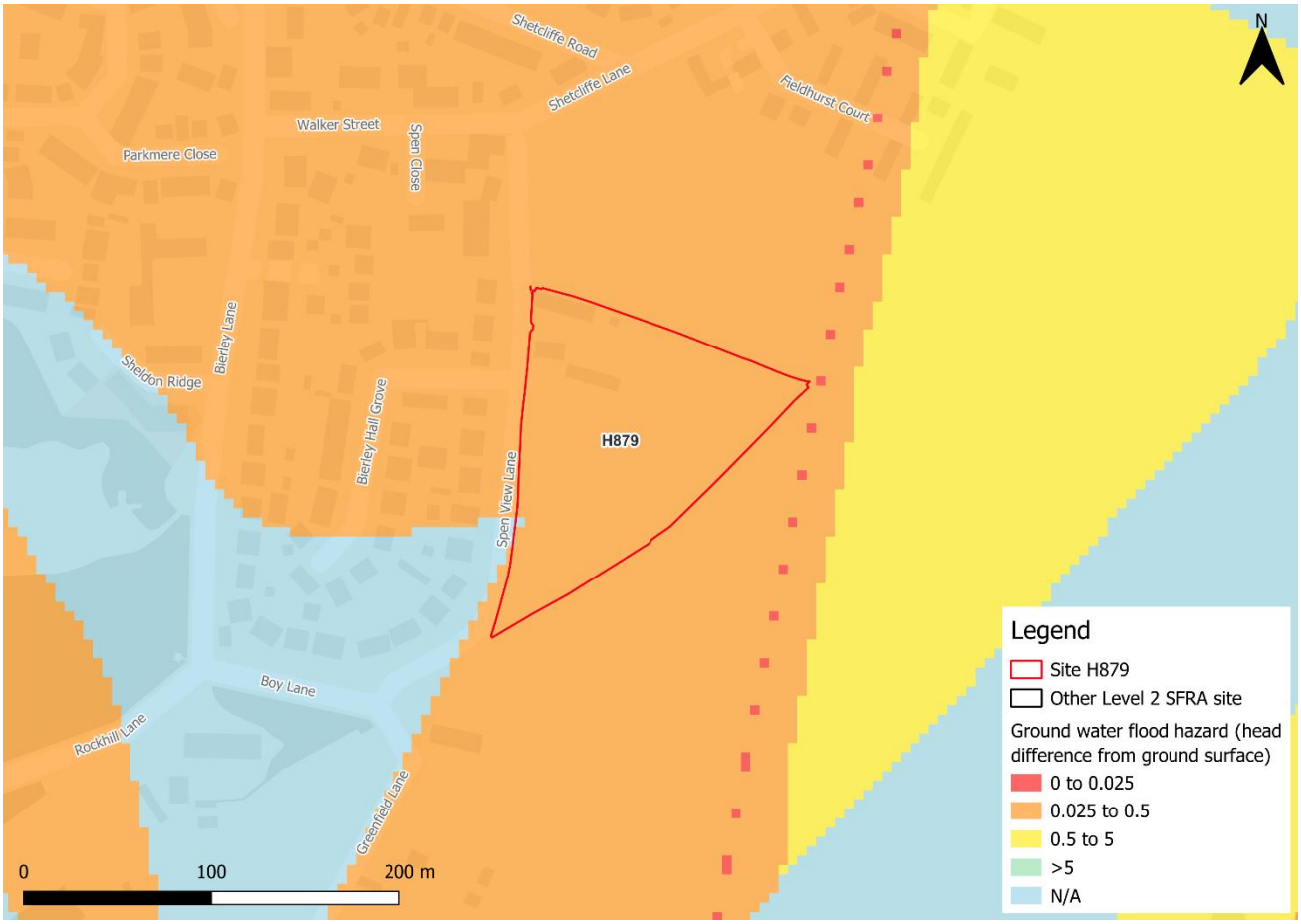


Figure 2-104: JBA 5m Groundwater Emergence Map (H879)

2.41.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions should be considered further as part of a site-specific FRA.

2.42 H894

Site summary (Figure 2-105)	
Location	Holme Lane / Raikes Lane, Holmewood
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1 hectare

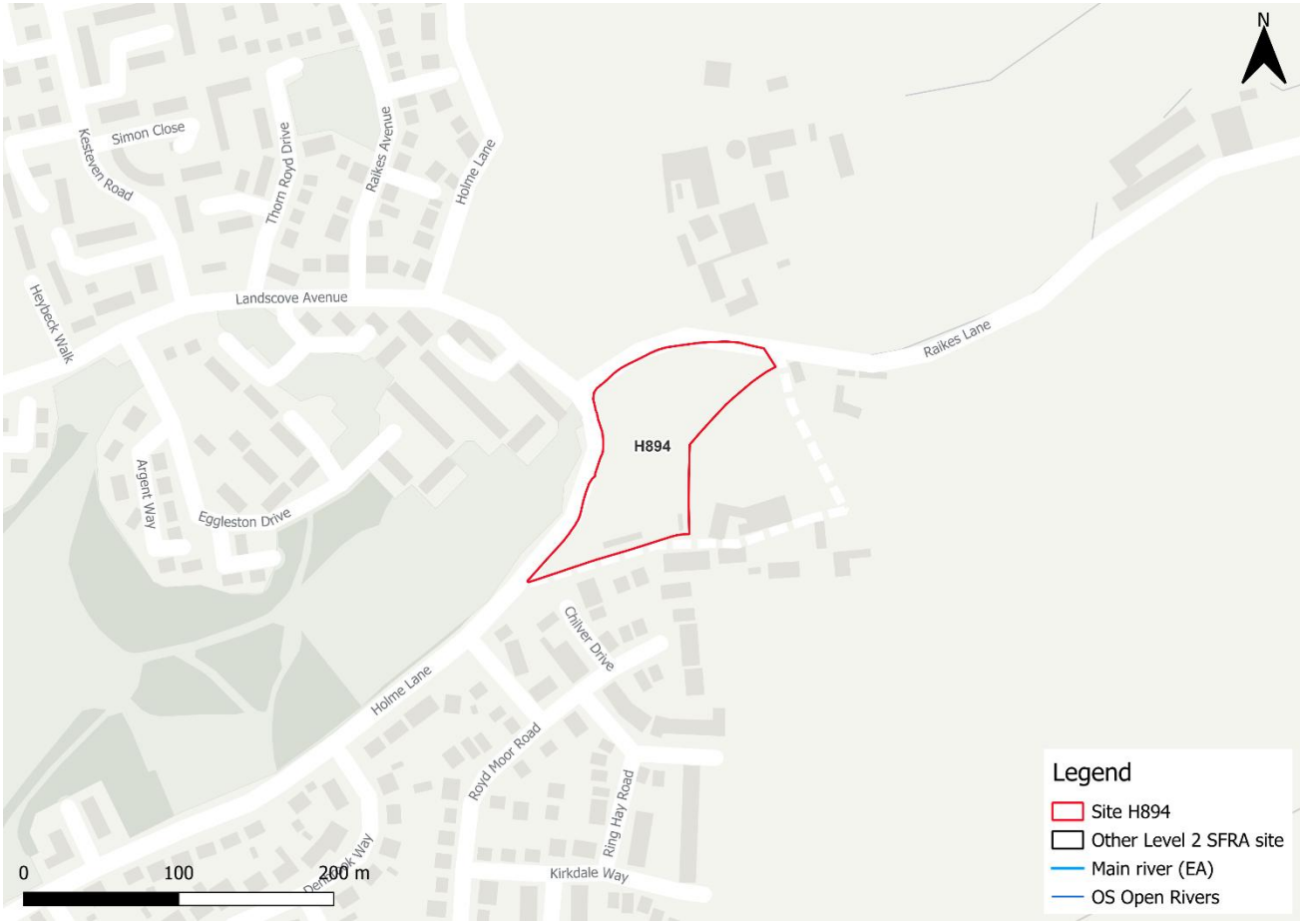


Figure 2-105: H894 site location boundary

2.42.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.42.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-42). Surface water risk in all events is confined to the northern and western boundaries of the site. Maximum depths within the site in the low risk event are between 0.15 and 0.3 m (Figure 2-106). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Raikes Lane to the north of the site.

Table 2-42: Existing surface water flood risk within H894 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
96	2	1	1

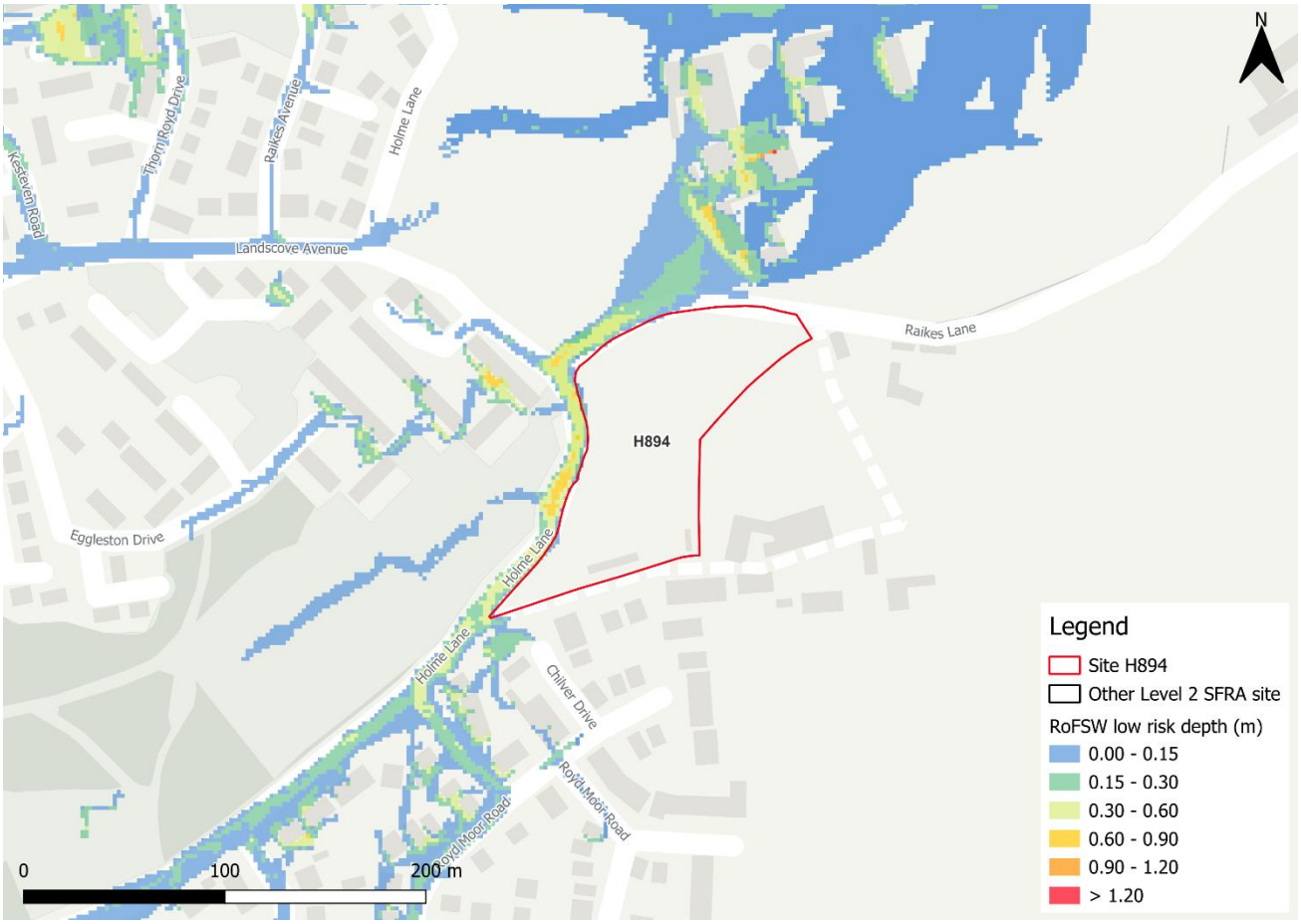


Figure 2-106: Low risk event surface water flood depths within H894 (Risk of Flooding from Surface Water)

2.42.3 Groundwater

The majority of the site is within an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas. There

is a small area within the south of the site where there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-107).

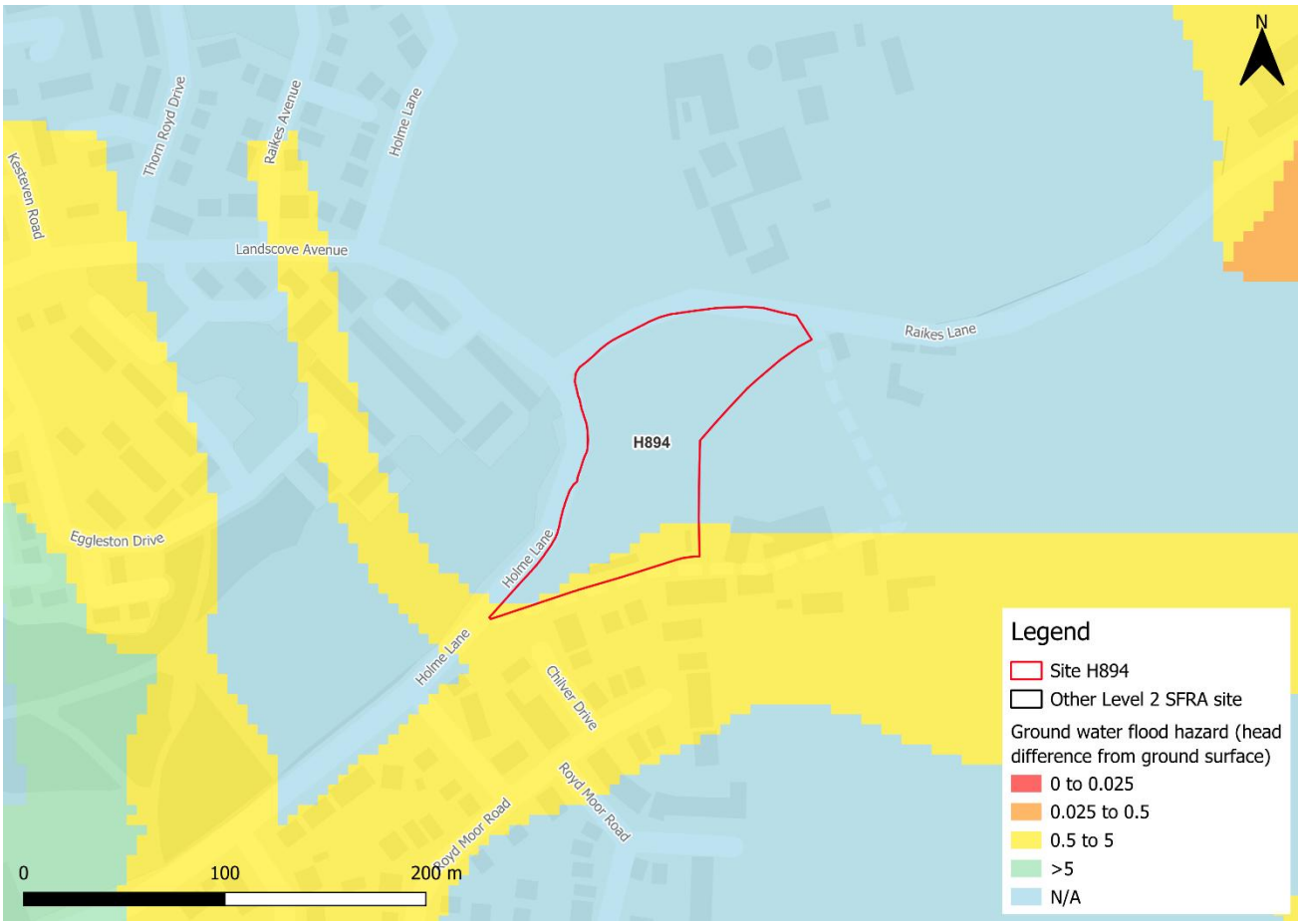


Figure 2-107: JBA 5m Groundwater Emergence Map (H894)

2.42.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.43 H897

Site summary (Figure 2-108)	
Location	Wilson Road, Wyke
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	3.3 hectares



Figure 2-108: H897 site location boundary

2.43.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.43.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-43). Surface water risk in all events is confined to the boundaries of the site. Maximum depths within the site in the low risk event are between 0.3 and 0.6 m (Figure 2-109). There is an additional area of shallow ponding within a topographic low spot in the northeast of the site in the medium risk event +45% climate change, with maximum depths of < 0.15 m.

Based on available information, safe access and escape routes should be achievable via Wilson Road to the south of the site.

Table 2-43: Existing surface water flood risk within H897 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0

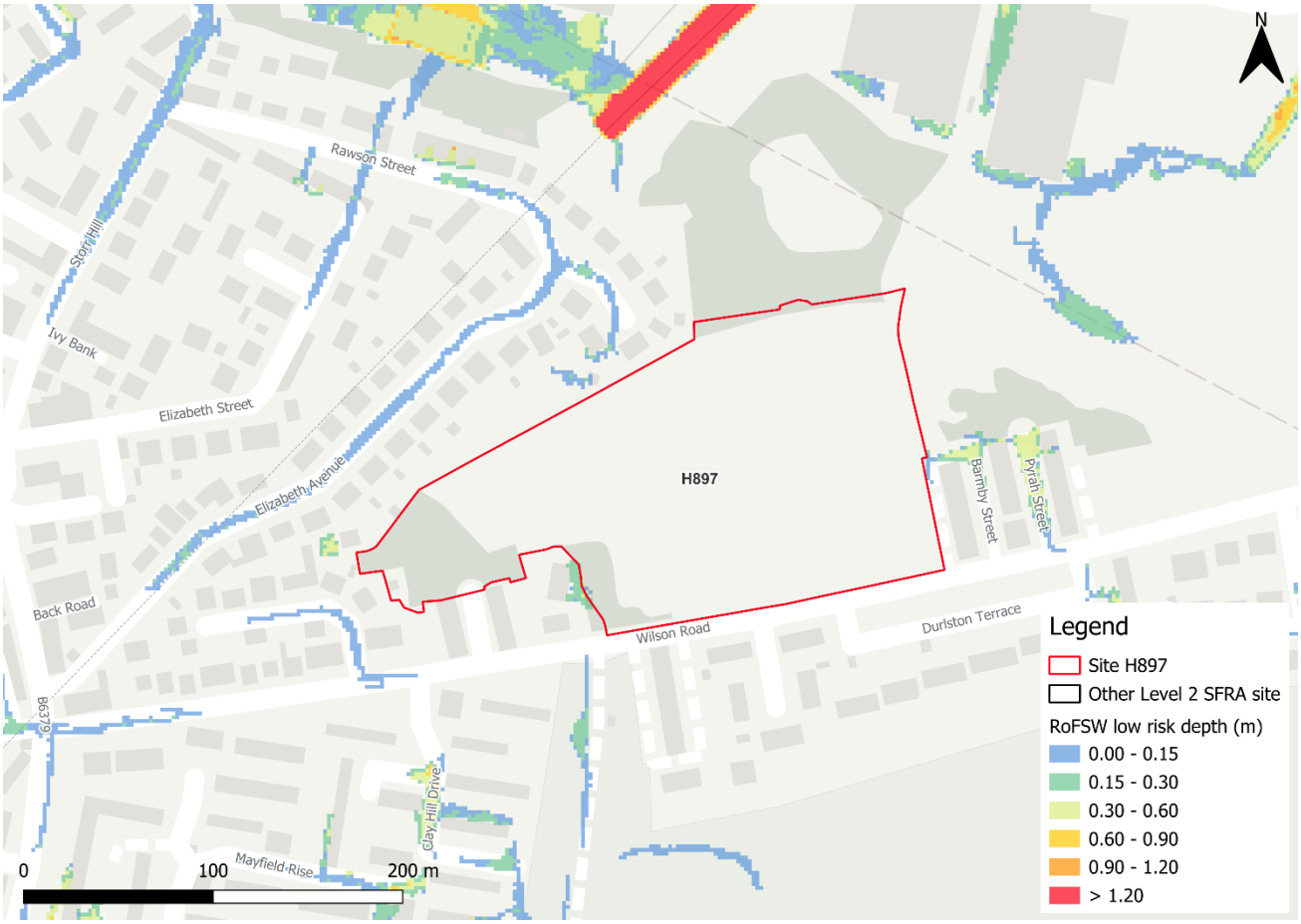


Figure 2-109: Low risk event surface water flood depths within H897 (Risk of Flooding from Surface Water)

2.43.3 Groundwater

The majority of the site is within an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS. There is an area within

the north of the site where there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-110). Groundwater conditions in this area should be considered further as part of a site-specific FRA.

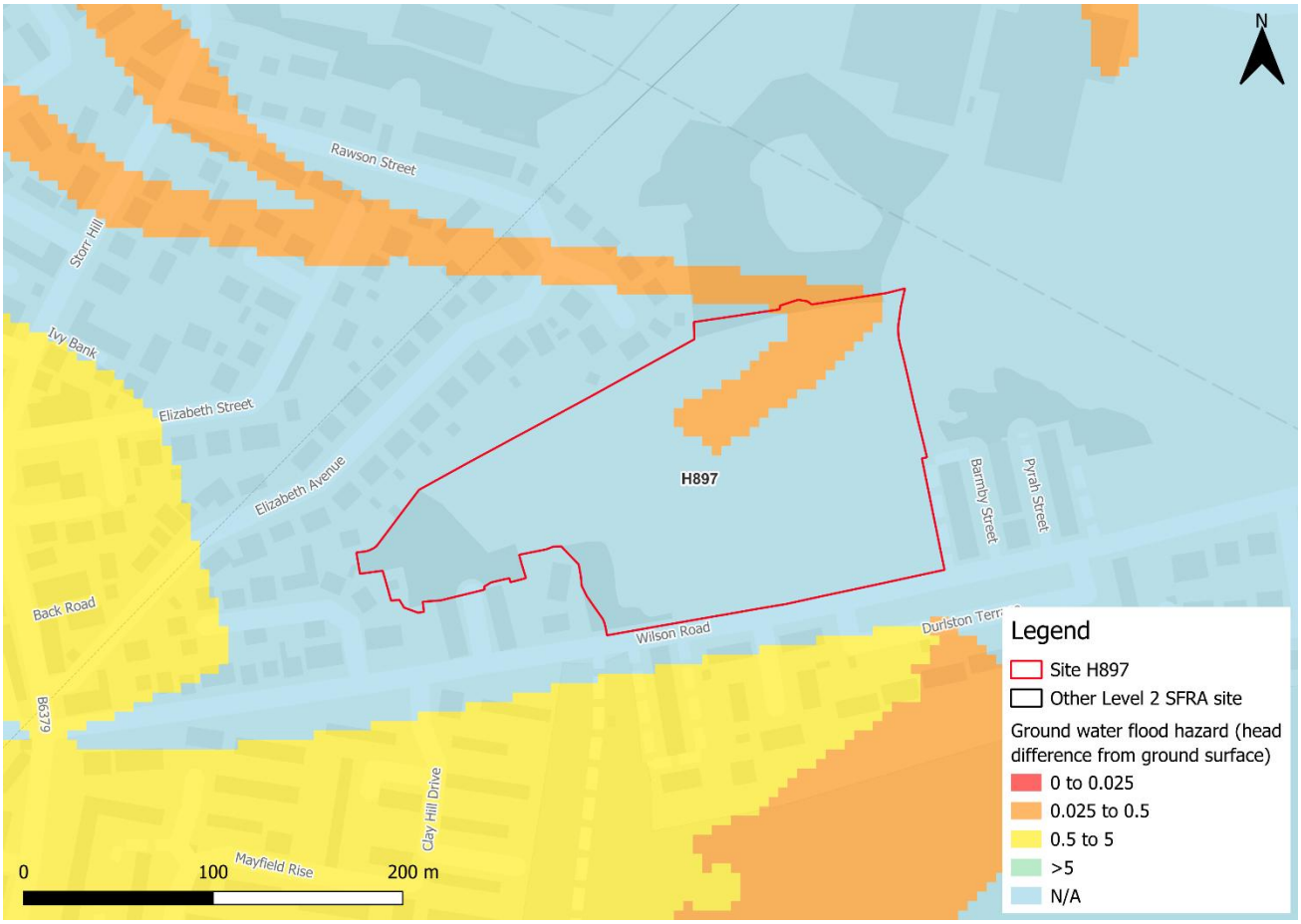


Figure 2-110: JBA 5m Groundwater Emergence Map (H897)

2.43.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

- Groundwater conditions within the north of the site should be considered further as part of a site-specific FRA.

2.44 H900

Site summary (Figure 2-111)	
Location	Carr House Gate
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	4.9 hectares

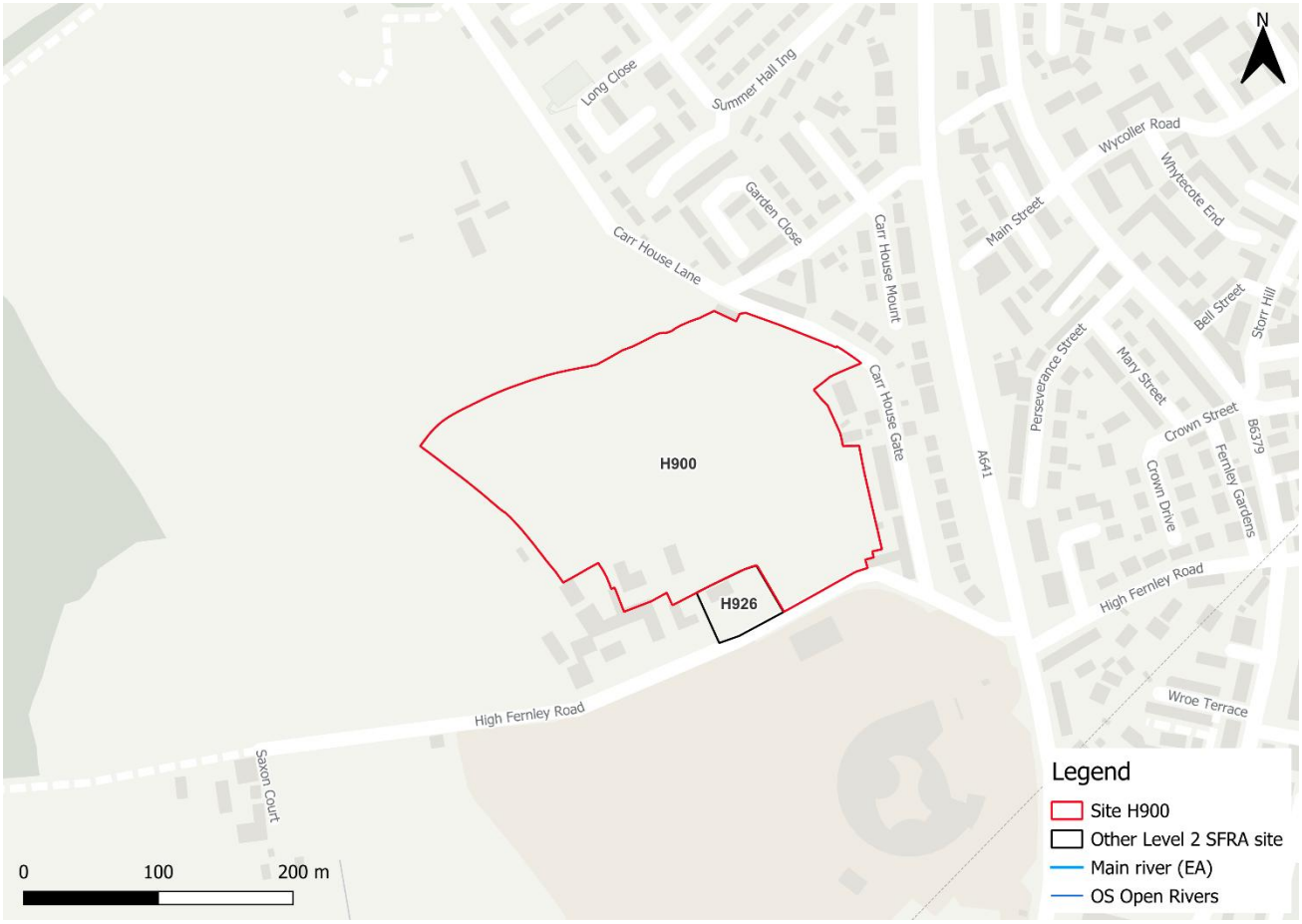


Figure 2-111: H900 site location boundary

2.44.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.44.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-44). Surface water risk in all events is confined to small areas of scattered ponding within topographic low spots across the site. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-112). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via High Fernley Road to the south of the site.

Table 2-44: Existing surface water flood risk within H900 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0



Figure 2-112: Medium risk event surface water flood depths within H900 (Risk of Flooding from Surface Water)

2.44.3 Groundwater

Within the majority of the site there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-113). There is no risk of groundwater emergence within the south of the site.

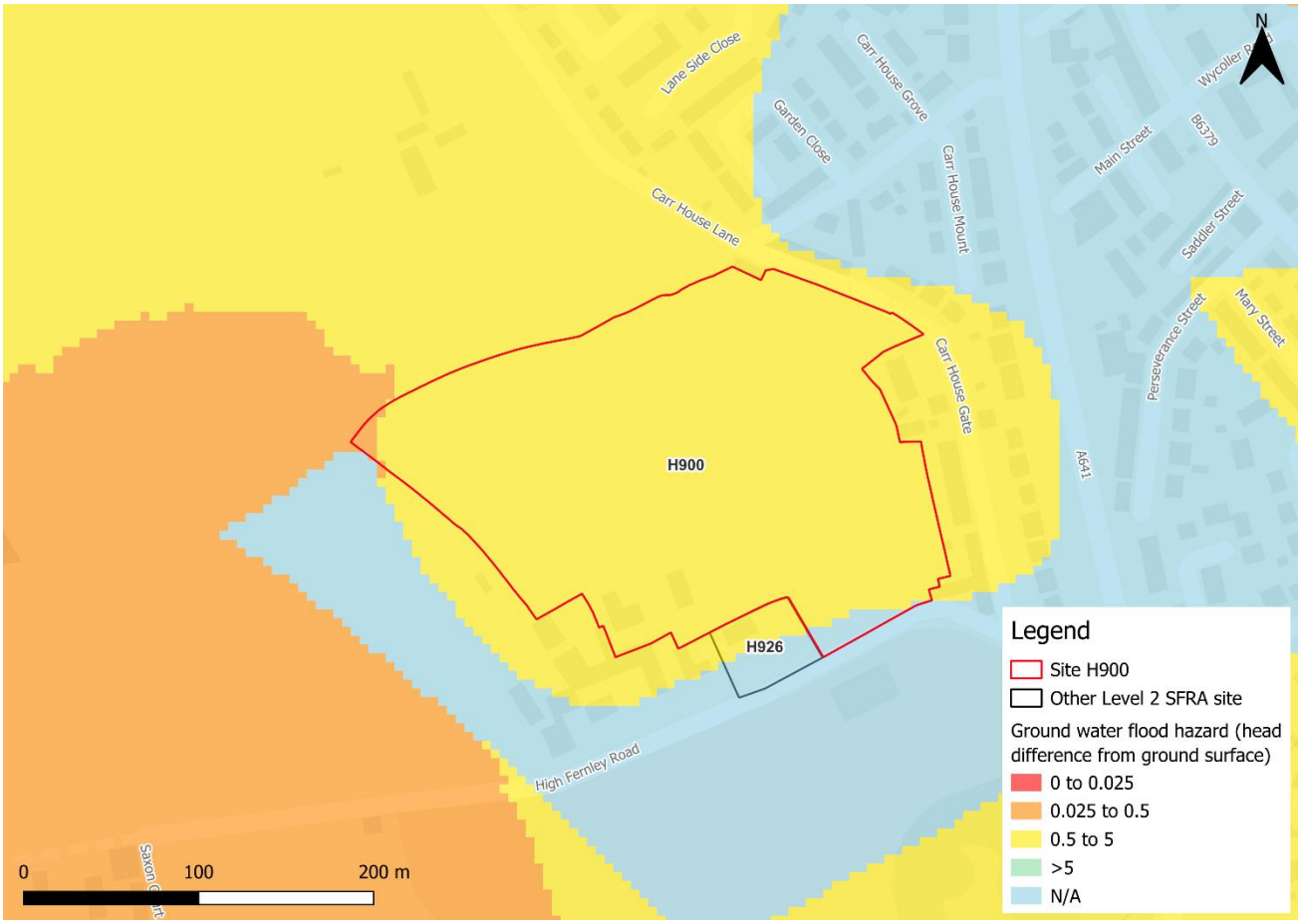


Figure 2-113: JBA 5m Groundwater Emergence Map (H900)

2.44.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.45 H911

Site summary (Figure 2-114)	
Location	Raikes Lane East
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	44.2 hectares

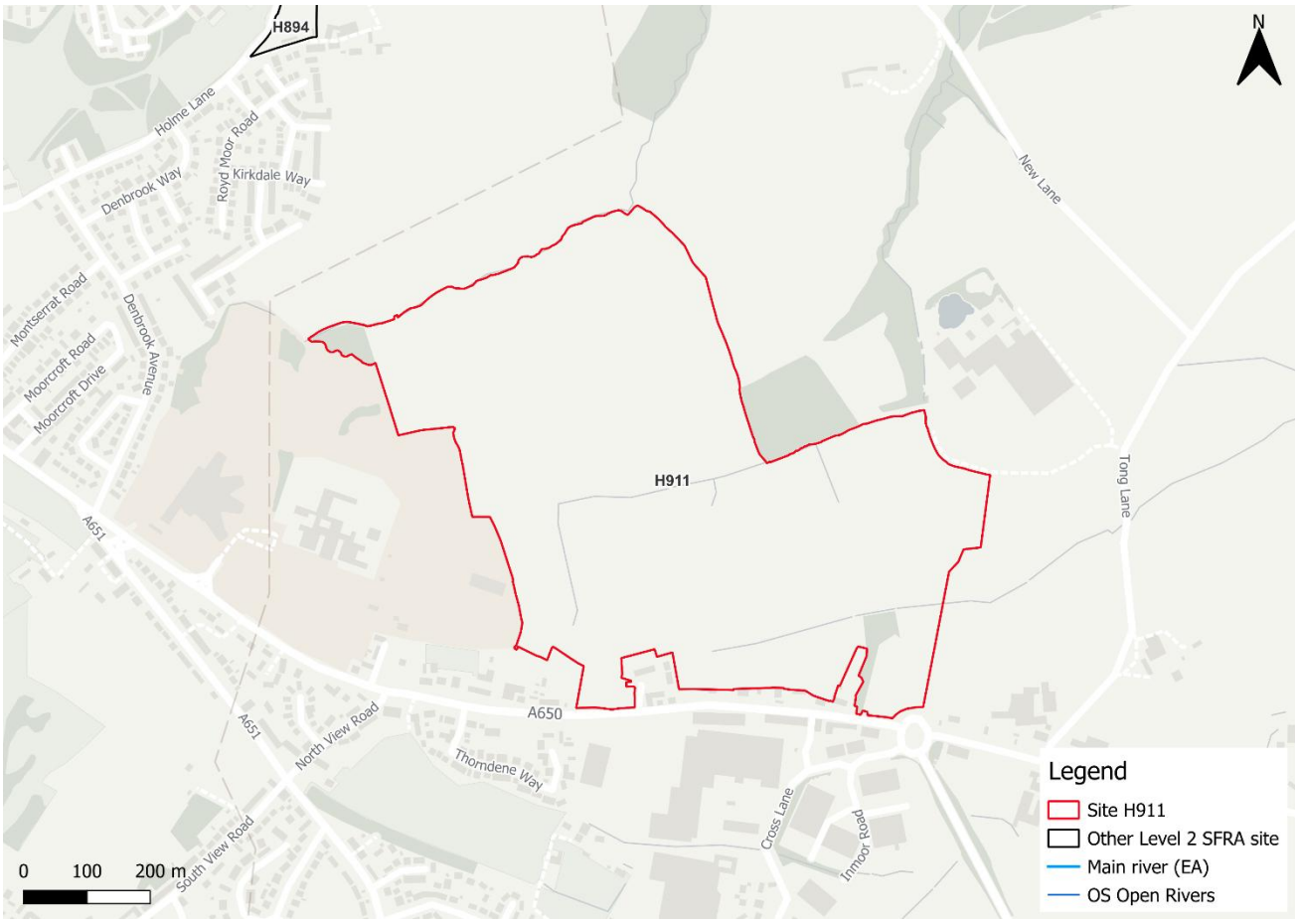


Figure 2-114: H911 site location boundary

2.45.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's Flood Map for Planning. Based on OS mapping and aerial imagery, there are two drainage ditches present through the centre and south of the site. It is recommended that any FRA considers the fluvial risk these may pose to the site.

2.45.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-45). Surface water risk is confined to the northern boundary of the site in the high and medium risk events. In the low risk event, there are areas of shallow surface water ponding within the north of the site, and coincident with the drainage ditches present within the site. Maximum depths within the site in the low risk event are between 0.15 and 0.3 m (Figure 2-115). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via the A650 to the south of the site.

Table 2-45: Existing surface water flood risk within H911 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	3	1	1

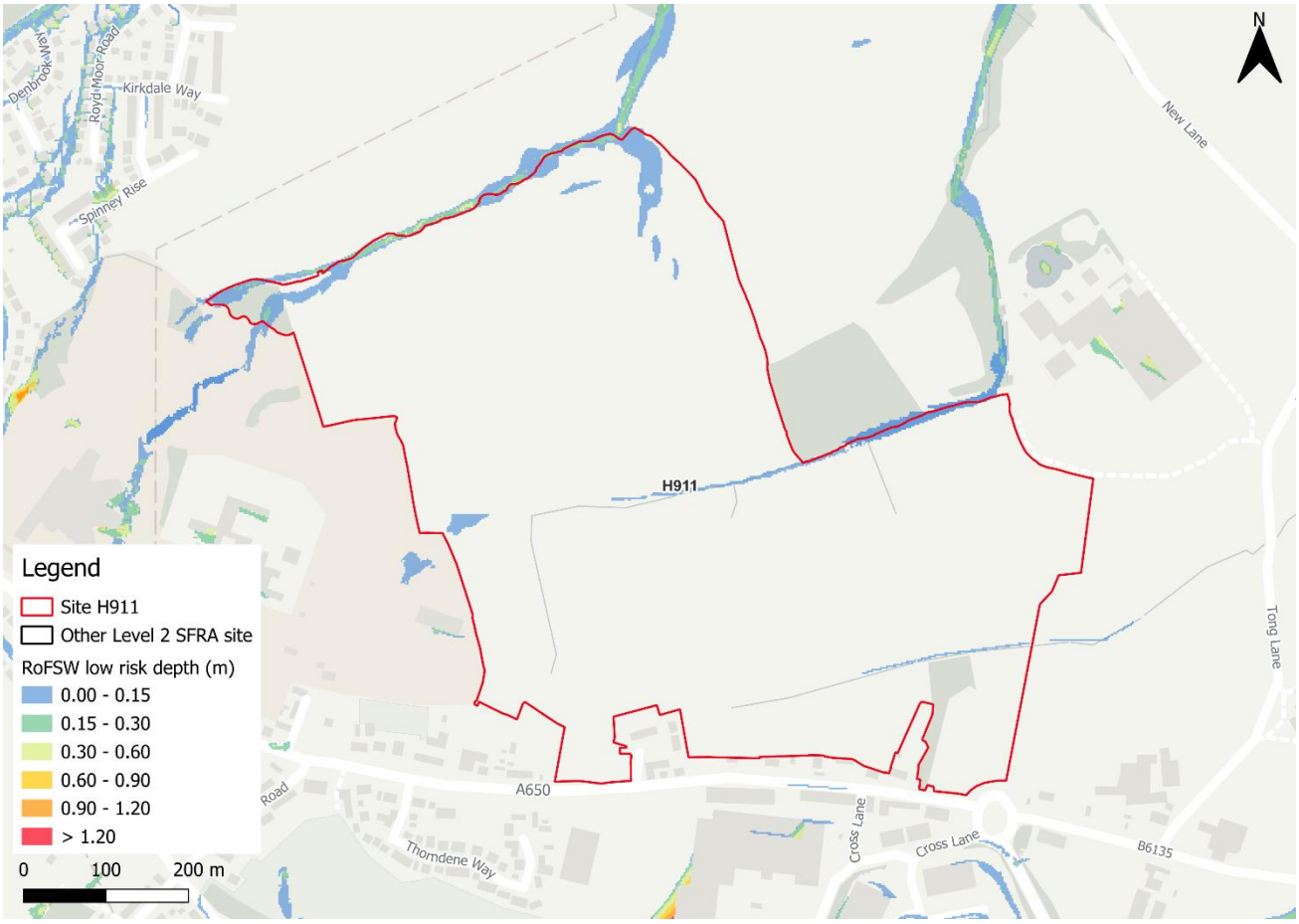


Figure 2-115: Low risk event surface water flood depths within H911 (Risk of Flooding from Surface Water)

2.45.3 Groundwater

The risk of groundwater emergence varies across the site. Within the north and east of the site, there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-116). Groundwater conditions in this area should be considered further as part of a site-specific FRA. There are some areas across the site where there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely. Within the remaining area of the site there is no risk of groundwater emergence.



Figure 2-116: JBA 5m Groundwater Emergence Map (H911)

2.45.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- This is subject to additional modelling to understand the fluvial risk posed by the existing drainage ditches through the centre and south of the site. The drainage ditches should be kept in place and remain unobstructed. The ditches should be maintained and included within the landscaping design of the residential development.
- Groundwater conditions should be considered further as part of a site-specific FRA.

2.46 H919

Site summary (Figure 2-117)	
Location	Dane Hill Drive, Holmewood
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	1.1 hectares

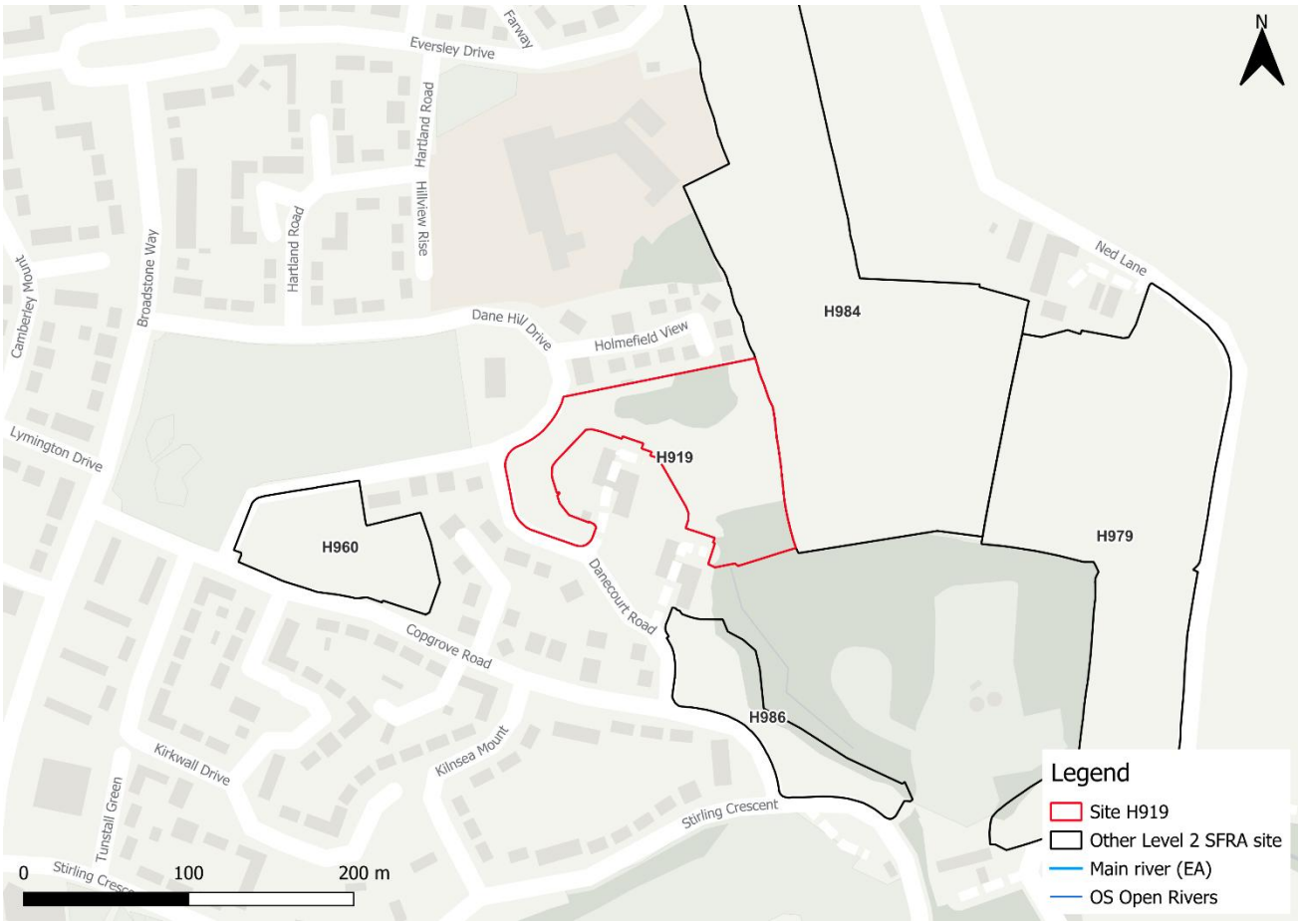


Figure 2-117: H919 site location boundary

2.46.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.46.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-46). Surface water risk in all events is confined to the boundaries of the site. Maximum depths within the site in the low risk event are < 0.15 m (Figure 2-118). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Dane Hill Drive to the west of the site given the shallow depths along this route.

Table 2-46: Existing surface water flood risk within H919 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
97	2	1	0

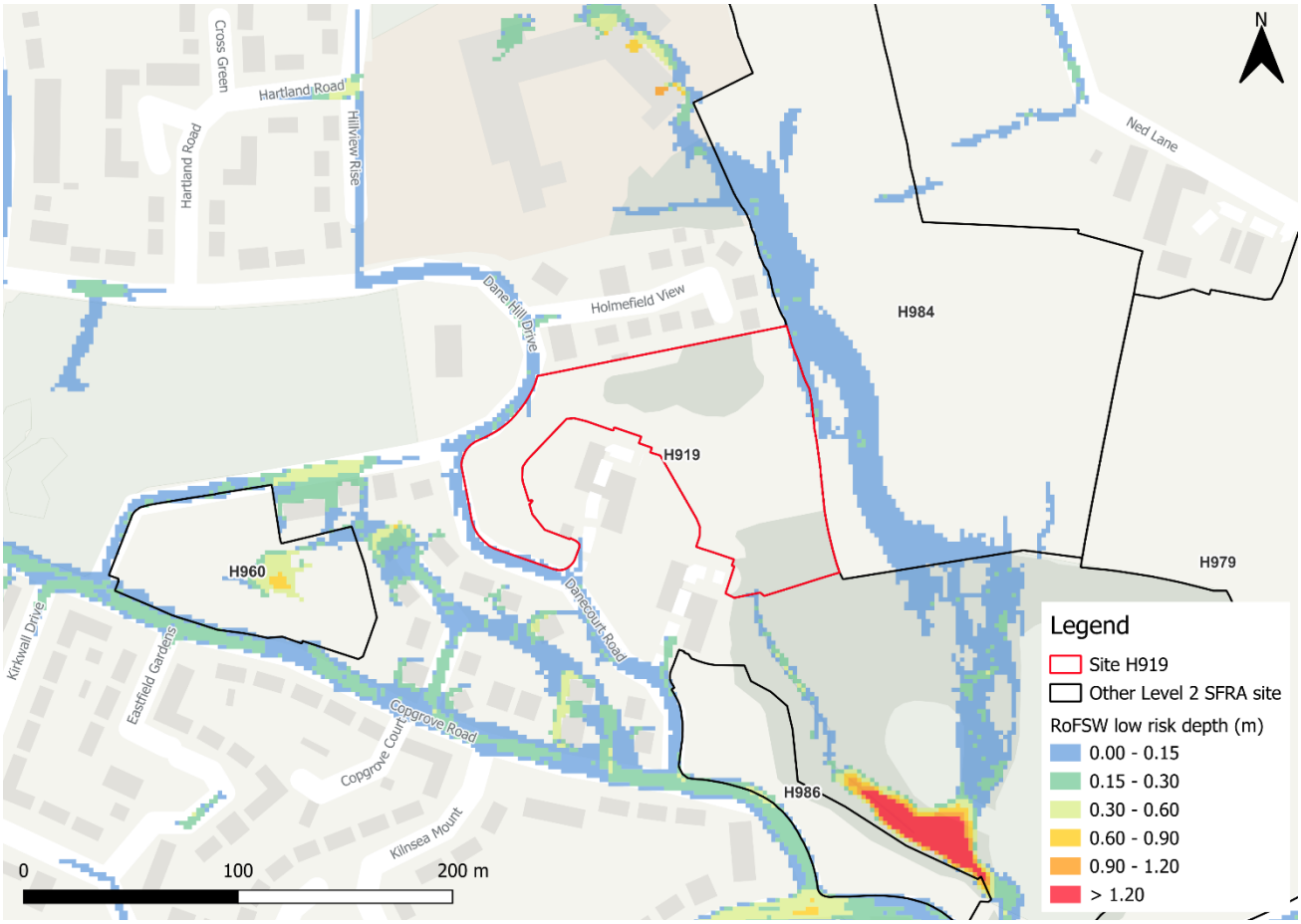


Figure 2-118: Low risk event surface water flood depths within H919 (Risk of Flooding from Surface Water)

2.46.3 Groundwater

Within the north of the site, there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-119). Within the south of the

site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in this area.

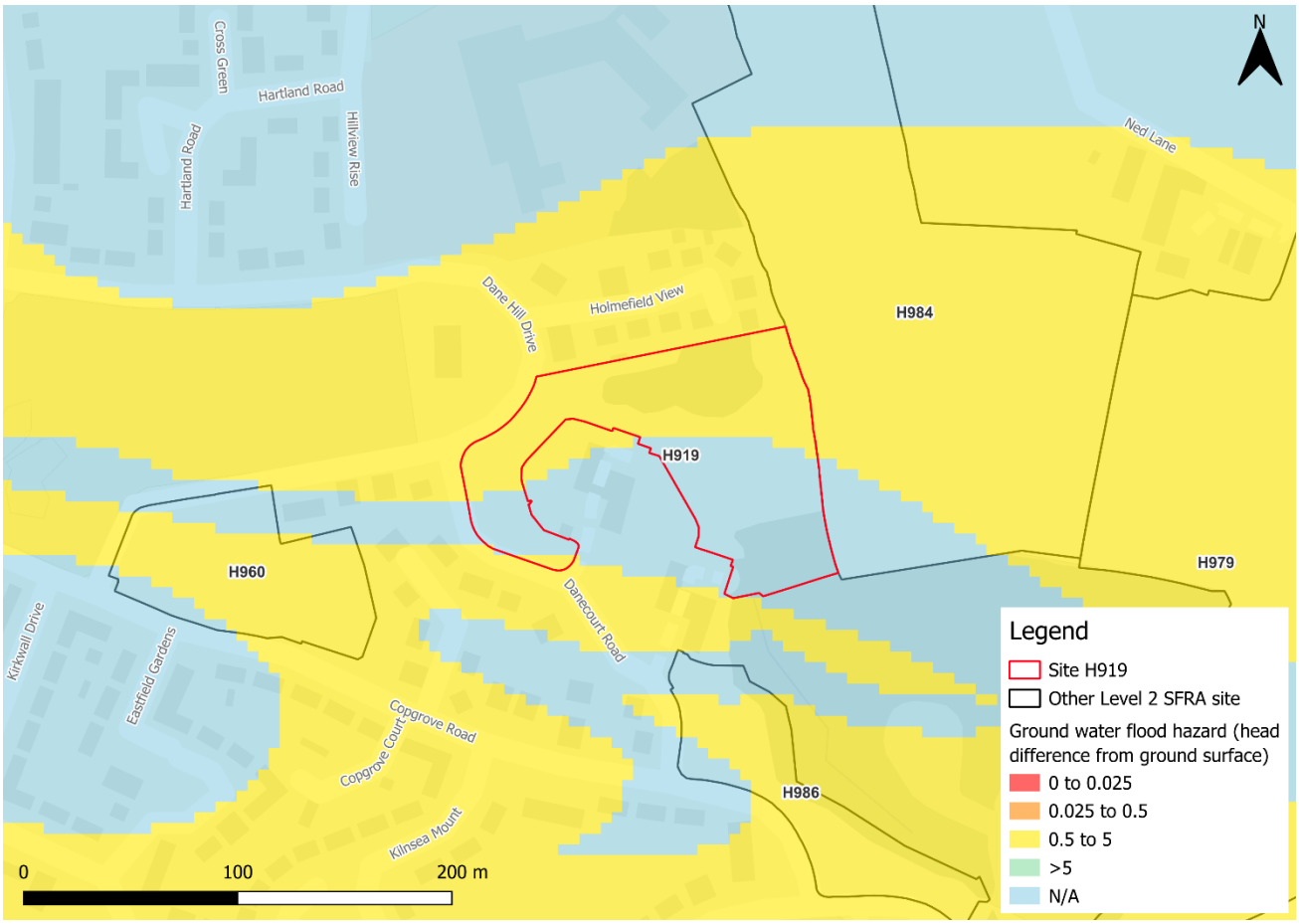


Figure 2-119: JBA 5m Groundwater Emergence Map (H919)

2.46.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.47 H979

Site summary (Figure 2-120)	
Location	Ned Lane, Holmewood
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	2.9 hectares

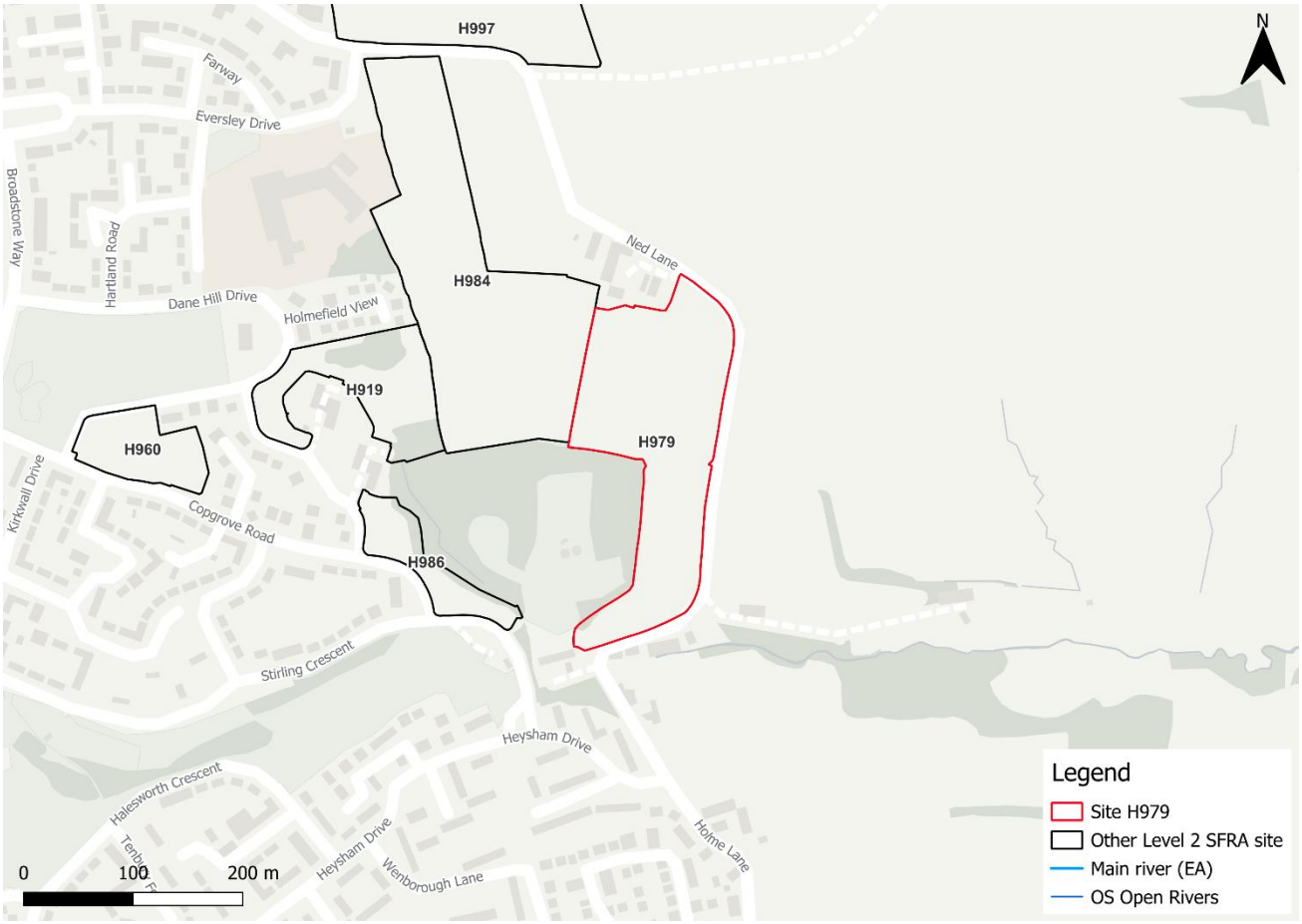


Figure 2-120: H979 site location boundary

2.47.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.47.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-47). Surface water risk in all events is largely confined to the south of the site with a small area of ponding along the western boundary. Maximum depths within the site in the low risk event are between 0.6 and 0.9 m (Figure 2-121). This is largely consistent with the medium risk event +45% climate change, however the area of ponding along the western boundary develops into a shallow flow path through the site. Maximum depths increase to between 0.9 and 1.2 m in this event.

Based on available information, safe access and escape routes should be achievable via Ned Lane to the north of the site.

Table 2-47: Existing surface water flood risk within H979 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
97	1	1	1

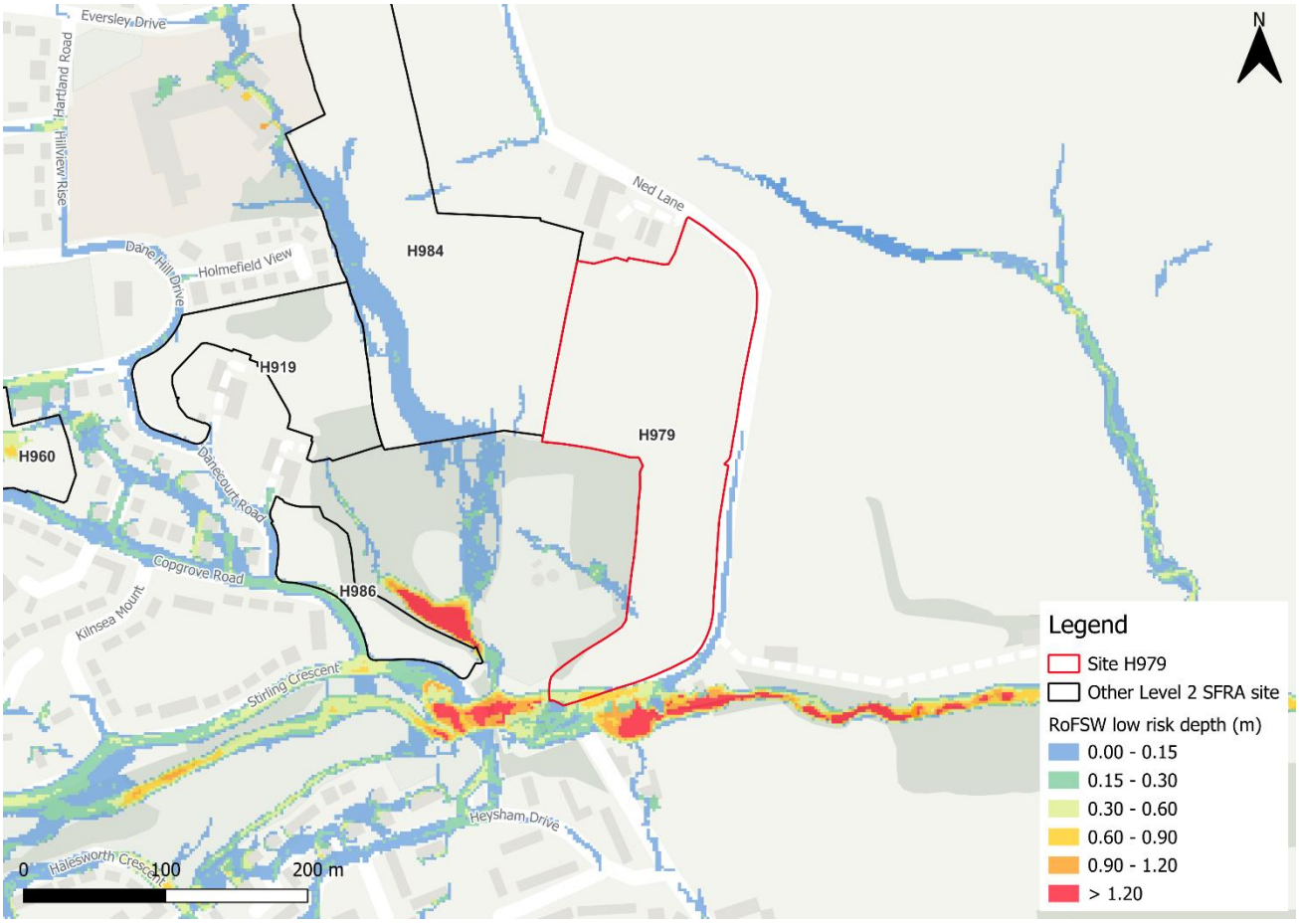


Figure 2-121: Low risk event surface water flood depths within H979 (Risk of Flooding from Surface Water)

2.47.3 Groundwater

Within the north and south of the site, there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-122). Within the centre of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in this area.

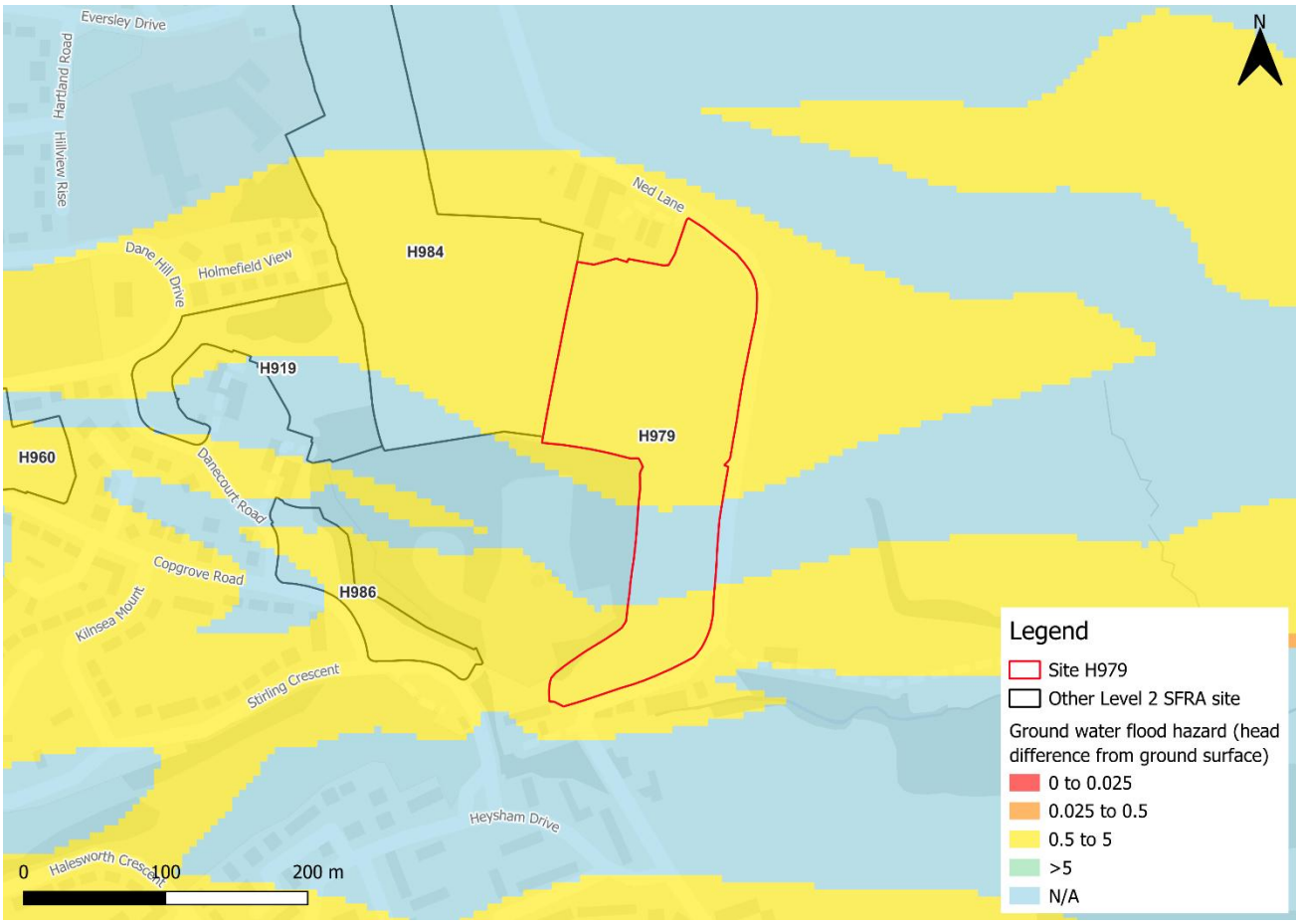


Figure 2-122: JBA 5m Groundwater Emergence Map (H979)

2.47.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.48 H980

Site summary (Figure 2-123)	
Location	Albert Terrace, Oakenshaw
Existing site use	Brownfield
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.8 hectares

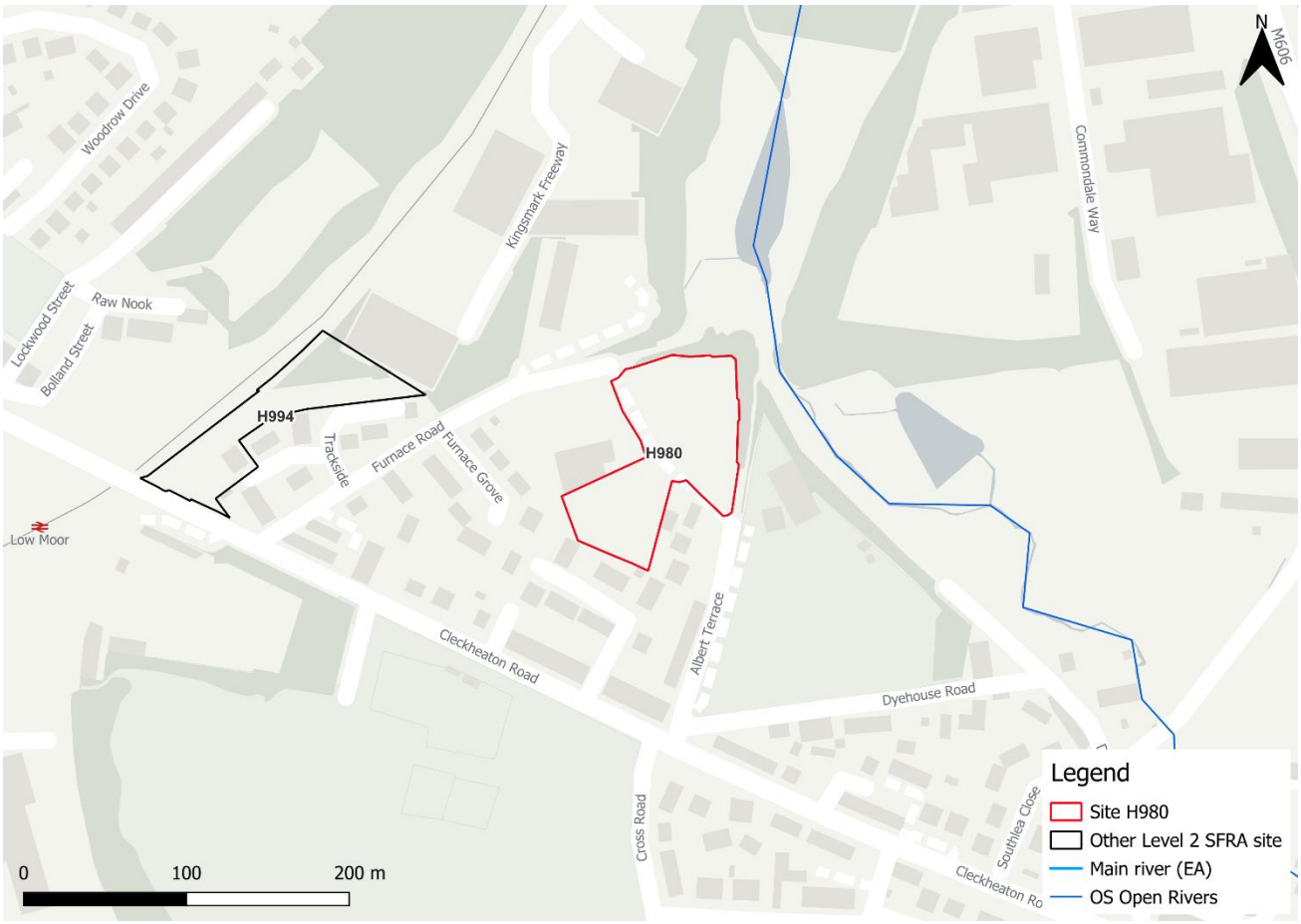


Figure 2-123: H980 site location boundary

2.48.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's Flood Map for Planning. Toad Holes Beck is an unmodelled watercourse located to the east of the site. Given the site is situated approximately 10m higher in elevation than the watercourse, it is unlikely to pose a fluvial risk to the site.

2.48.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-48). Surface water risk in the high and medium risk events is confined to an area of ponding within a topographic low spot in the east of the site. In the low risk event, an additional shallow flow path emerges through the north of the site. Maximum depths within the site in the medium risk event are between 0.6 and 0.9 m (Figure 2-124). The medium risk event +45% climate change is consistent in extent to the present day low risk event, with maximum depths in the area of ponding of > 1.2 m.

Based on available information, safe access and escape routes should be achievable via Furnace Road to the north of the site.

Table 2-48: Existing surface water flood risk within H980 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
79	16	1	4

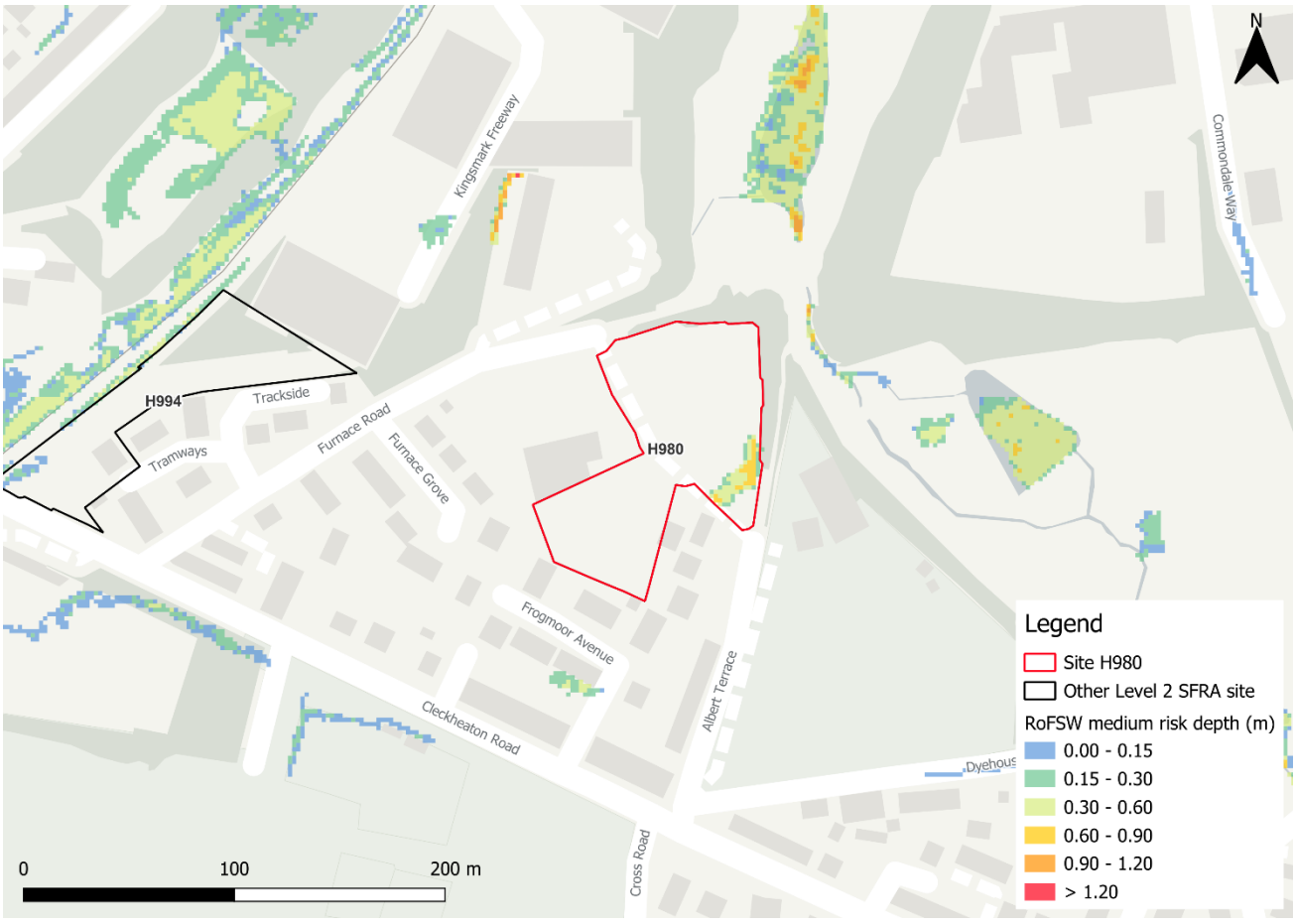


Figure 2-124: Medium risk event surface water flood depths within H980 (Risk of Flooding from Surface Water)

2.48.3 Reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. Figure 2-125 shows the RFM in a 'dry day' and 'wet day' scenario. A 'dry day' scenario assumes that the water level in the reservoir is the same as the spillway level or the underside of the roof for a service reservoir and the watercourses upstream and downstream of the reservoir are at a normal level. A 'wet day' scenario assumes a worst-case scenario where a reservoir releases water held on a 'wet day' when local rivers have already overflowed their banks.

The site is potentially at risk from Harold Park reservoir located within Bradford, owned and maintained by the City of Bradford Metropolitan District Council.

The EA's SFRA guidance states that where a proposed development site is at flood risk from a reservoir, then an assessment into whether the reservoir design or maintenance schedule needs improving should be carried out. Expert advice may be required from an all-reservoirs panel engineer. The Council should consult internally to ascertain whether the proposed development could affect the reservoir's risk designation, it's design category or how it is operated. The Council, as category 1 responders, can access more detailed information about reservoir risk and reservoir owners using the Resilience Direct system.

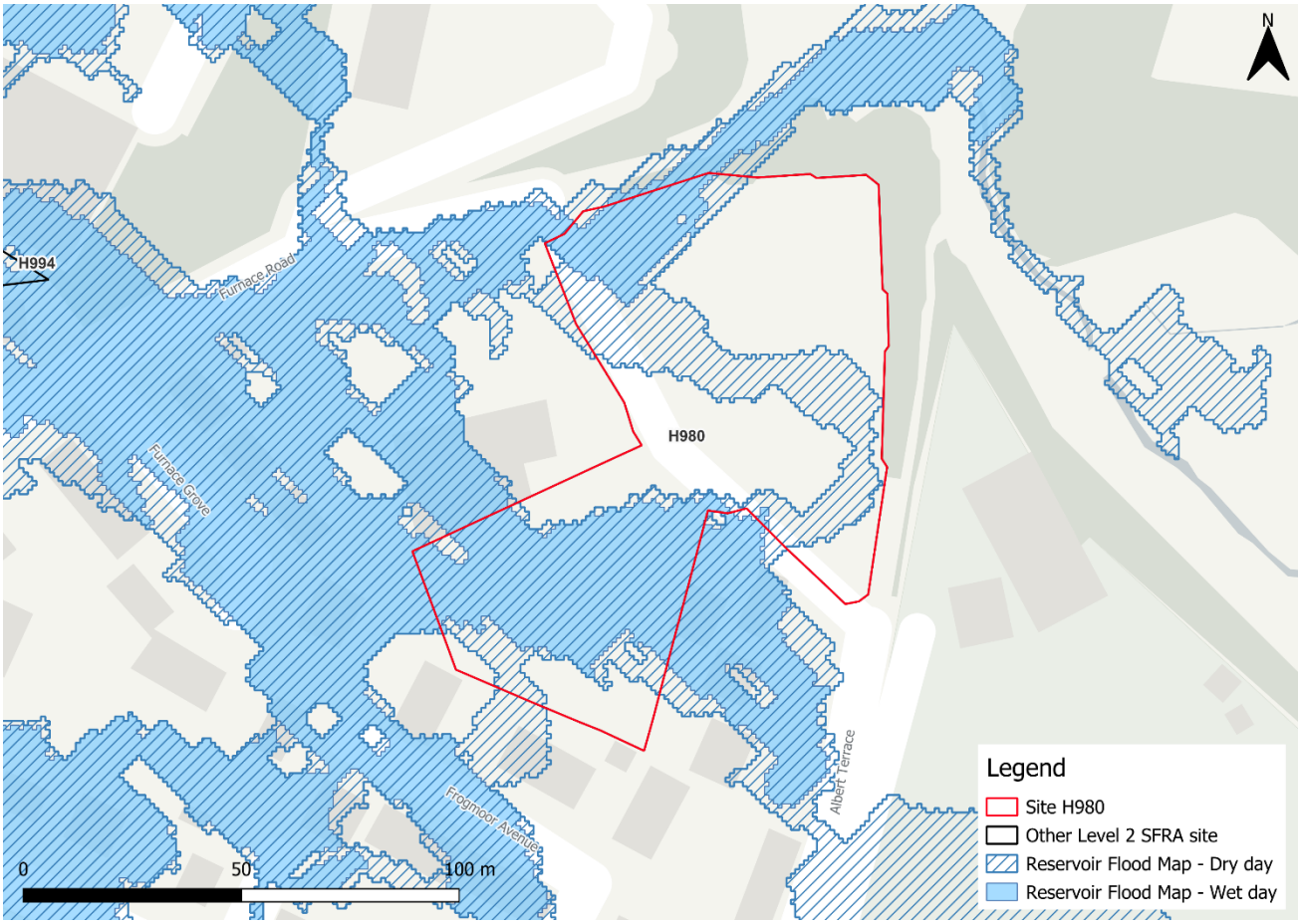


Figure 2-125: Flood risk from reservoirs within H980

2.48.4 Groundwater

The entirety of the site is within an area where there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.48.5 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial risk as a result of climate change.
- A shallow flow path emerges through the centre of the site within the medium risk surface water event plus climate change. Topographic flow routes should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.
- The Council should consult internally regarding the potential reservoir risk.

2.49 H984

Site summary (Figure 2-126)	
Location	Ned Lane, Holmewood (2)
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	3.7 hectares

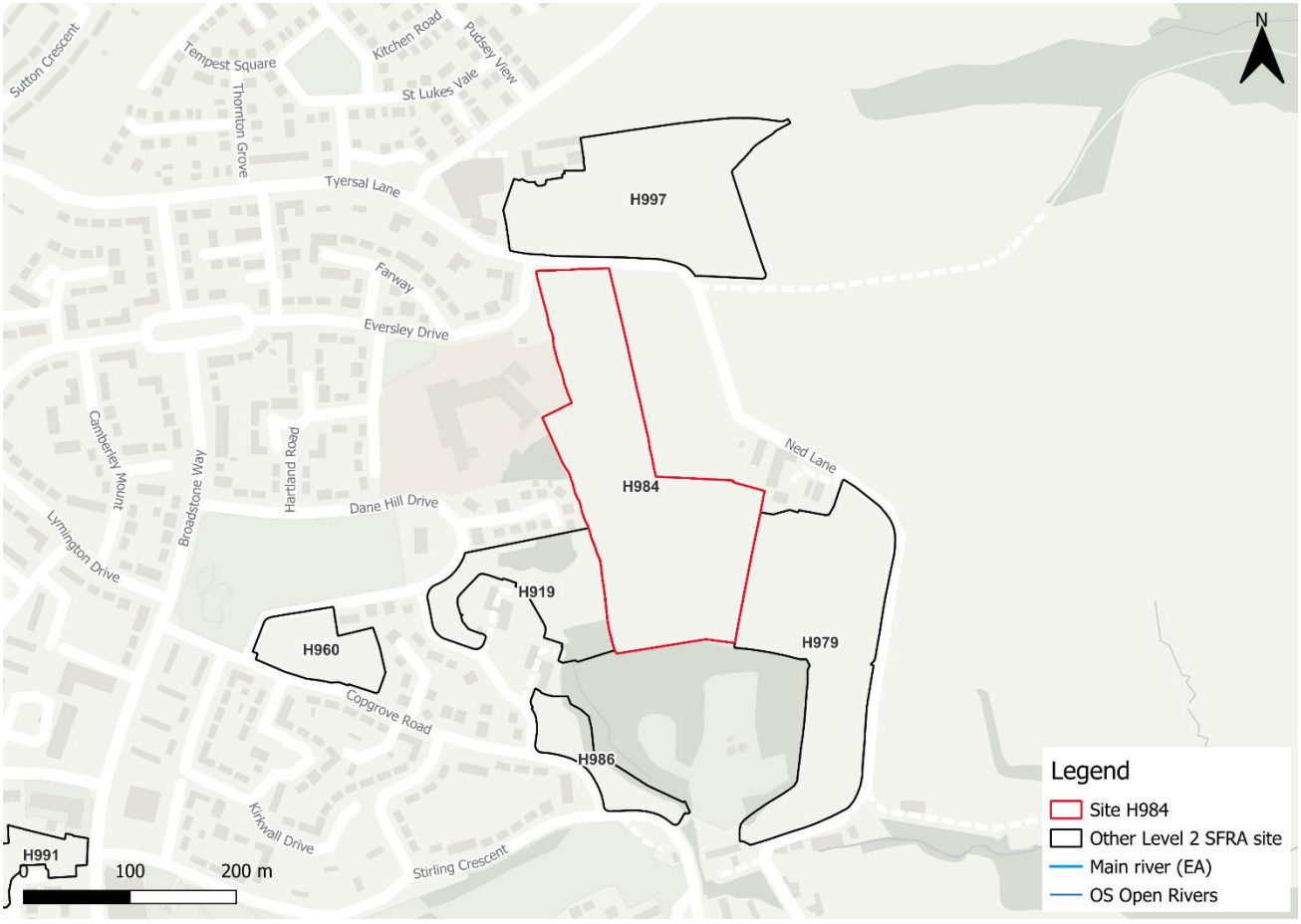


Figure 2-126: H984 site location boundary

2.49.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.49.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-49). Surface water risk in the medium risk event is largely confined to a short, shallow flow path within the west of the site. This develops into a larger flow path in the low risk event, however remains shallow. Maximum depths within the site in the medium risk event are < 0.15 m (Figure 2-127). The present day low risk event is largely consistent with the medium risk event +45% climate change (Figure 2-128). Maximum depths increase to between 0.15 and 0.3 m in this event.

Based on available information, safe access and escape routes should be achievable via Ned Lane to the north of the site.

Table 2-49: Existing surface water flood risk within H984 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
87	11	2	0

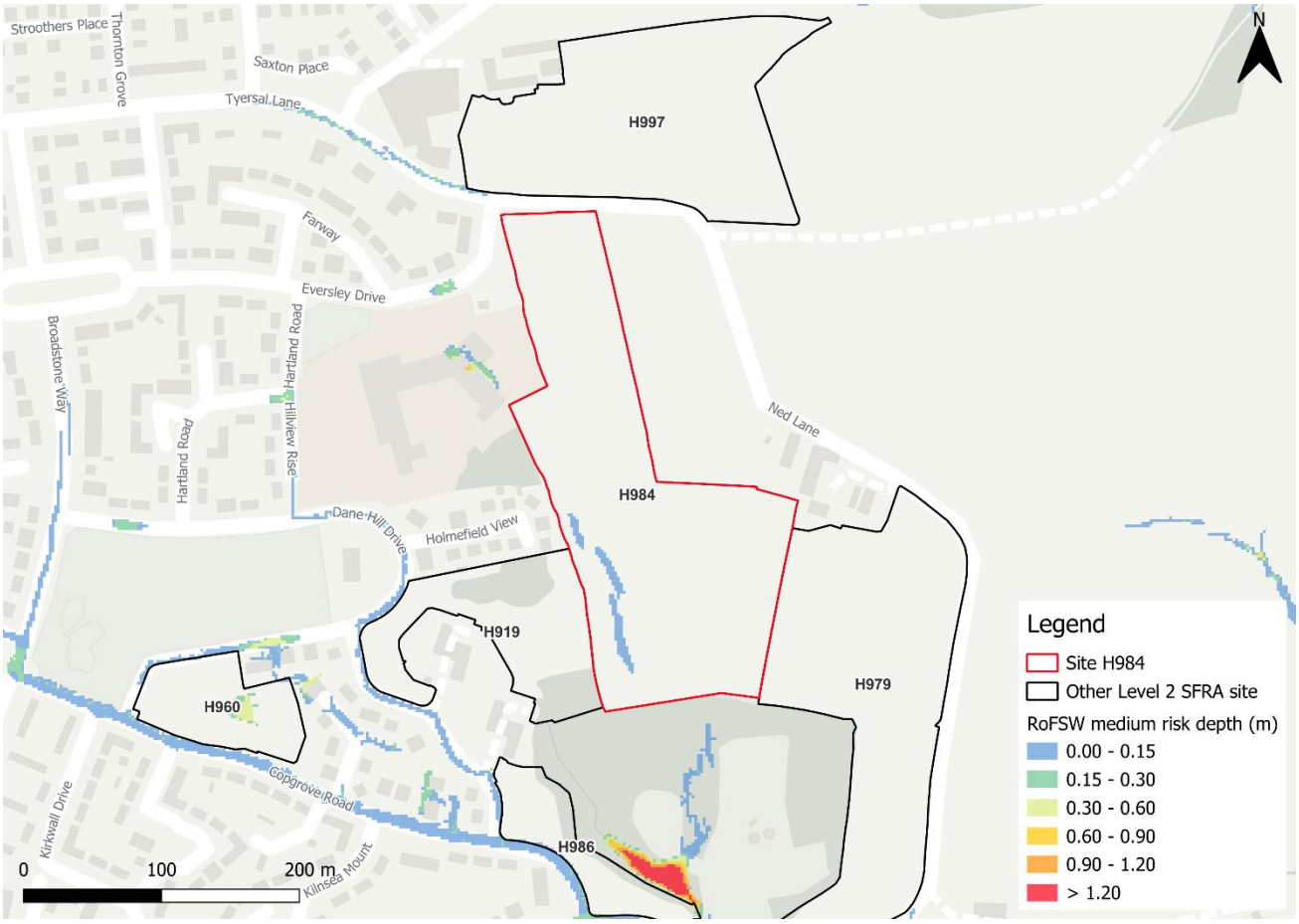


Figure 2-127: Medium risk event surface water flood depths within H984 (Risk of Flooding from Surface Water)

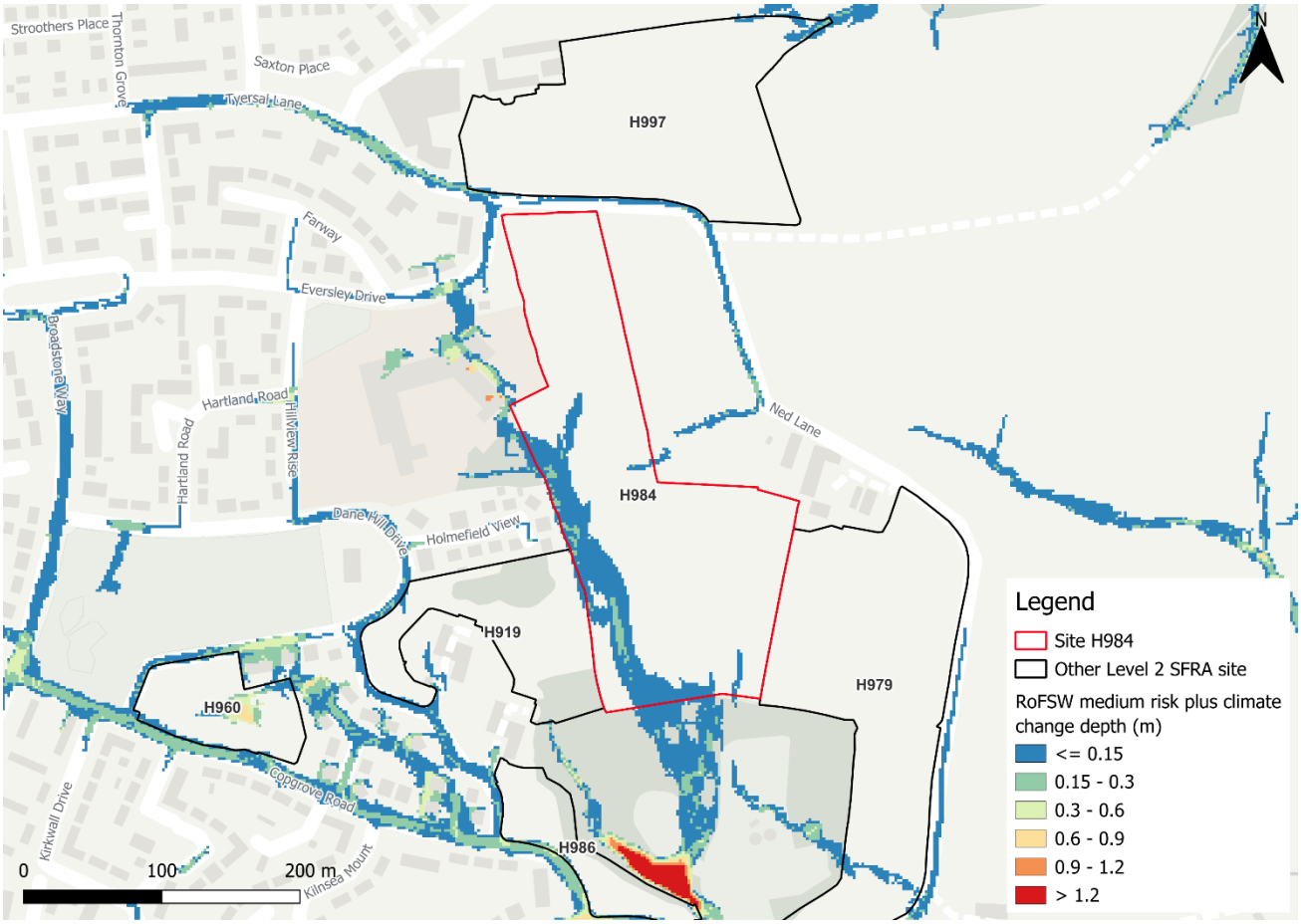


Figure 2-128: Medium risk event surface water flood depths plus 45% climate change within H984 (based on Risk of Flooding from Surface Water map)

2.49.3 Groundwater

Within the centre of the site, there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-129). Across the rest of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in this area.

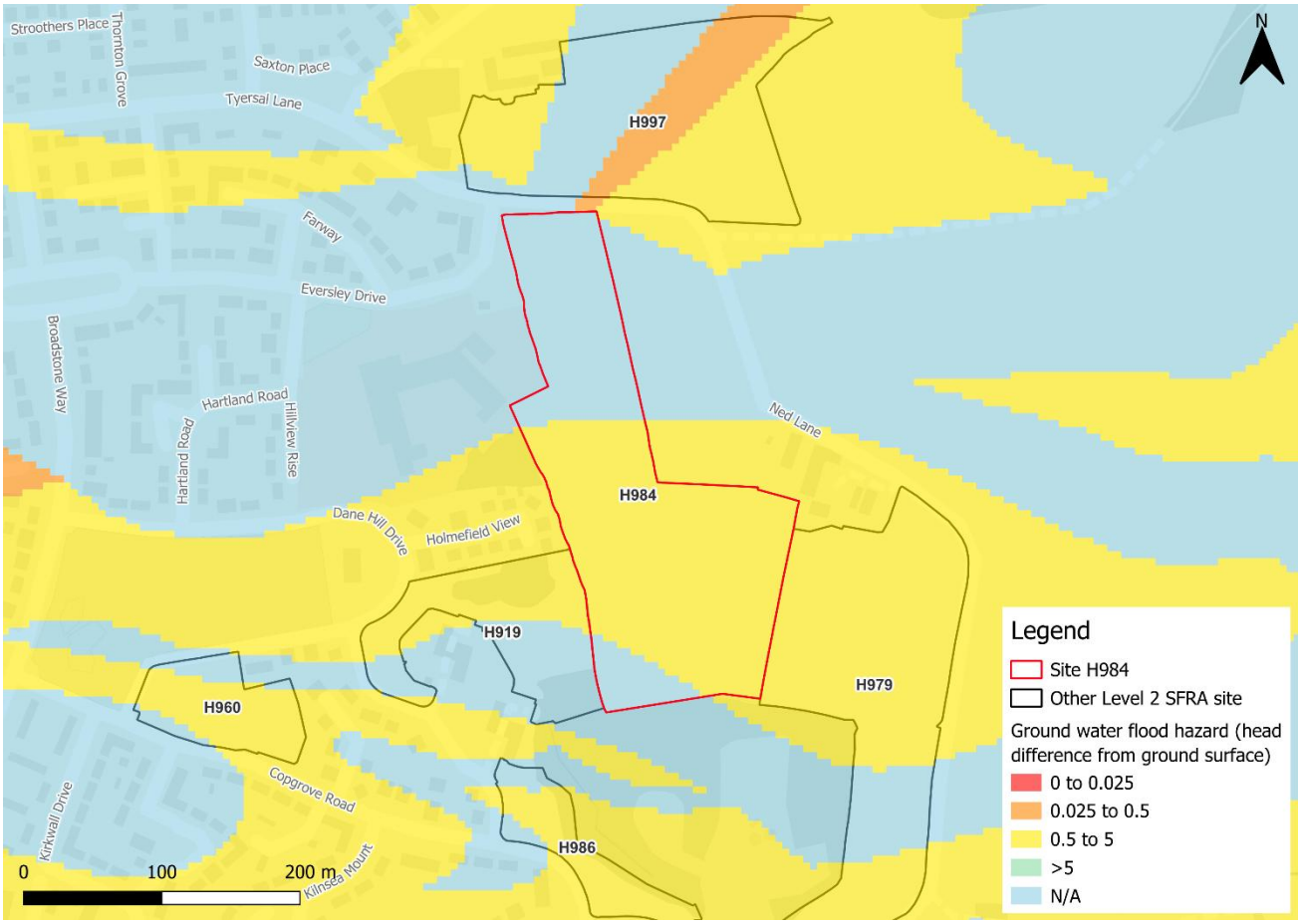


Figure 2-129: JBA 5m Groundwater Emergence Map (H984)

2.49.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.50 H986

Site summary (Figure 2-130)	
Location	Copgrove Road, Holmewood
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.6 hectares

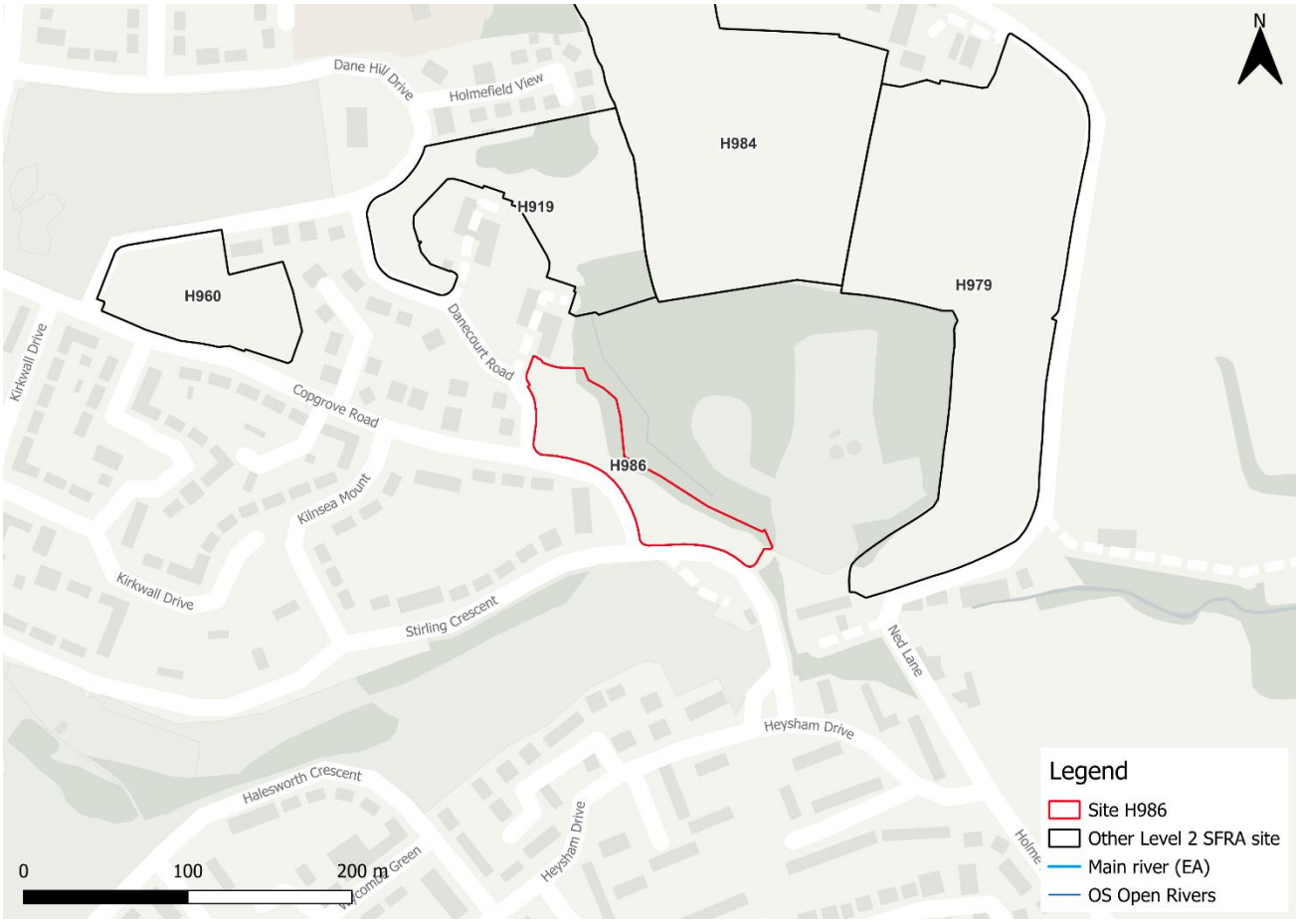


Figure 2-130: H986 site location boundary

2.50.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's Flood Map for Planning. Based on OS mapping, an small unnamed, unmodelled watercourse is present adjacent to the eastern boundary of the site. Given the elevation of the site in relation to the watercourse, this is unlikely to pose fluvial risk to the site.

2.50.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-50). Surface water risk is confined to the boundaries of the site in all events. Maximum depths within the site in the low risk event are between 0.3 and 0.6 m (Figure 2-131). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Copgrove Road to the west of the site in the high and medium risk events. This route becomes inundated in the low risk event and medium risk event +45% climate change, safe access and escape routes should be considered further as part of a site-specific FRA.

Table 2-50: Existing surface water flood risk within H986 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
92	4	2	2

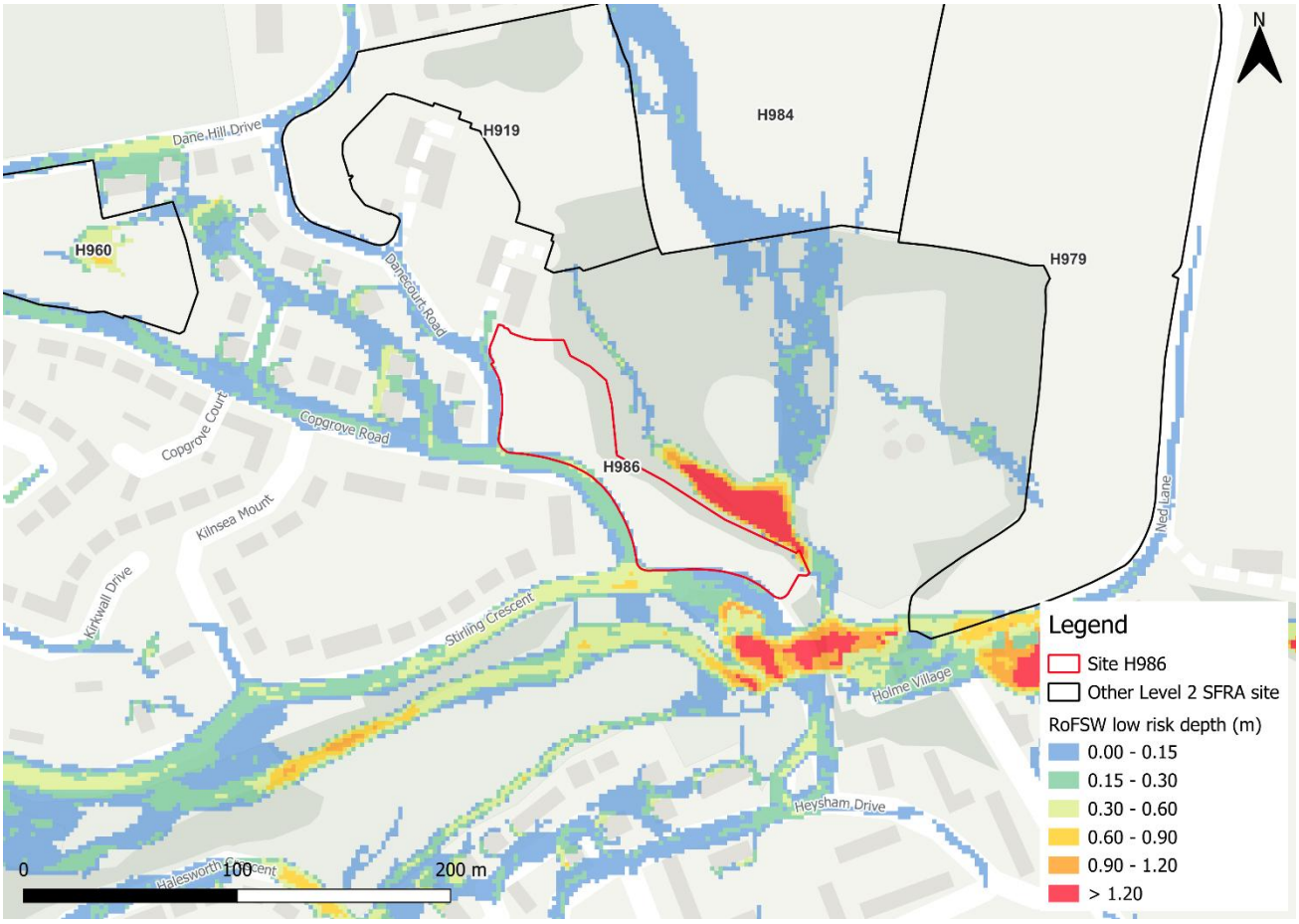


Figure 2-131: Low risk event surface water flood depths within H986 (Risk of Flooding from Surface Water)

2.50.3 Groundwater

Within the majority of the site there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-132).

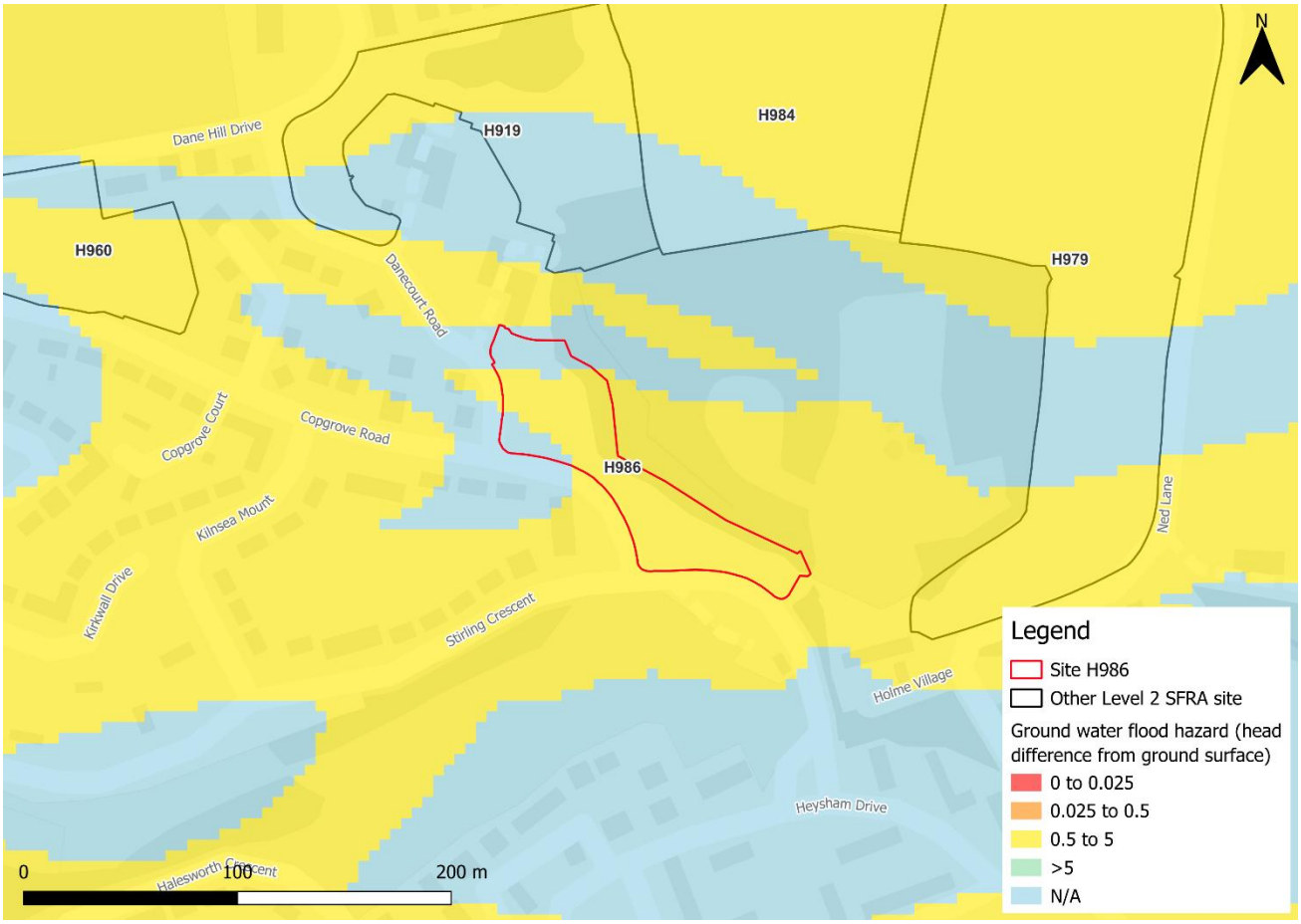


Figure 2-132: JBA 5m Groundwater Emergence Map (H986)

2.50.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

- Safe access and escape routes in the low risk event and medium risk event +45% climate change should be considered further as part of a site-specific FRA.

2.51 H991

Site summary (Figure 2-133)	
Location	Mead View, Holmewood (1)
Existing site use	Residential care home
Existing site vulnerability	More vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.7 hectares

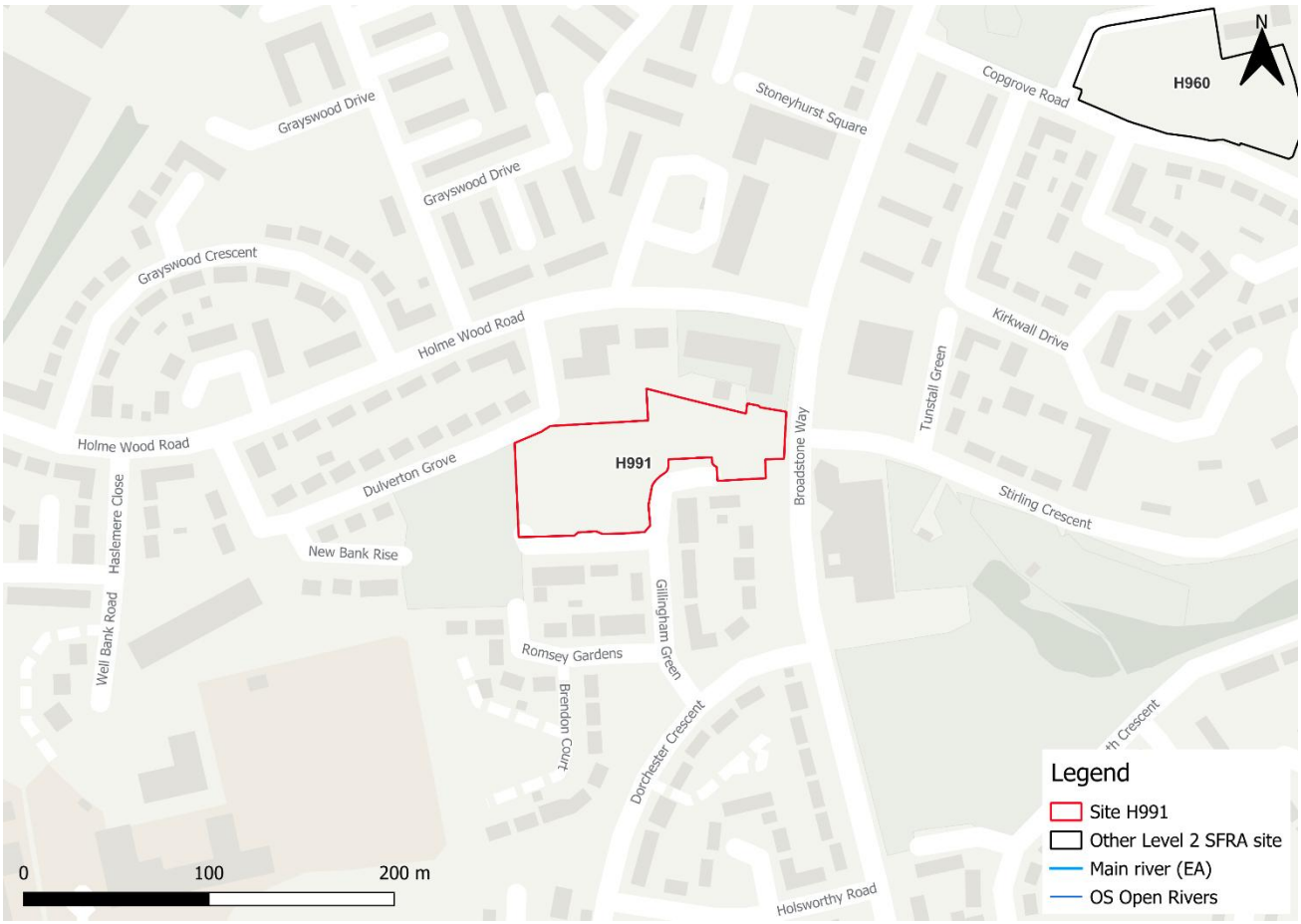


Figure 2-133: H991 site location boundary

2.51.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.51.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-51). Surface water risk is confined to a shallow flow path within the north east of the site in all events. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-134). This is largely consistent with the medium risk event +45% climate change however maximum depths increase to between 0.3 and 0.6 m in this event.

Based on available information, safe access and escape routes should be achievable via Mead Way to the south of the site.

Table 2-51: Existing surface water flood risk within H991 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
89	4	6	1

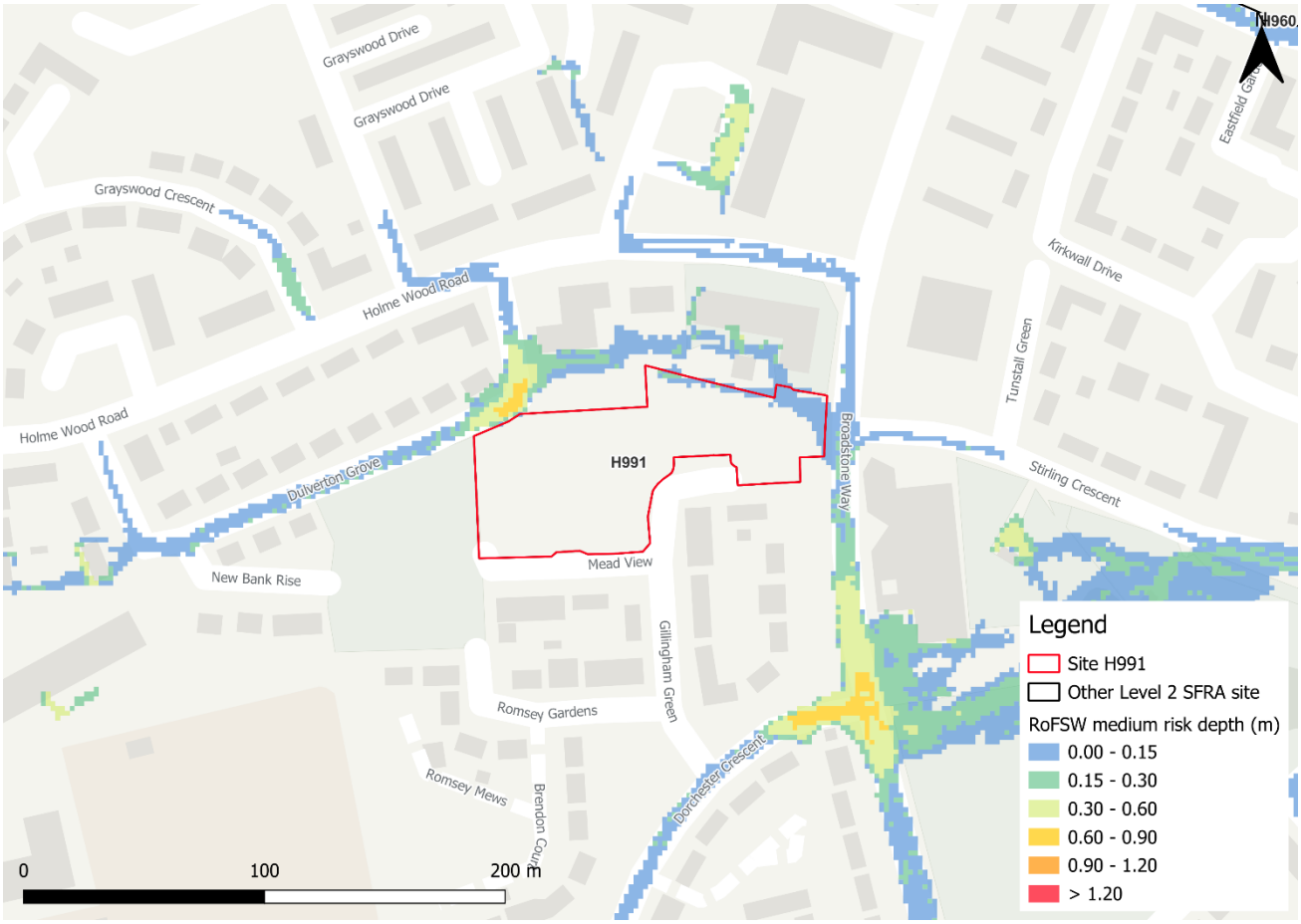


Figure 2-134: Medium risk event surface water flood depths within H991 (Risk of Flooding from Surface Water)

2.51.3 Groundwater

The entirety of the site is in an area where there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-135).

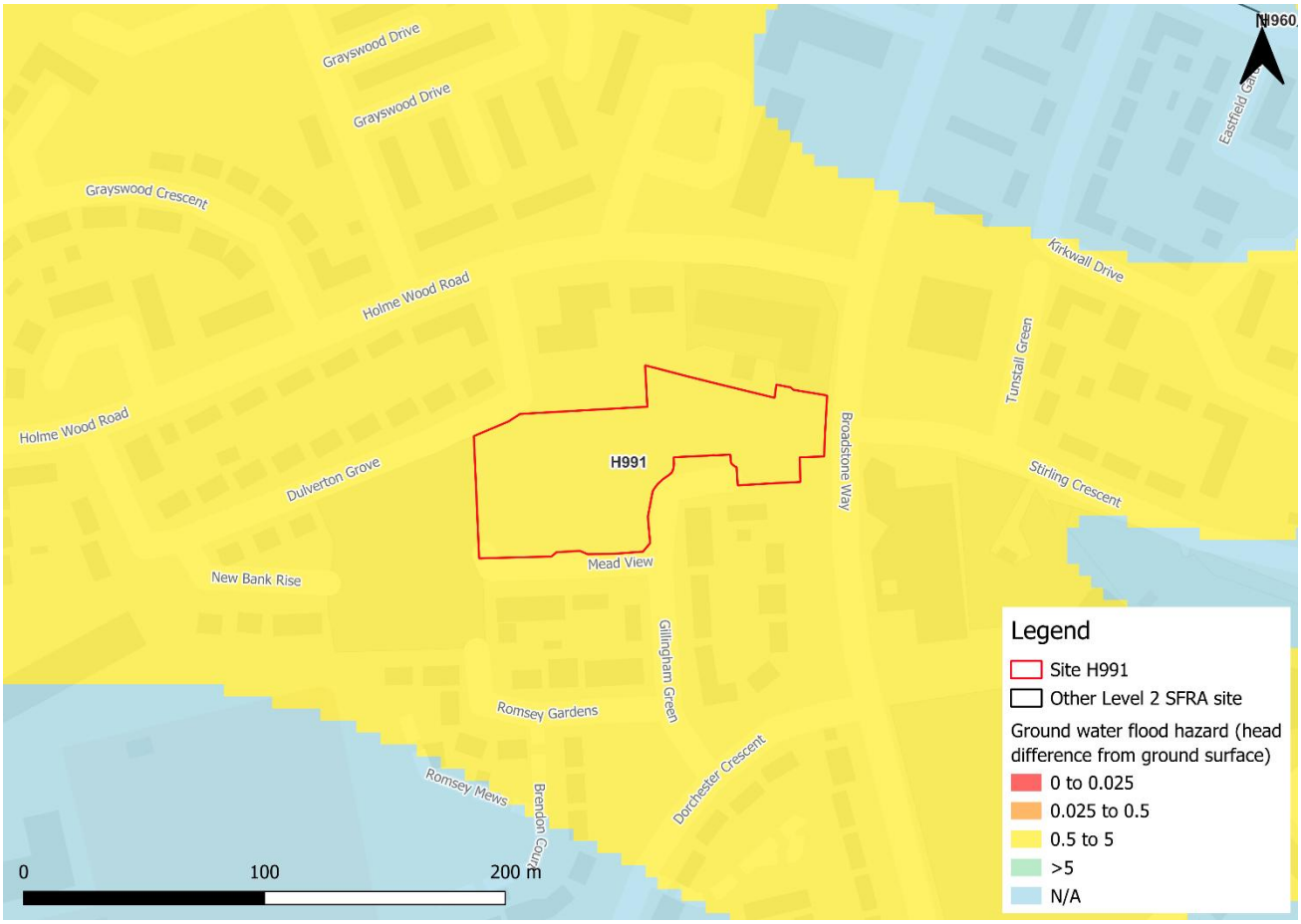


Figure 2-135: JBA 5m Groundwater Emergence Map (H991)

2.51.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.52 H993

Site summary (Figure 2-136)	
Location	Kaycell Street, Bierley
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.6 hectares

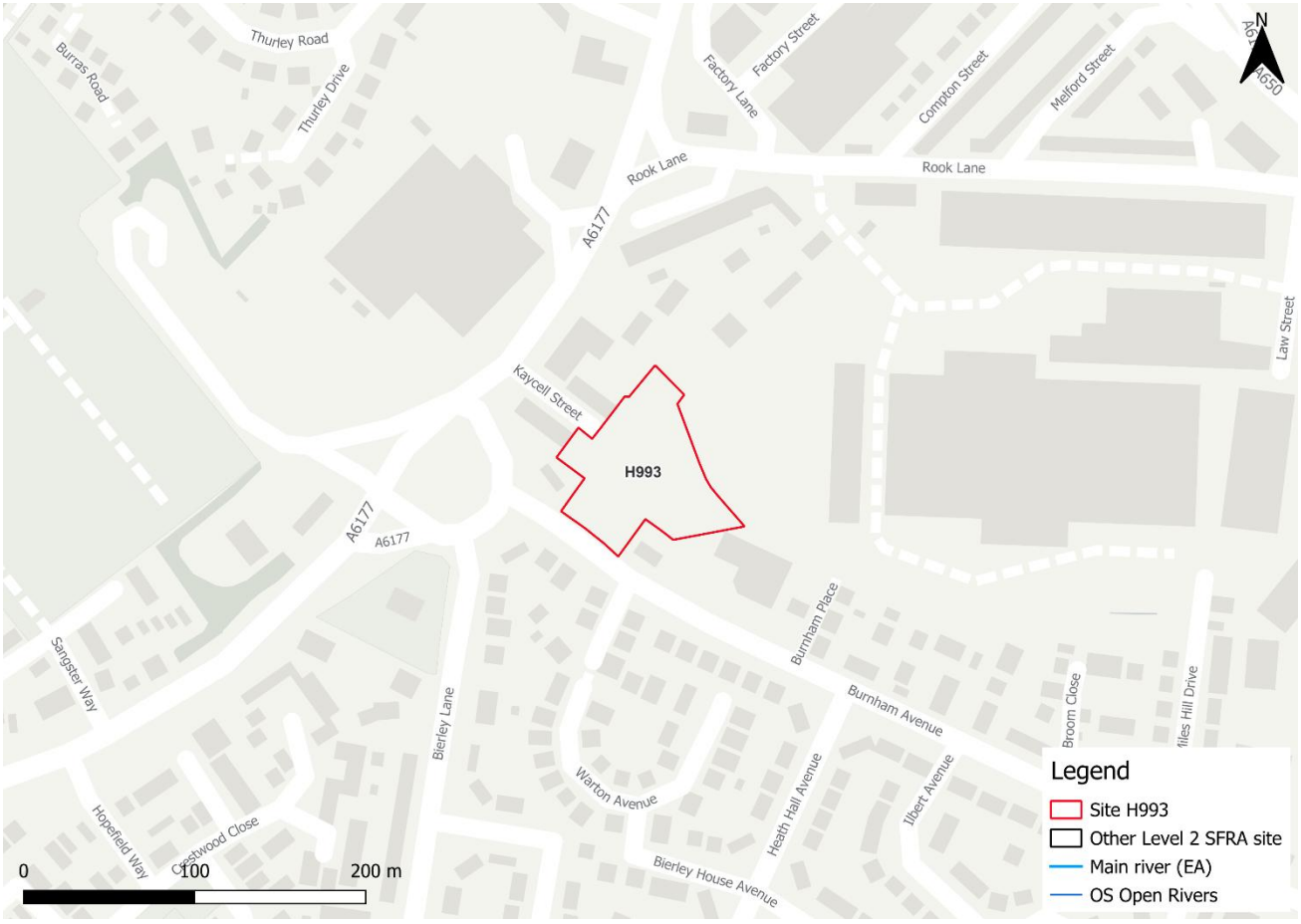


Figure 2-136: H993 site location boundary

2.52.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.52.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-52). Surface water risk is confined to the east of the site in the medium risk event. This area of risk increases in extent in the low risk event. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-137). The area at risk in the east of the site extends to a shallow flow path through the site in the medium risk event +45% climate change, with maximum depths of between 0.3 and 0.6 m (Figure 2-138).

Based on available information, safe access and escape routes should be achievable via Kaycell Street to the west of the site.

Table 2-52: Existing surface water flood risk within H993 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
91	7	2	0

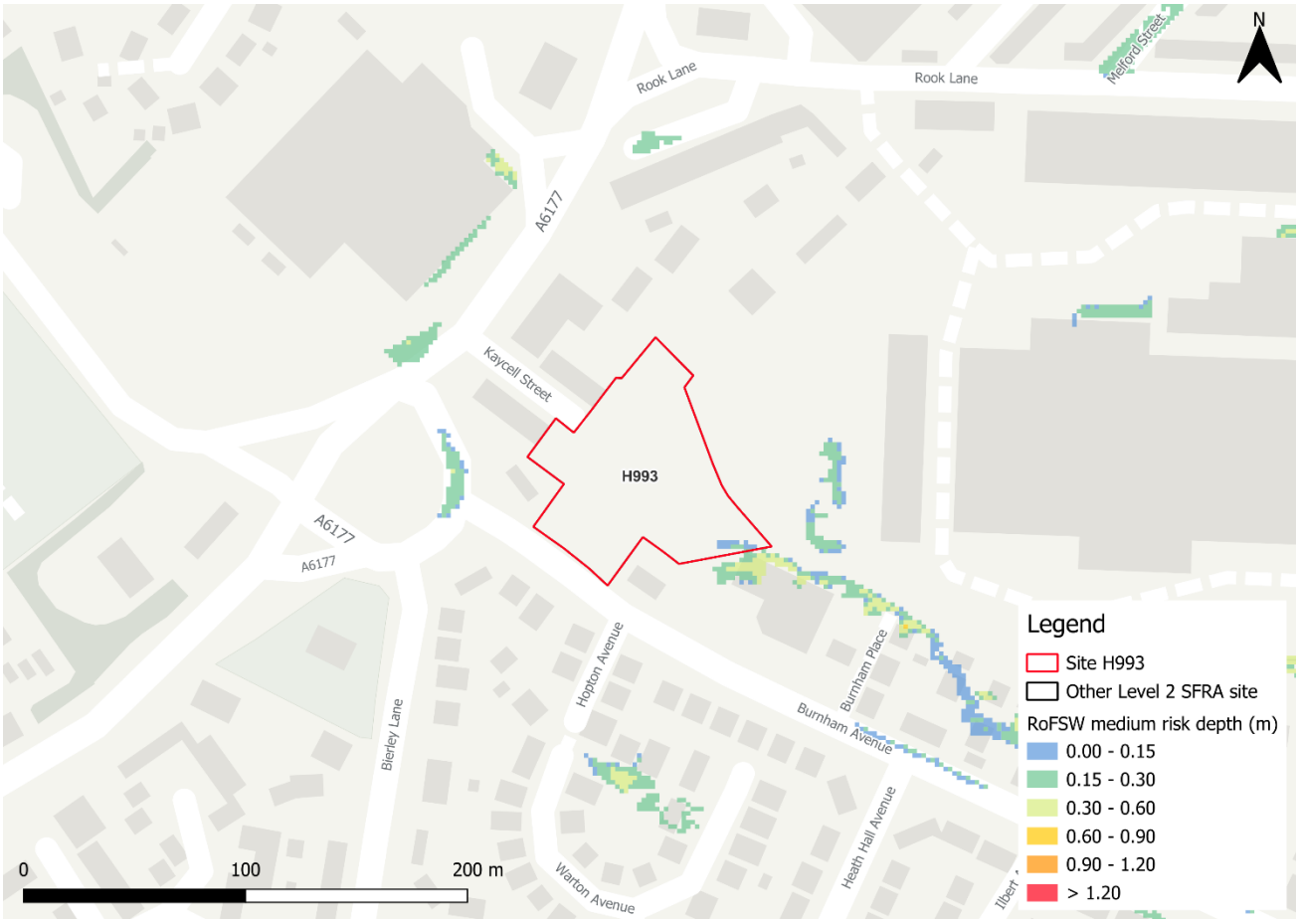


Figure 2-137: Medium risk event surface water flood depths within H993 (Risk of Flooding from Surface Water)

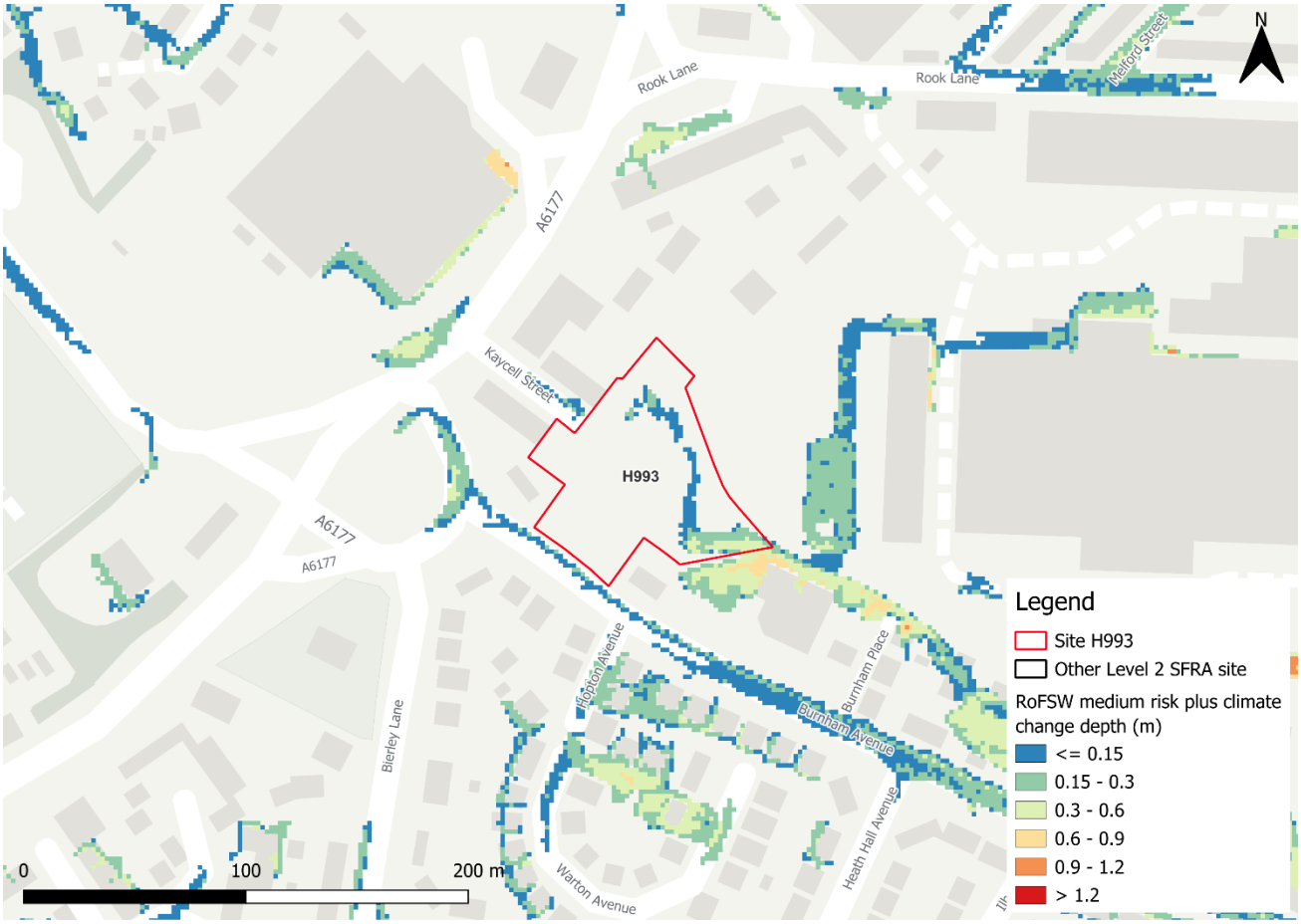


Figure 2-138: Medium risk event surface water flood depths plus 45% climate change within H993 (based on Risk of Flooding from Surface Water map)

2.52.3 Groundwater

Across the majority of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas. Within the west and south of the site, there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-139).

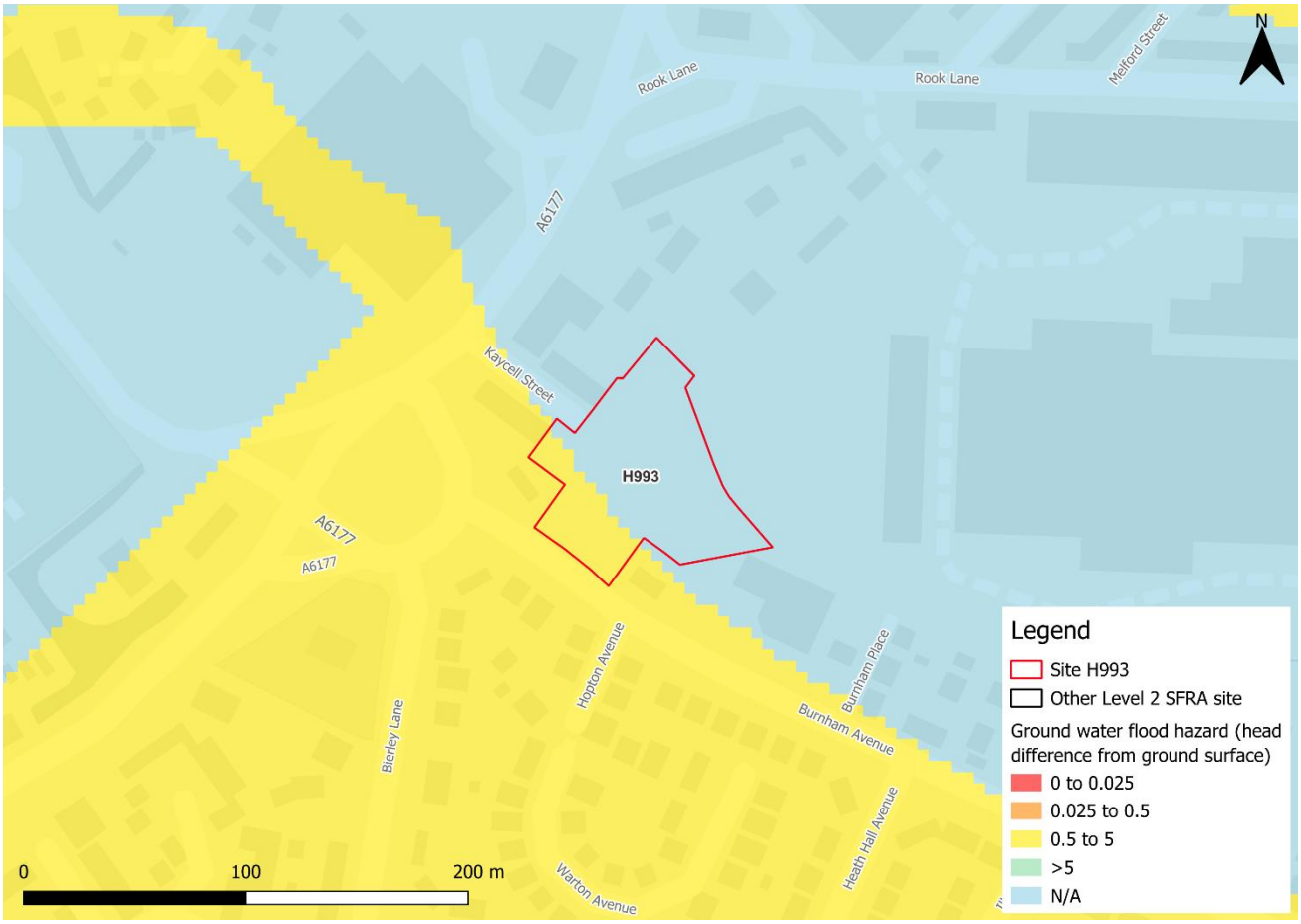


Figure 2-139: JBA 5m Groundwater Emergence Map (H993)

2.52.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- A shallow flow path emerges through the centre of the site within the medium risk surface water event plus climate change. Topographic flow routes should be considered and included in site design and ideally left in place to flood naturally

when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.53 H994

Site summary (Figure 2-140)	
Location	Cleckheaton Road
Existing site use	Brownfield
Existing site vulnerability	Less vulnerable
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	0.5 hectares

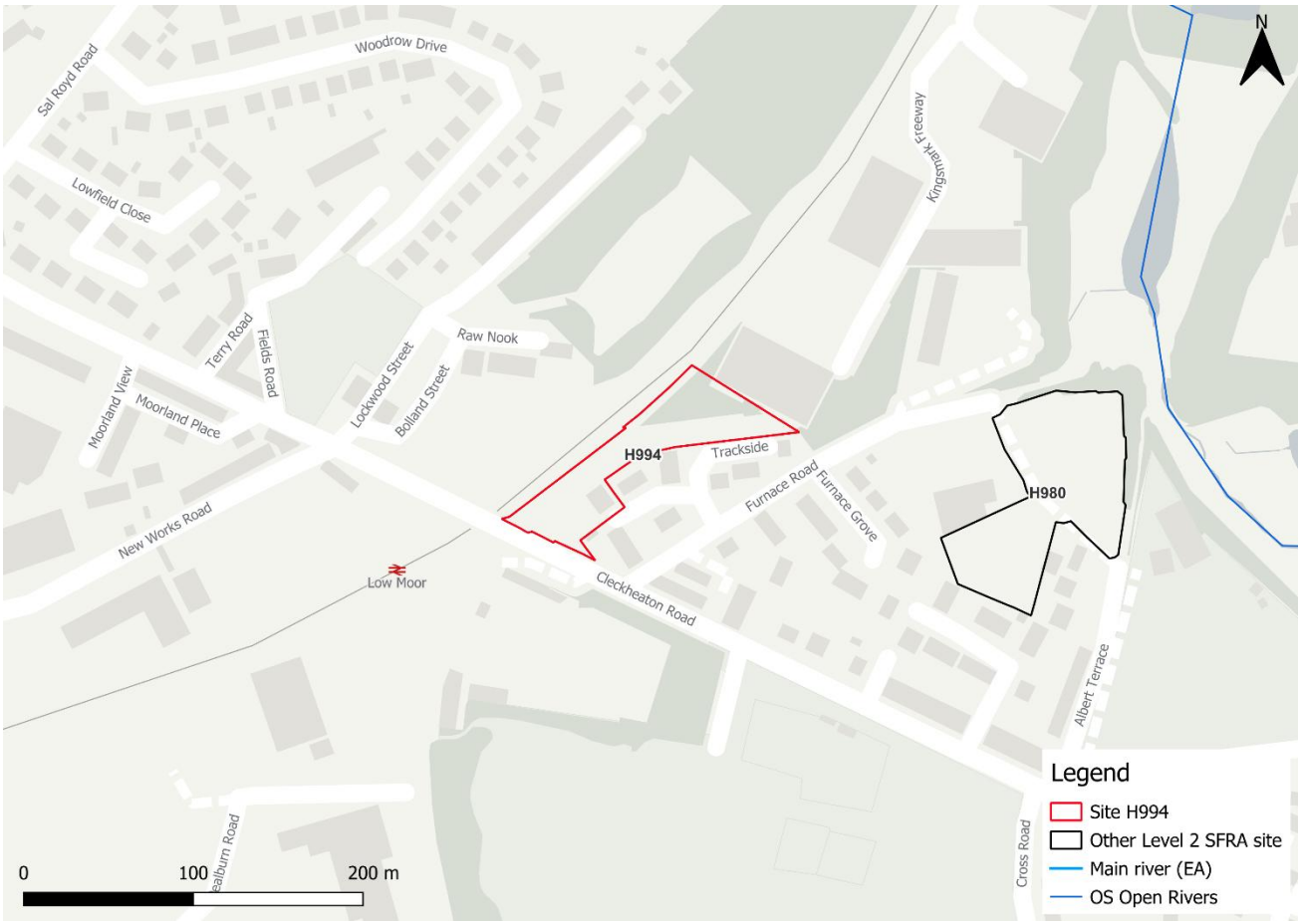


Figure 2-140: H994 site location boundary

2.53.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.53.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-53). Surface water risk is confined to a short, shallow flow path within the southwest of the site in the medium risk event. This extends along the northwestern boundary of the site in the low risk event. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-141). The present day low risk event is consistent with the medium risk event +45% climate change, with maximum depths of between 0.3 and 0.6 m (Figure 2-142).

Based on available information, safe access and escape routes should be achievable via Cleckheaton Road to the south of the site.

Table 2-53: Existing surface water flood risk within H994 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
79	17	4	0

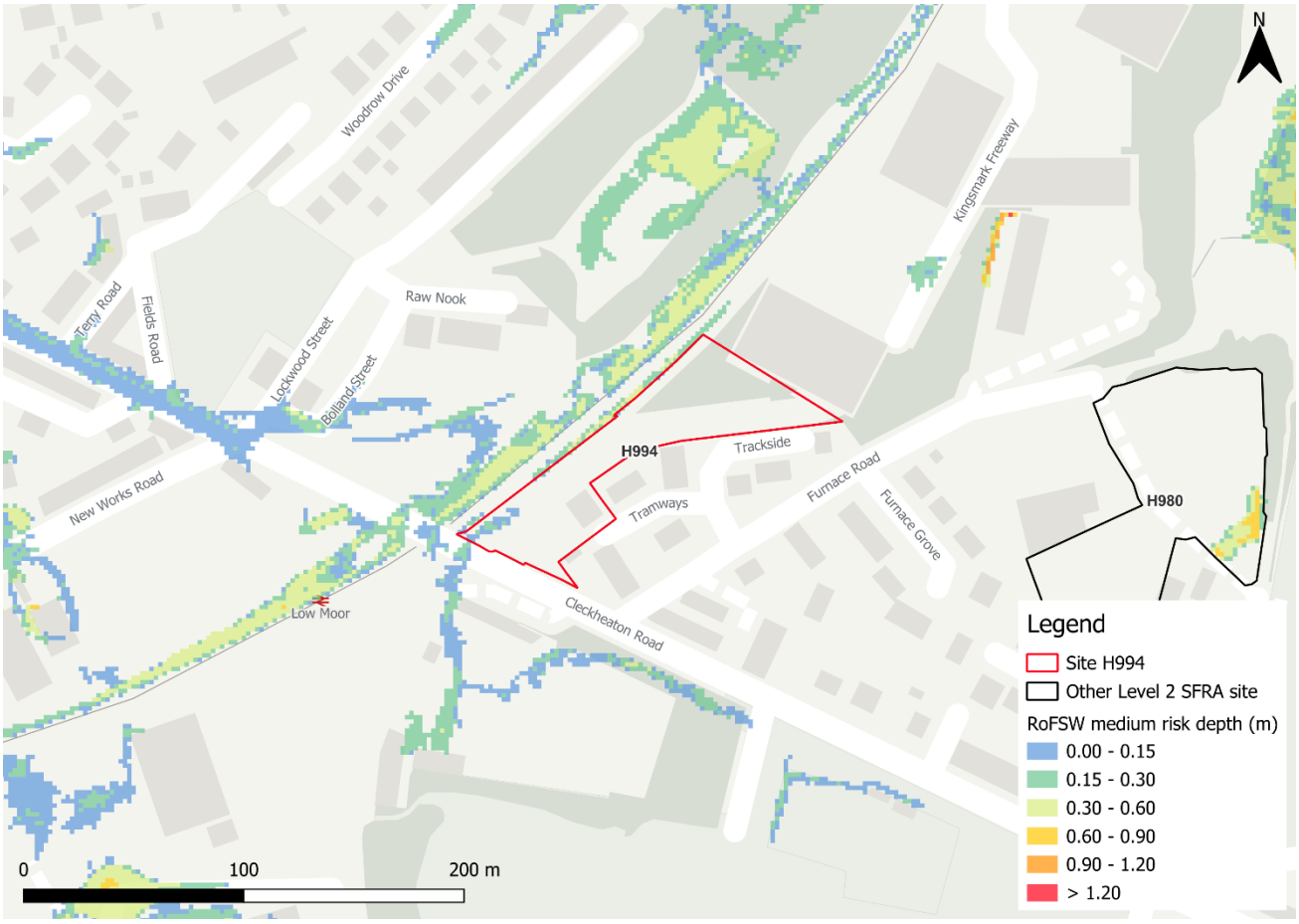


Figure 2-141: Medium risk event surface water flood depths within H994 (Risk of Flooding from Surface Water)

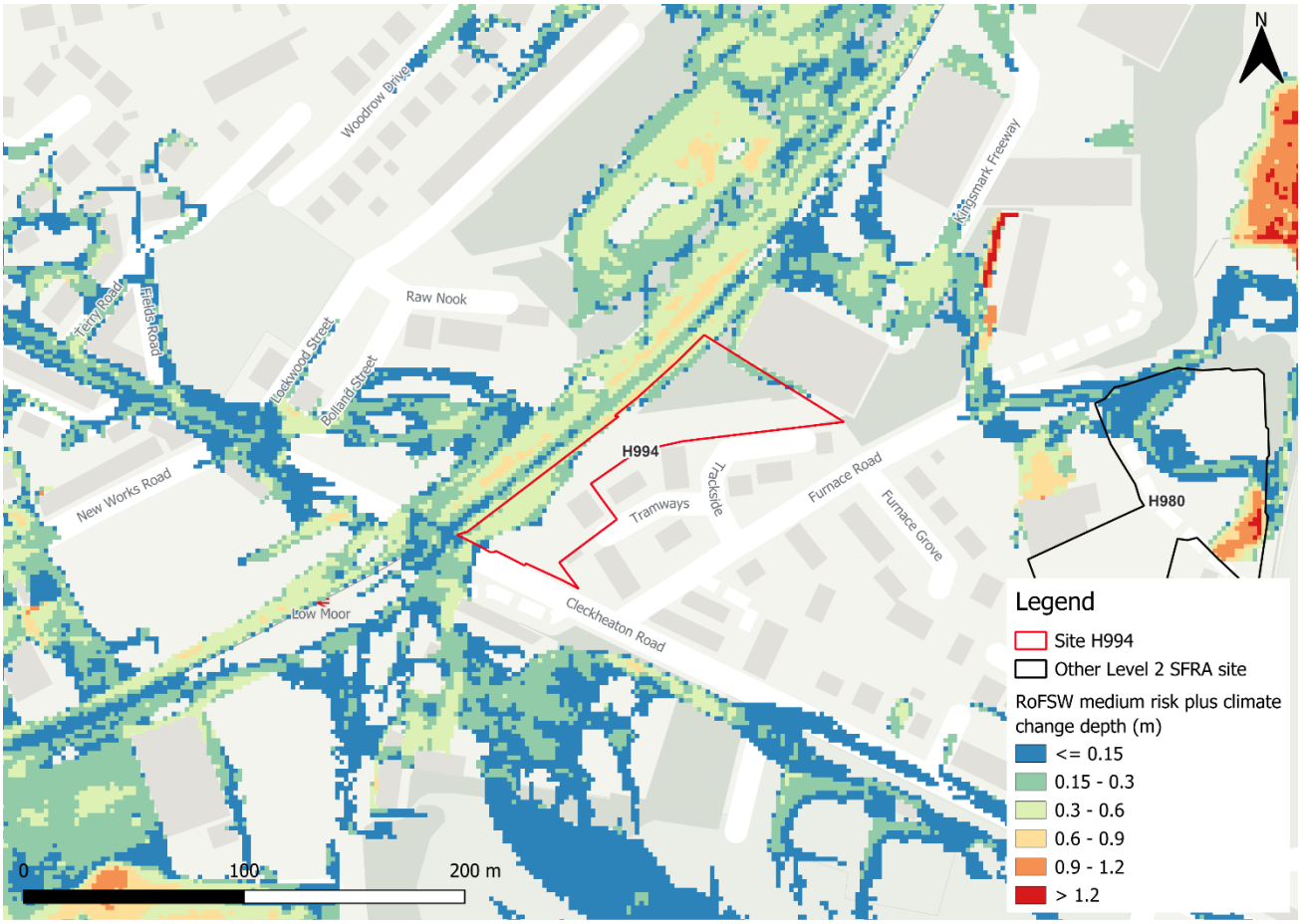


Figure 2-142: Medium risk event surface water flood depths plus 45% climate change within H994 (based on Risk of Flooding from Surface Water map)

2.53.3 Reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. Figure 2-143 shows the RFM in a 'dry day' and 'wet day' scenario. A 'dry day' scenario assumes that the water level in the reservoir is the same as the spillway level or the underside of the roof for a service reservoir and the watercourses upstream and downstream of the reservoir are at a normal level. A 'wet day' scenario assumes a worst-case scenario where a reservoir releases water held on a 'wet day' when local rivers have already overflowed their banks.

The site is potentially at risk from Harold Park reservoir located within Bradford, owned and maintained by the City of Bradford Metropolitan District Council.

The EA's SFRA guidance states that where a proposed development site is at flood risk from a reservoir, then an assessment into whether the reservoir design or maintenance schedule needs improving should be carried out. Expert advice may be required from an all-reservoirs panel engineer. The Council should consult internally to ascertain whether the proposed development could affect the reservoir's risk designation, it's design category or how it is operated. The Council, as category 1 responders, can access more detailed information about reservoir risk and reservoir owners using the Resilience Direct system.

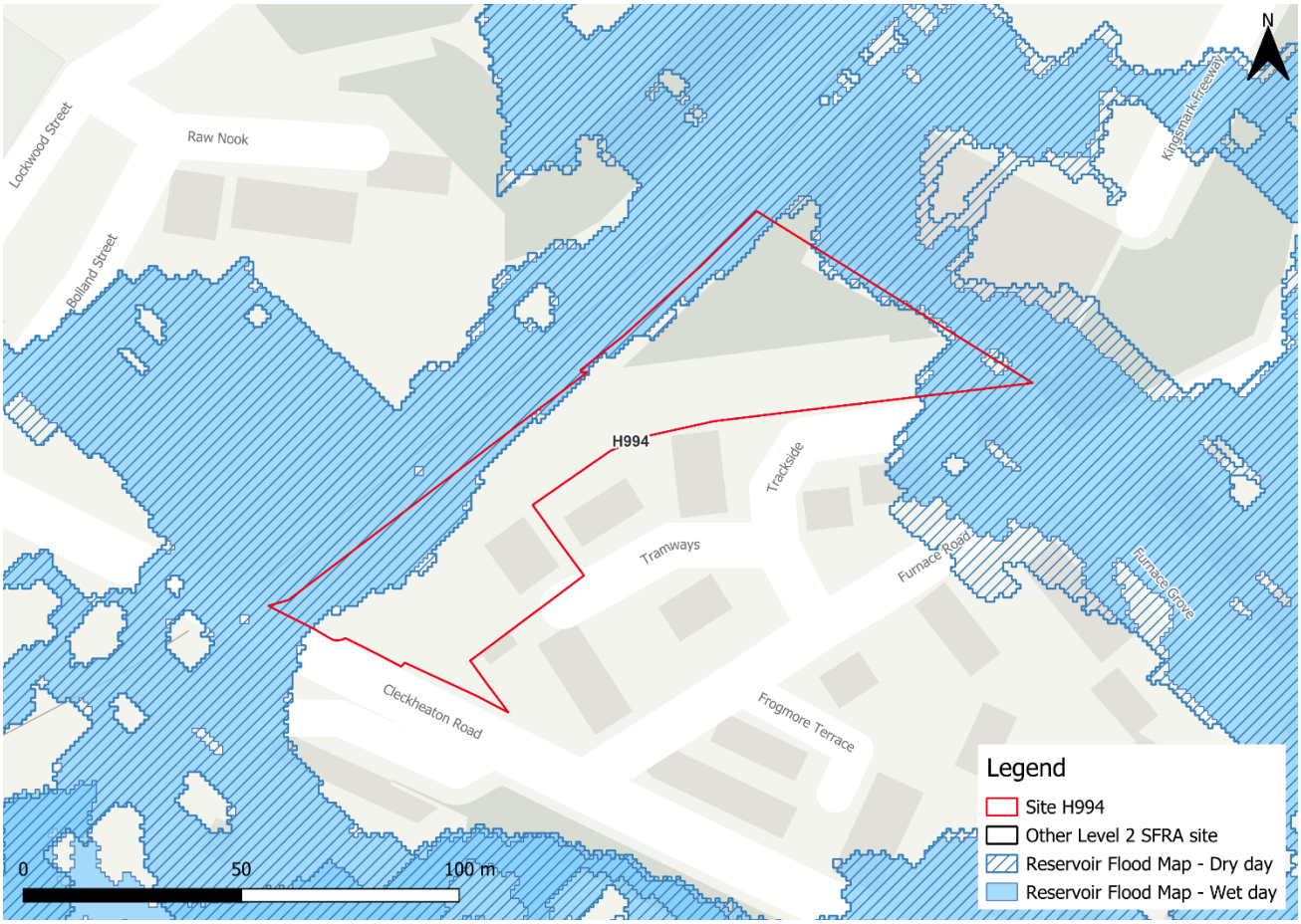


Figure 2-143: Flood risk from reservoirs within H994

2.53.4 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.53.5 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial risk as a result of climate change.

- Ideally, development would avoid the area at risk in the medium risk event climate change along the northwestern boundary of the site.
- The Council should consult internally regarding the potential reservoir risk.

2.54 H997

Site summary (Figure 2-144)	
Location	Harper Gate Farm, Tyersal Lane
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Housing
Proposed site vulnerability	More vulnerable
Site area	2.6 hectares

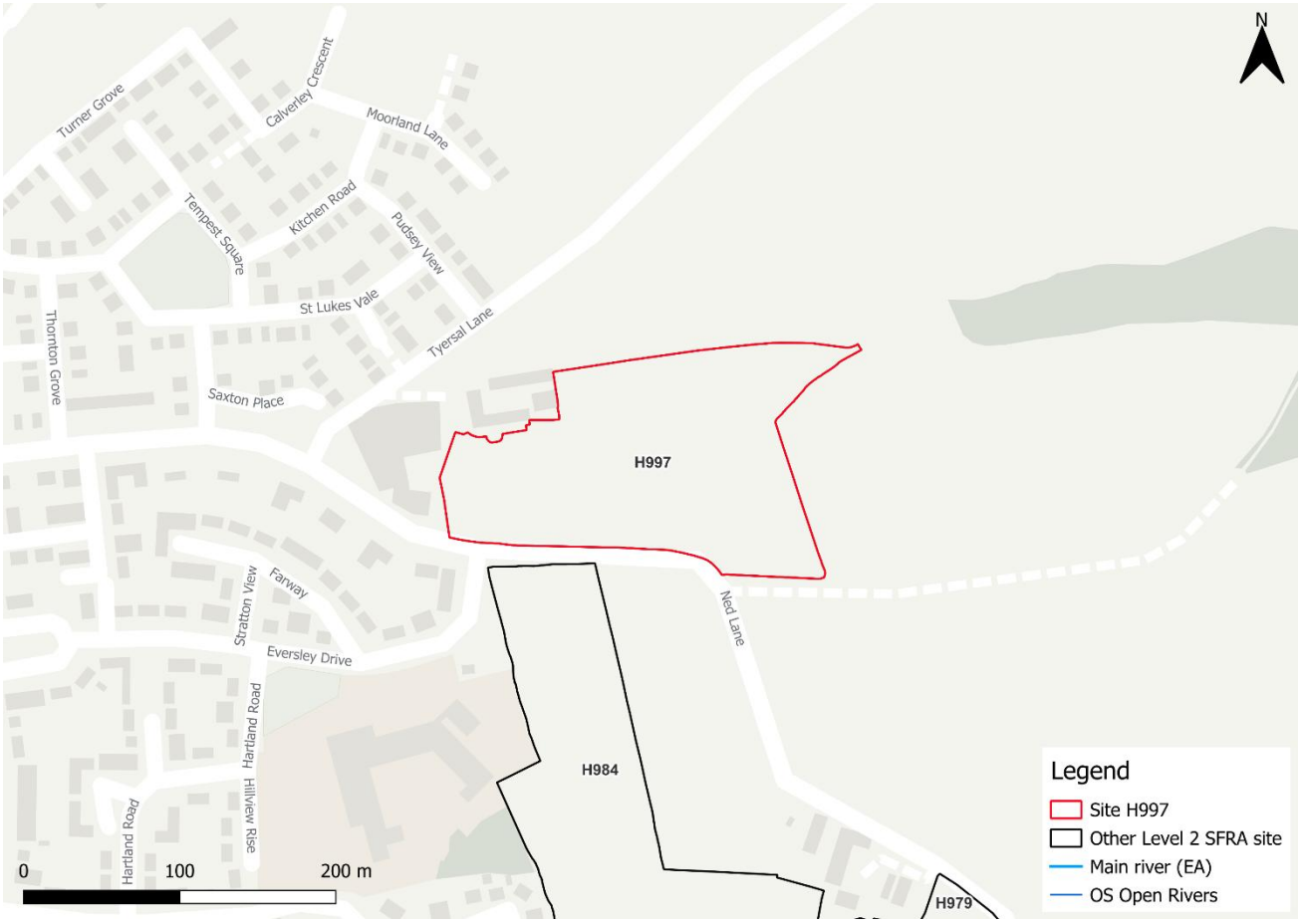


Figure 2-144: H997 site location boundary

2.54.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.54.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-54). Surface water risk is confined to the boundaries of the site in all events. Maximum depths within the site in the low risk event are between 0.15 and 0.3 m (Figure 2-145). This is consistent with the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Ned Lane to the south of the site.

Table 2-54: Existing surface water flood risk within H997 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
98	1	1	0

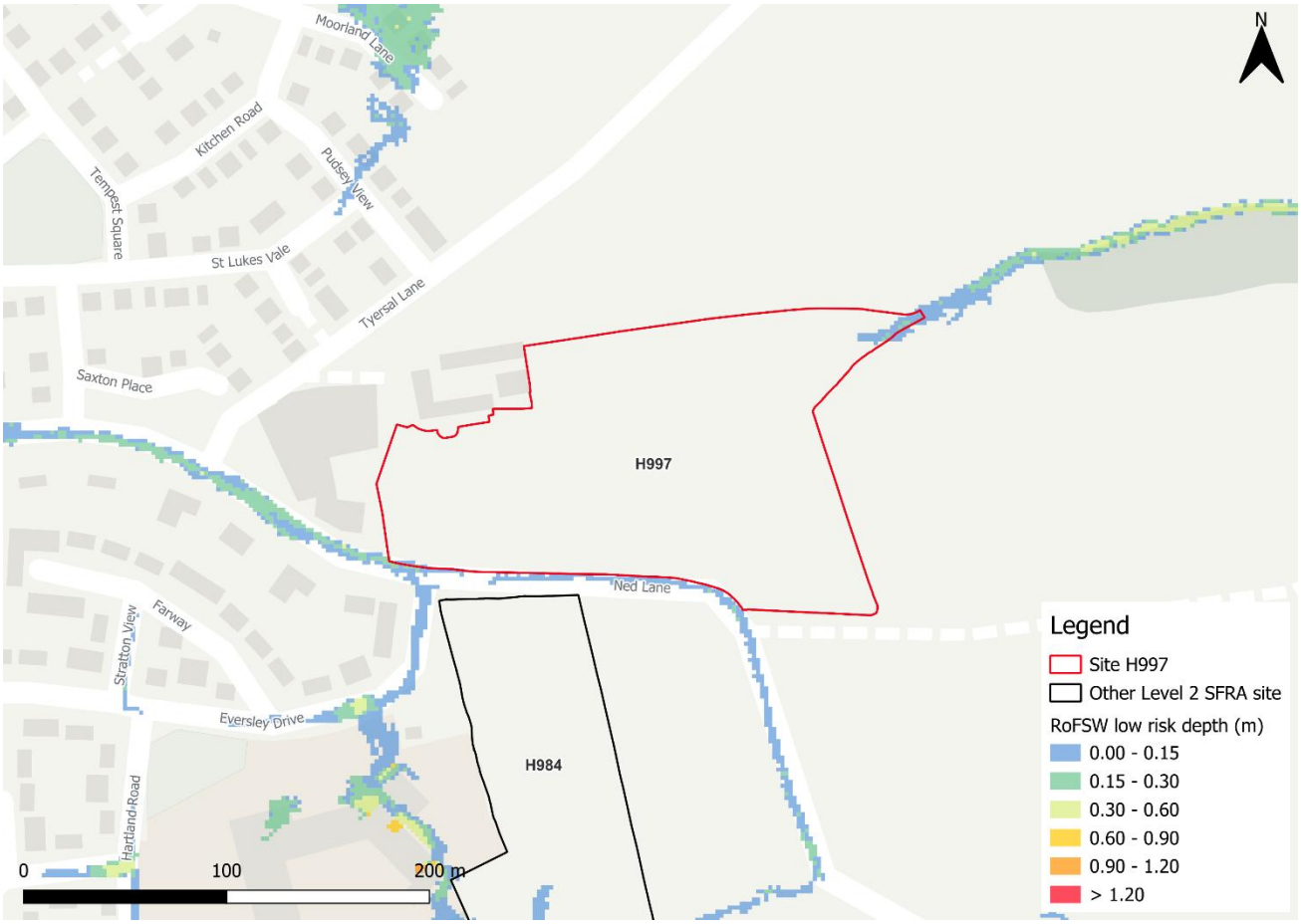


Figure 2-145: Low risk event surface water flood depths within H997 (Risk of Flooding from Surface Water)

2.54.3 Groundwater

The risk of groundwater emergence varies across the site. Through the centre of the site, there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-146). Groundwater conditions in this area should be considered further as part of a site-

specific FRA. Within the east and west of the site, there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely. Within the remaining area of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in this area.

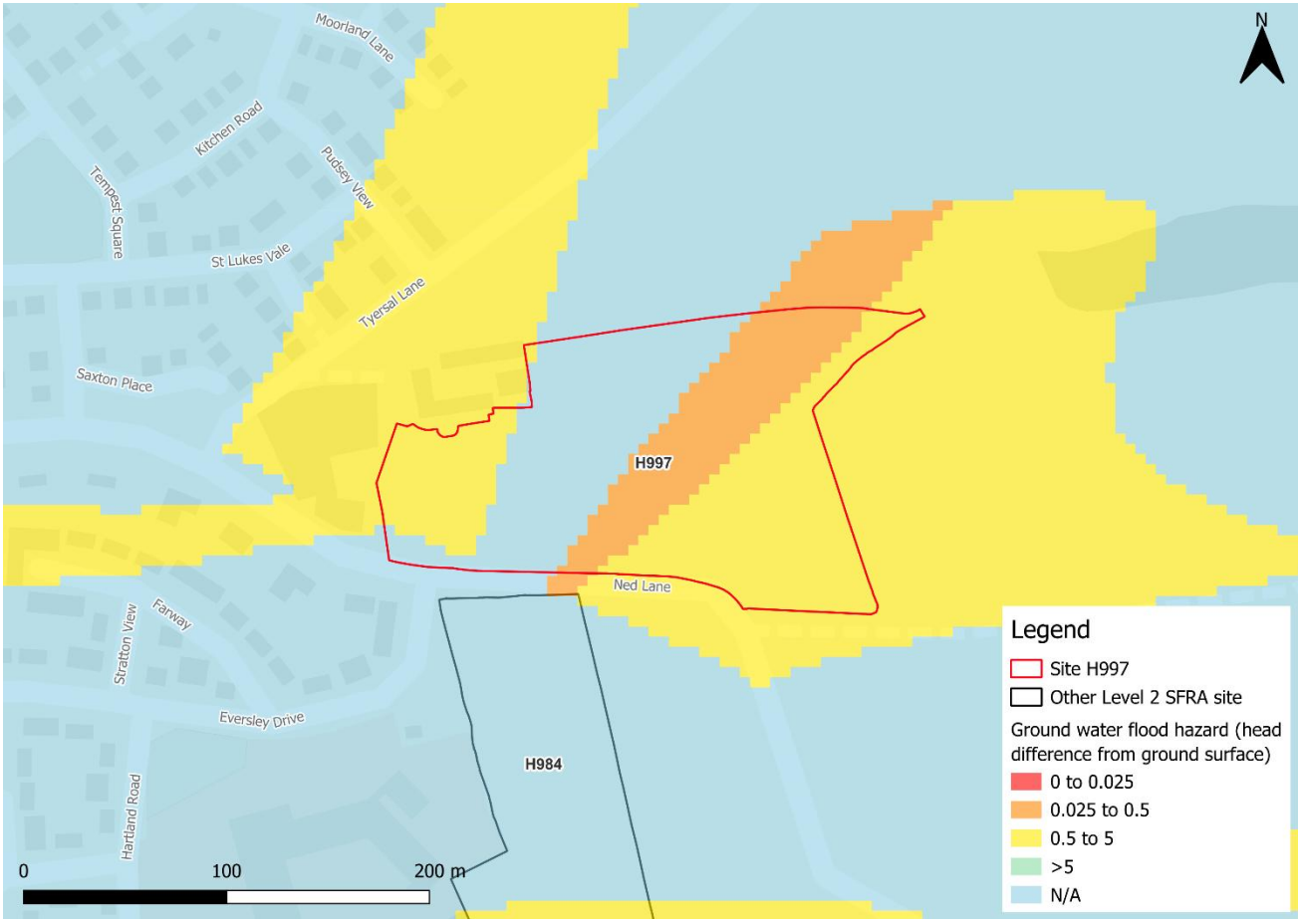


Figure 2-146: JBA 5m Groundwater Emergence Map (H997)

2.54.4 Summary and recommendations

- The site is not required to pass the exception test as it is not located within Flood Zone 3a.
- The proposed development would see a change in the risk classification from water compatible to more vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

- Groundwater conditions should be considered further as part of a site-specific FRA.

2.55 E20

Site summary (Figure 2-147)	
Location	Walkhill Farm, Apperley Lane
Existing site use	Agriculture
Existing site vulnerability	Less vulnerable
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	5.3 hectares

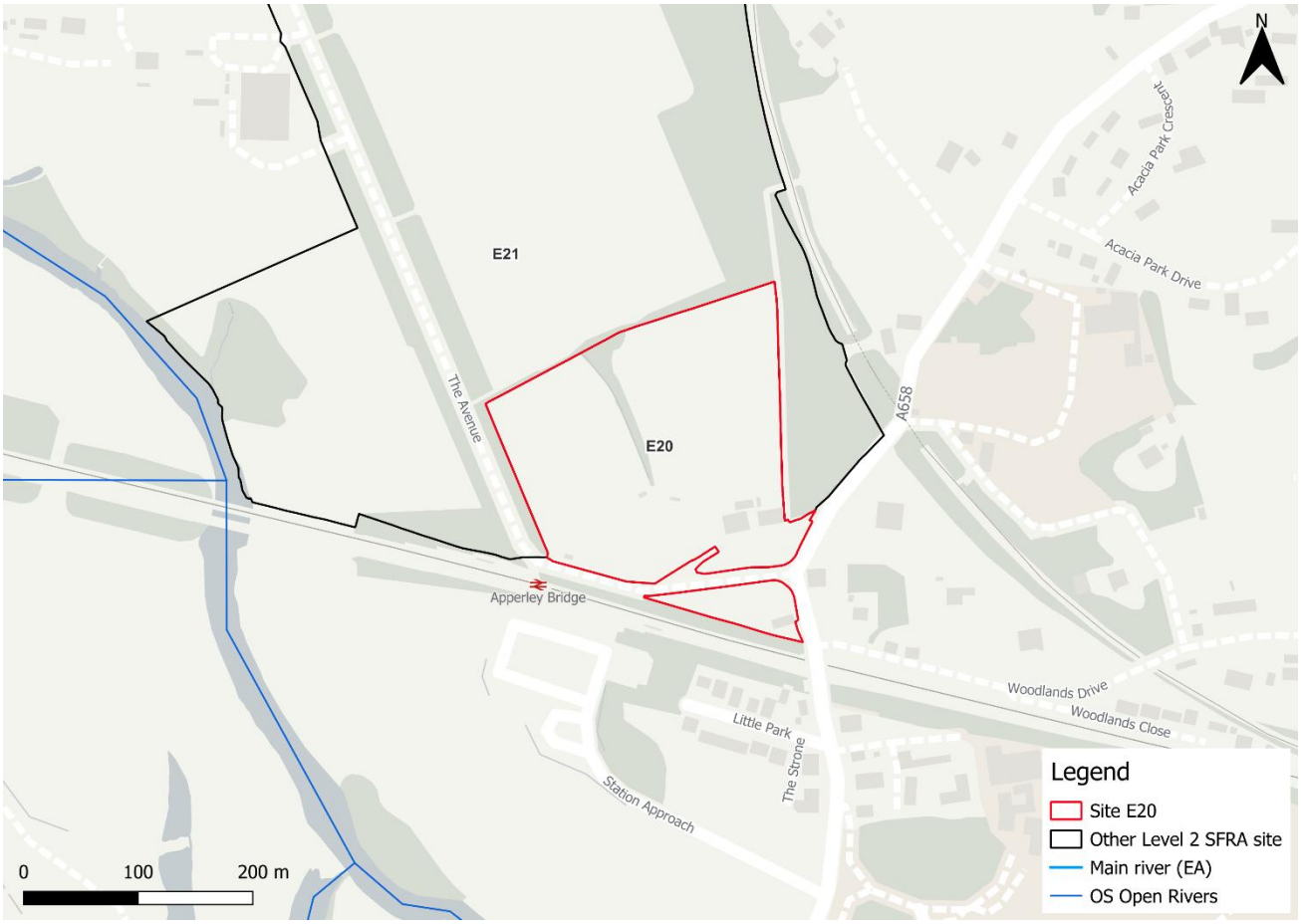


Figure 2-147: E20 site location boundary

2.55.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.55.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-55). Surface water risk is confined to an area of ponding within the northwest of the site in the medium risk event. This area of ponding increases in both extent and depth in the low risk event. Maximum depths within the site in the medium risk event are between 0.6 and 0.9 m (Figure 2-148). The present day low risk event is consistent with the medium risk event +45% climate change, with maximum depths of > 1.2 m.

Based on available information, safe access and escape routes should be achievable via the A658 to the east of the site.

Table 2-55: Existing surface water flood risk within E20 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
95	3	1	1

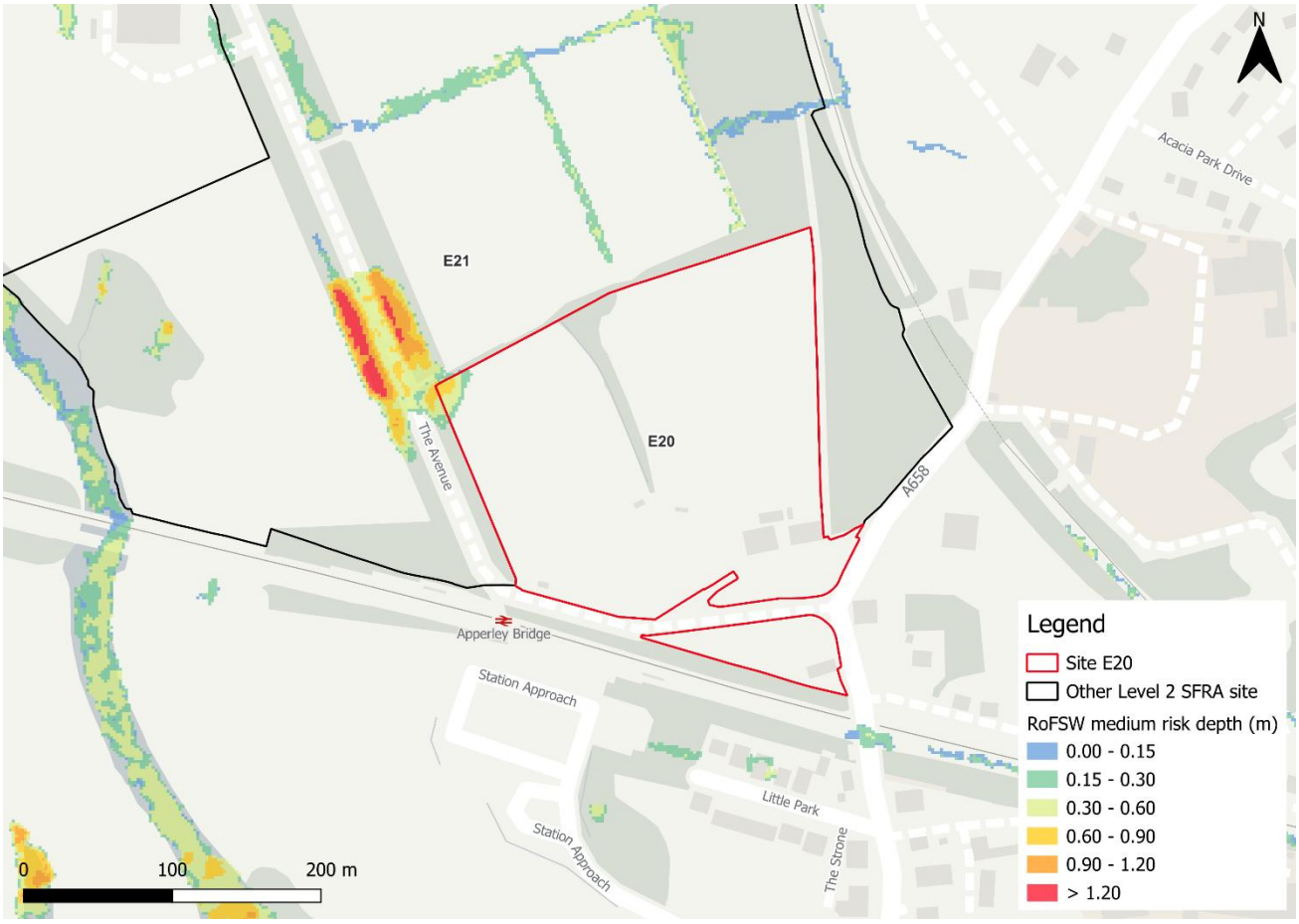


Figure 2-148: Medium risk event surface water flood depths within E20 (Risk of Flooding from Surface Water)

2.55.3 Groundwater

Across the majority of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas. Within the north and south of the site, there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-149).

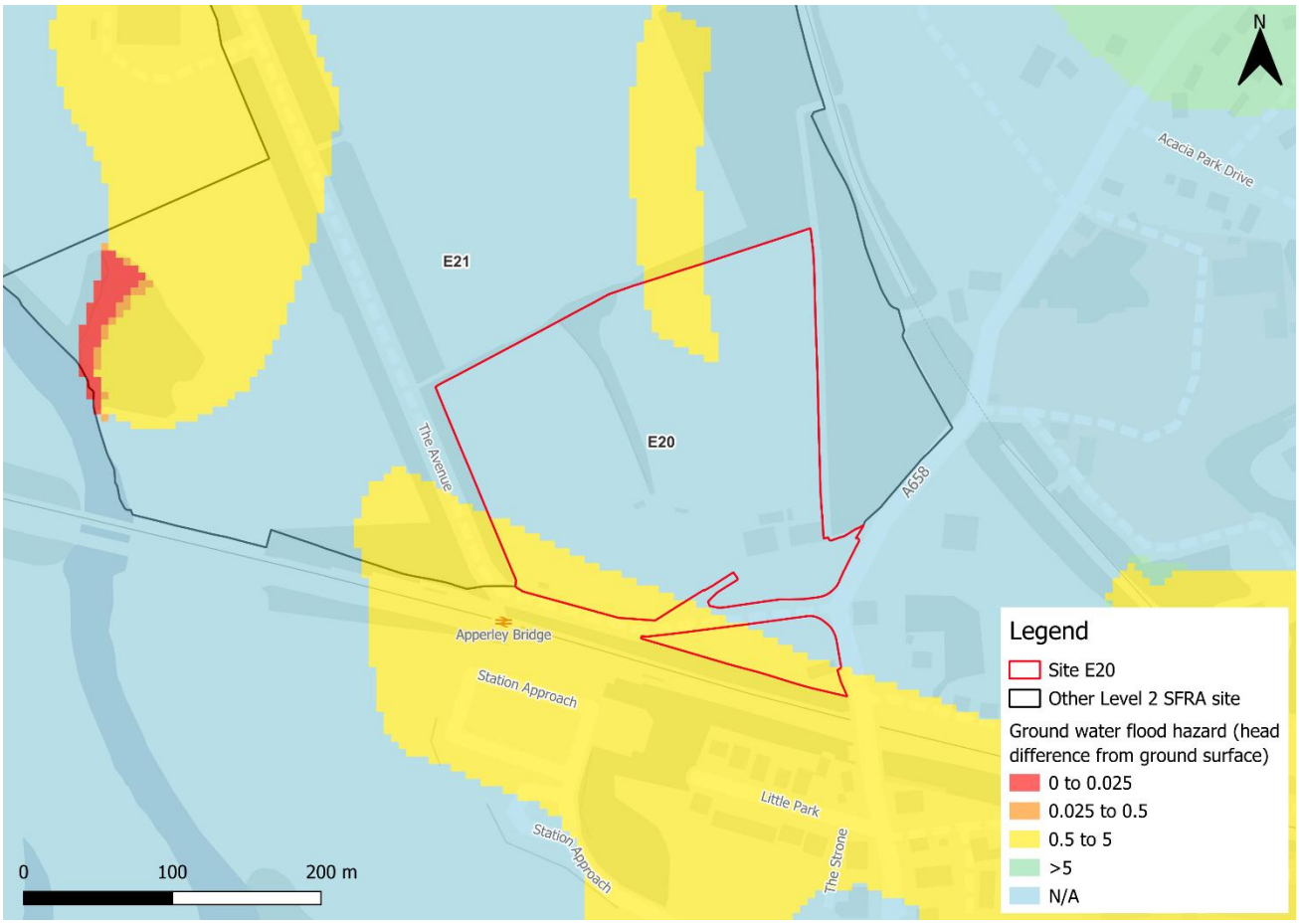


Figure 2-149: JBA 5m Groundwater Emergence Map (E20)

2.55.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial risk as a result of climate change.
- Topographic depressions should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must

include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.56 E27

Site summary (Figure 2-150)	
Location	Lister Street
Existing site use	Industrial
Existing site vulnerability	Less vulnerable
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	0.3 hectares

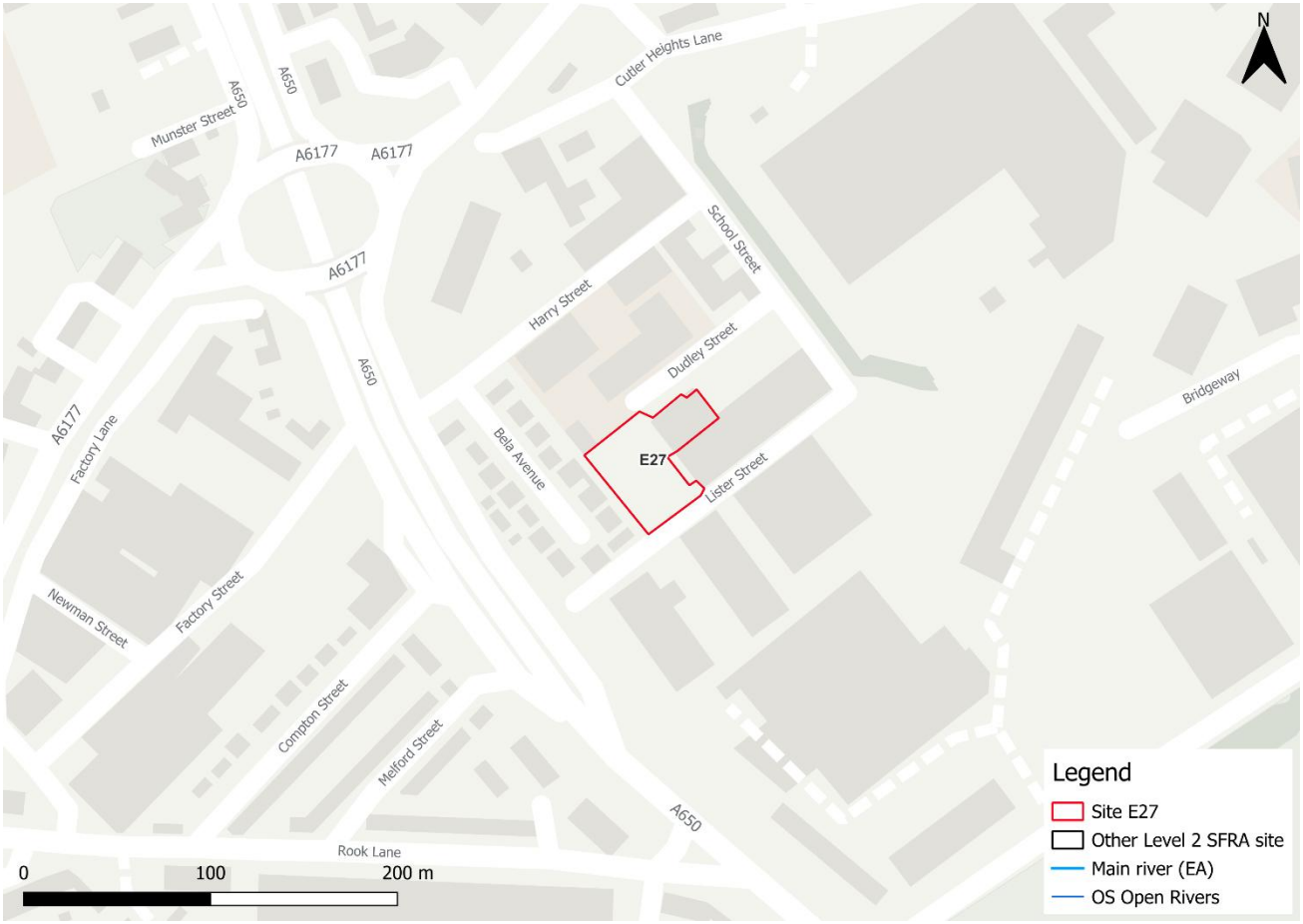


Figure 2-150: E27 site location boundary

2.56.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.56.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-56). Surface water risk is confined to an area of ponding in a topographic low spot within the centre of the site in all events and is constrained by the existing development within the site boundary. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-151). The area of ponding within the centre of the site increases in both extent and depth in the medium risk event +45% climate change, with maximum depths of between 0.3 and 0.6 m.

Based on available information, safe access and escape routes should be achievable via Lister Street to the south of the site.

Table 2-56: Existing surface water flood risk within E27 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
93	3	4	0



Figure 2-151: Medium risk event surface water flood depths within E27 (Risk of Flooding from Surface Water)

2.56.3 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.56.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Surface water risk is constrained by the area of existing development within the site. Any change in site layout where current buildings are to be demolished will require detailed surface water modelling.
- Topographic depressions should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.57 E38

Site summary (Figure 2-152)	
Location	Land At Wharfedale Business Centre Shetcliffe Lane Bradford West Yorkshire
Existing site use	Industrial
Existing site vulnerability	Less vulnerable
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	0.5 hectares

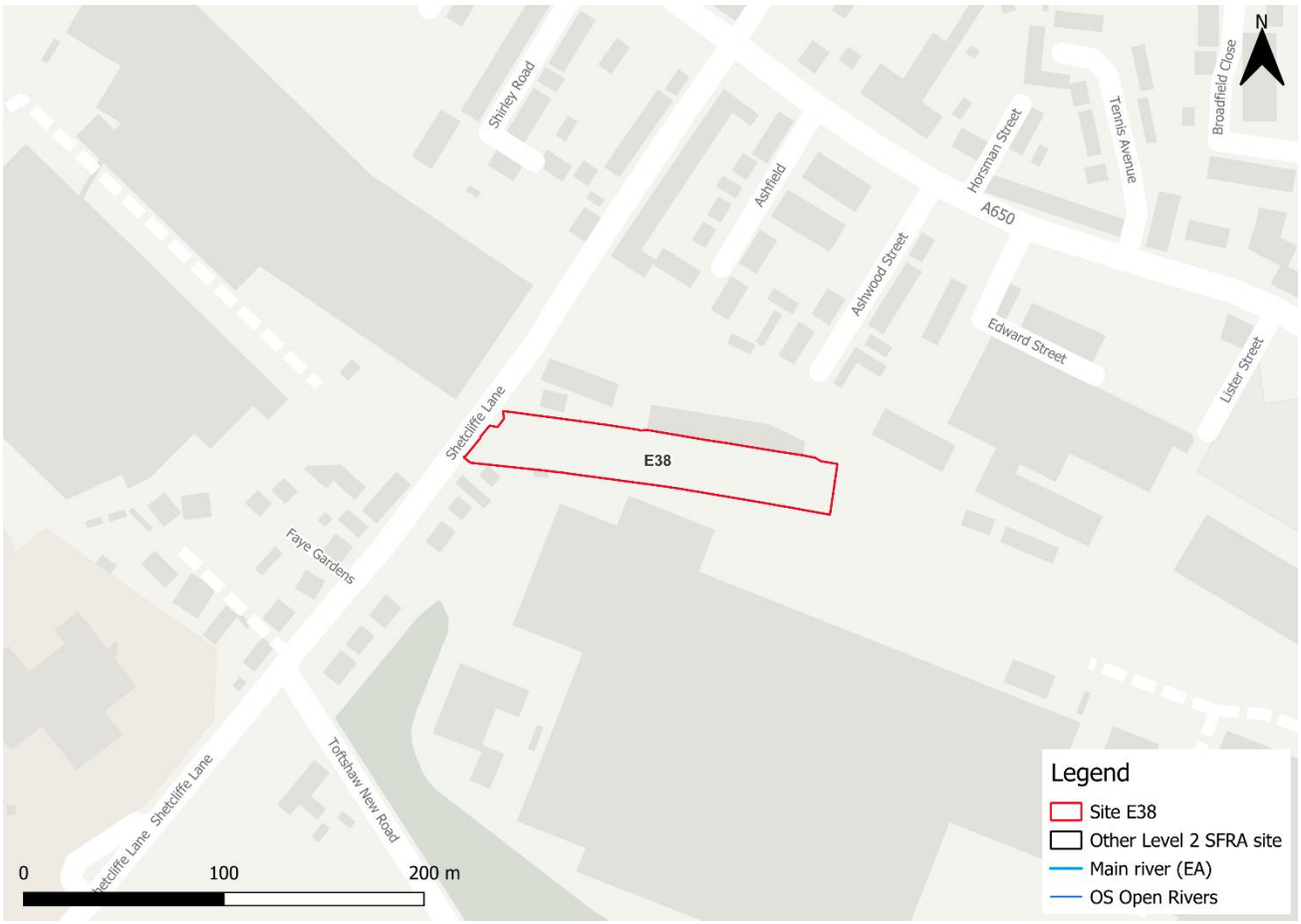


Figure 2-152: E38 site location boundary

2.57.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.57.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-57). Surface water risk is confined to a small area along the southern boundary of the site in the medium risk event. In the low risk event, a shallow flow path extents through the centre of the site. Maximum depths within the site in the low risk event are between 0.3 and 0.6 m (Figure 2-153). The present day low risk event is consistent in extent and depth to the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Shetcliffe Lane to the west of the site given the low flood depths along this route.

Table 2-57: Existing surface water flood risk within E38 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
92	7	1	0

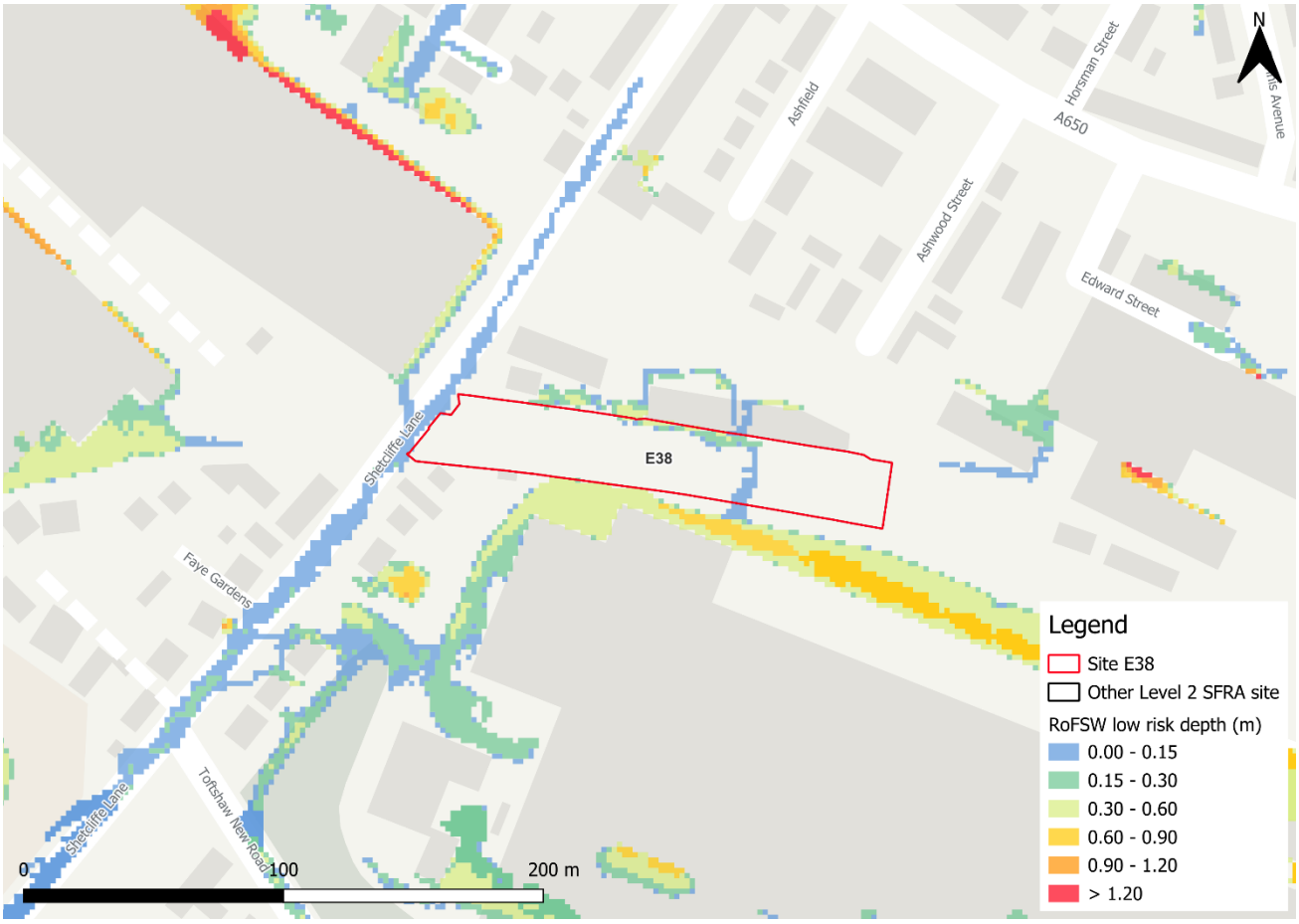


Figure 2-153: Low risk event surface water flood depths within E38 (Risk of Flooding from Surface Water)

2.57.3 Groundwater

Across the entirety of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS.

2.57.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.58 E55

Site summary (Figure 2-154)	
Location	Land East of Sticker Lane
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	1.3 hectares

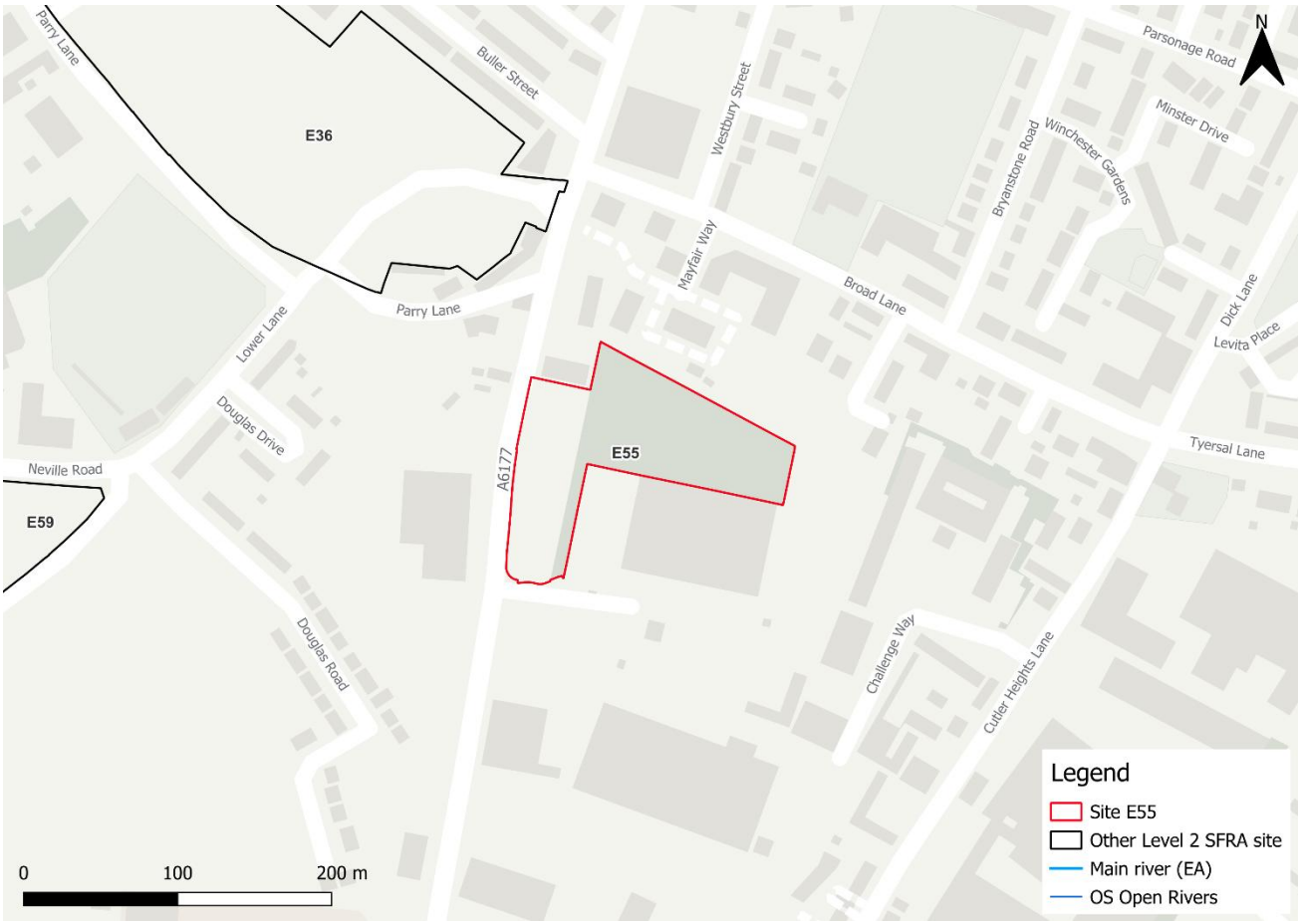


Figure 2-154: E55 site location boundary

2.58.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.58.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-58). Surface water risk is confined to a small area of ponding within the east of the site in the medium risk event. There are some additional areas of ponding across the site in the low risk event. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-155). The present day low risk event is consistent in extent and depth to the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via the A6177 to the west of the site given the low flood depths along this route.

Table 2-58: Existing surface water flood risk within E55 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
96	3	1	0

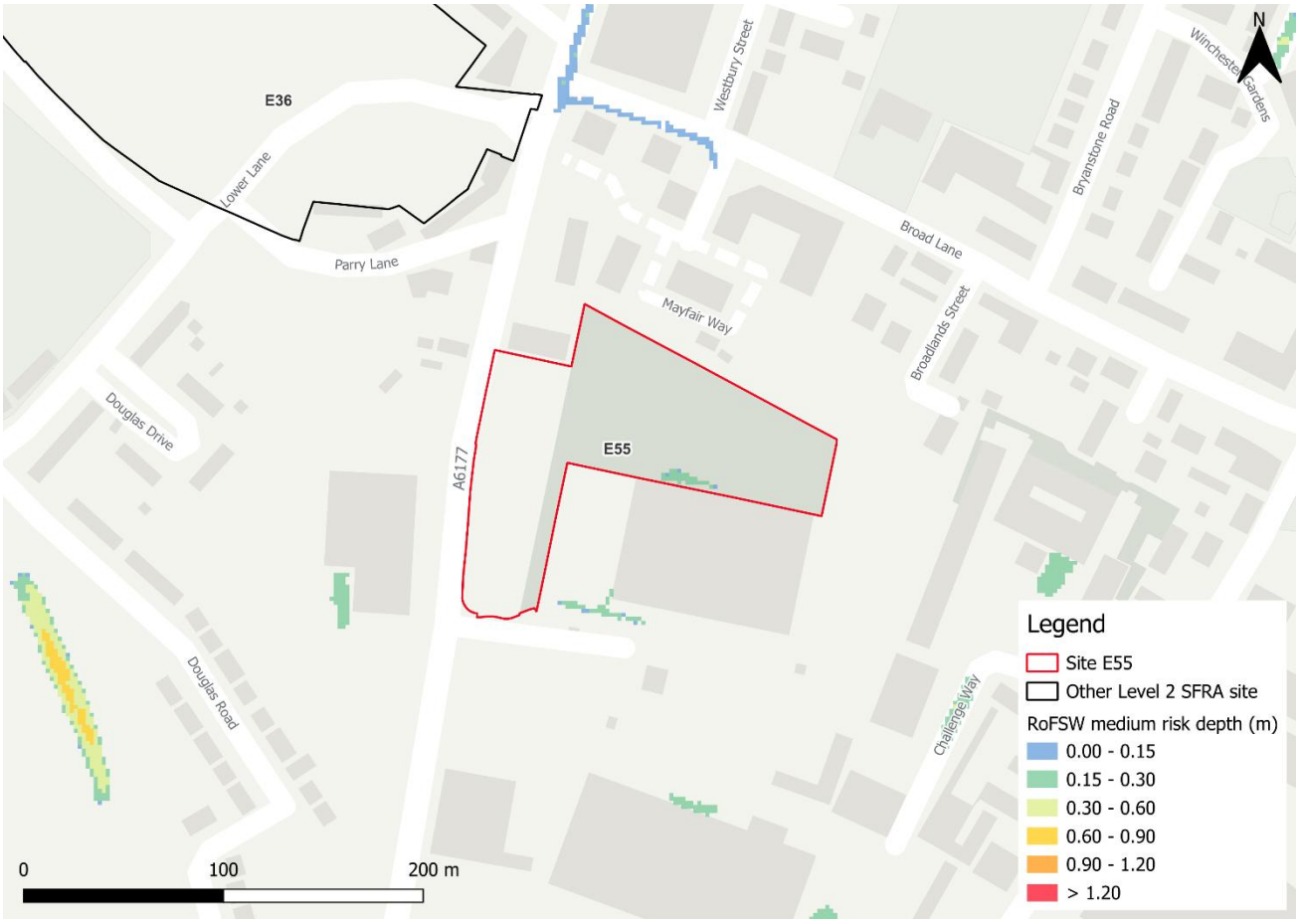


Figure 2-155: Medium risk event surface water flood depths within E55 (Risk of Flooding from Surface Water)

2.58.3 Groundwater

Across the majority of the site, there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely (Figure 2-156). There is no risk of groundwater emergence across the remaining area of the site. Groundwater conditions may therefore be suited to infiltration SuDS in these areas.

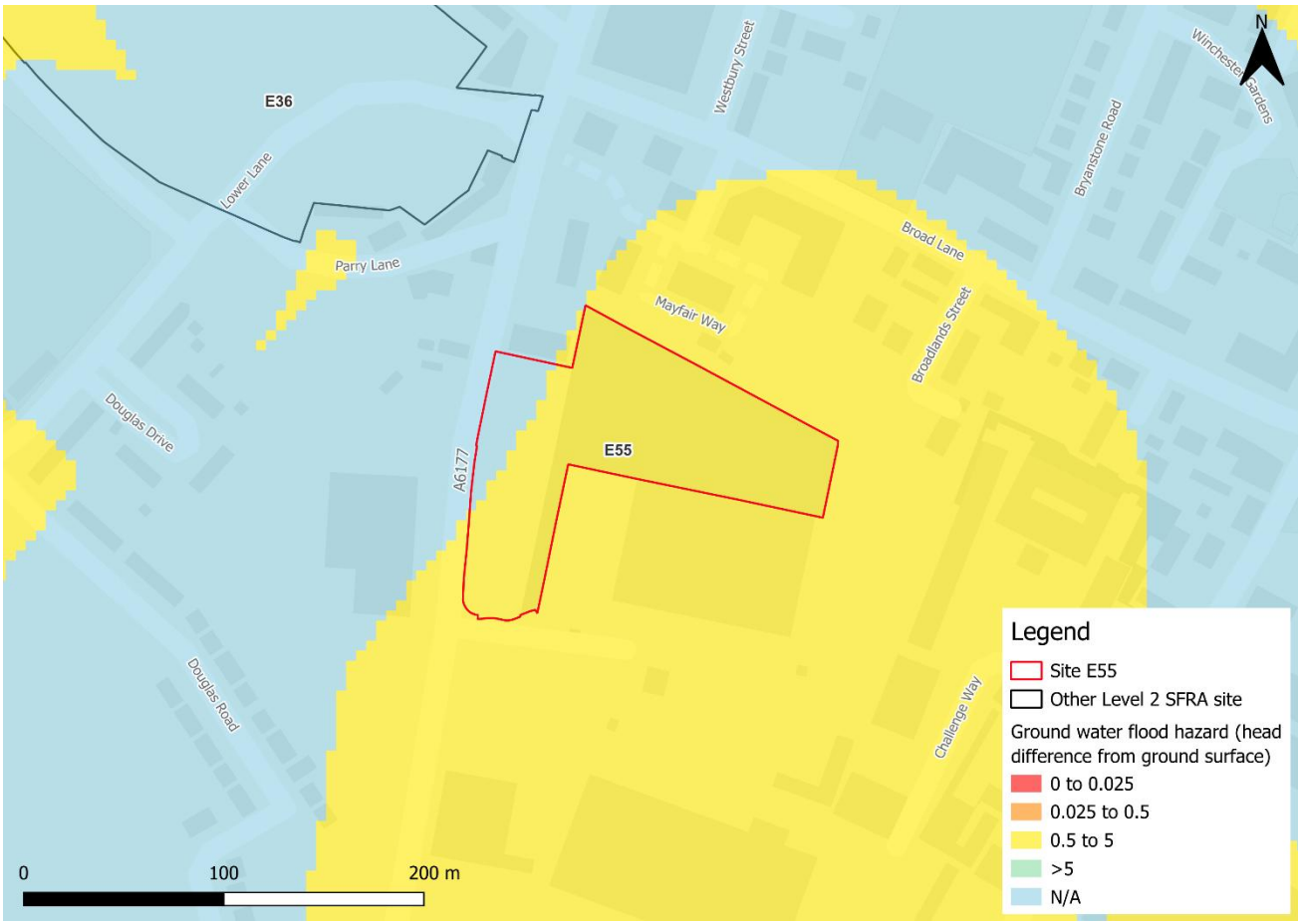


Figure 2-156: JBA 5m Groundwater Emergence Map (E55)

2.58.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- The proposed development would see a change in the risk classification from water compatible to less vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

2.59 E60

Site summary (Figure 2-157)	
Location	Staithgate Lane North
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	5.9 hectares

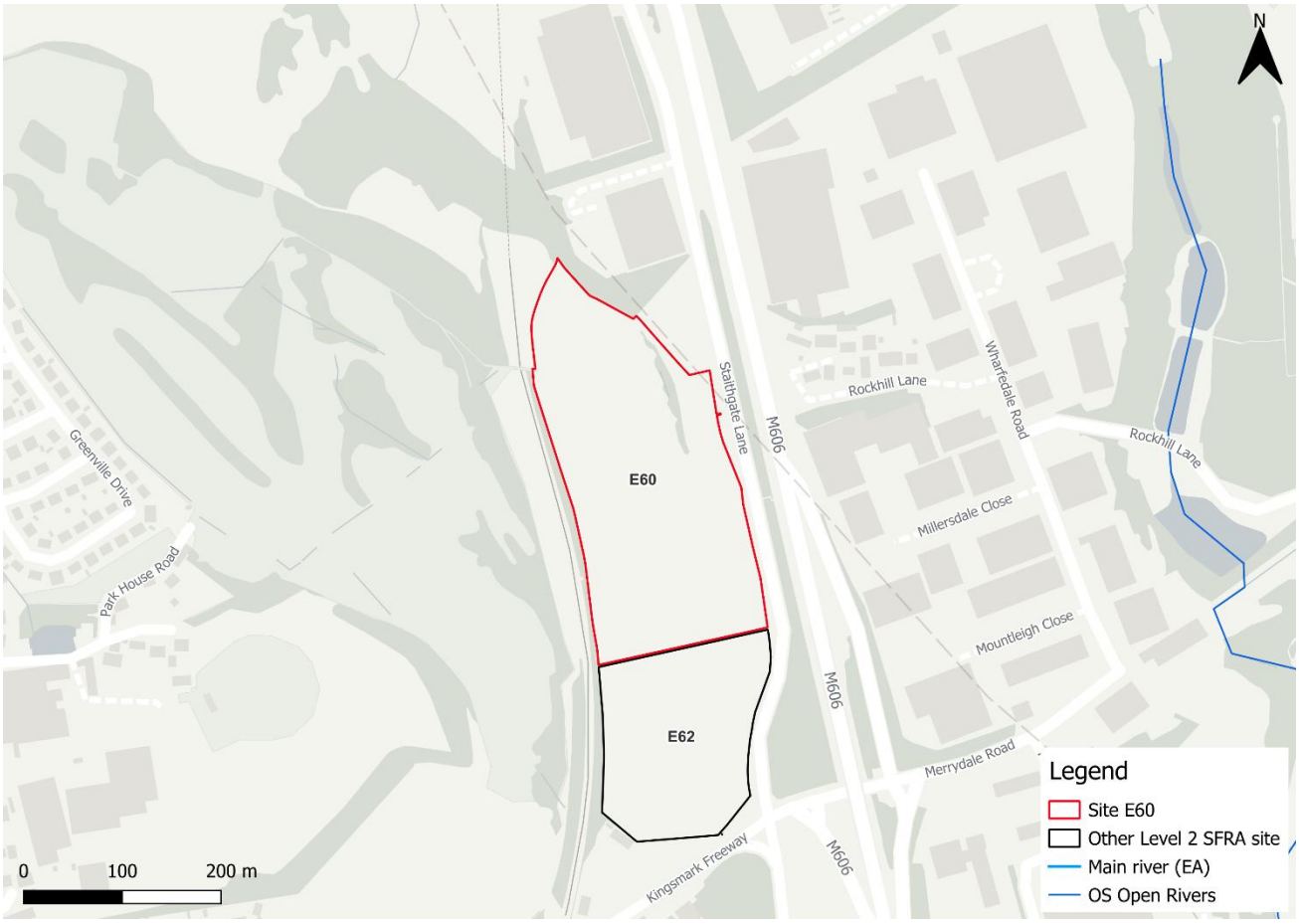


Figure 2-157: E60 site location boundary

2.59.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.59.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-59). Surface water risk is confined to a flow path within the west of the site in all events. Maximum depths within the site in the medium risk event are between 0.3 and 0.6 m (Figure 2-158). The flow path within the west of the site increases in both extent and depth in the medium risk event +45% climate change, with maximum depths of between 0.6 and 0.9 m.

Based on available information, safe access and escape routes should be achievable via Staithgate Lane to the east of the site given the low flood depths along this route.

Table 2-59: Existing surface water flood risk within E60 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
94	3	2	1

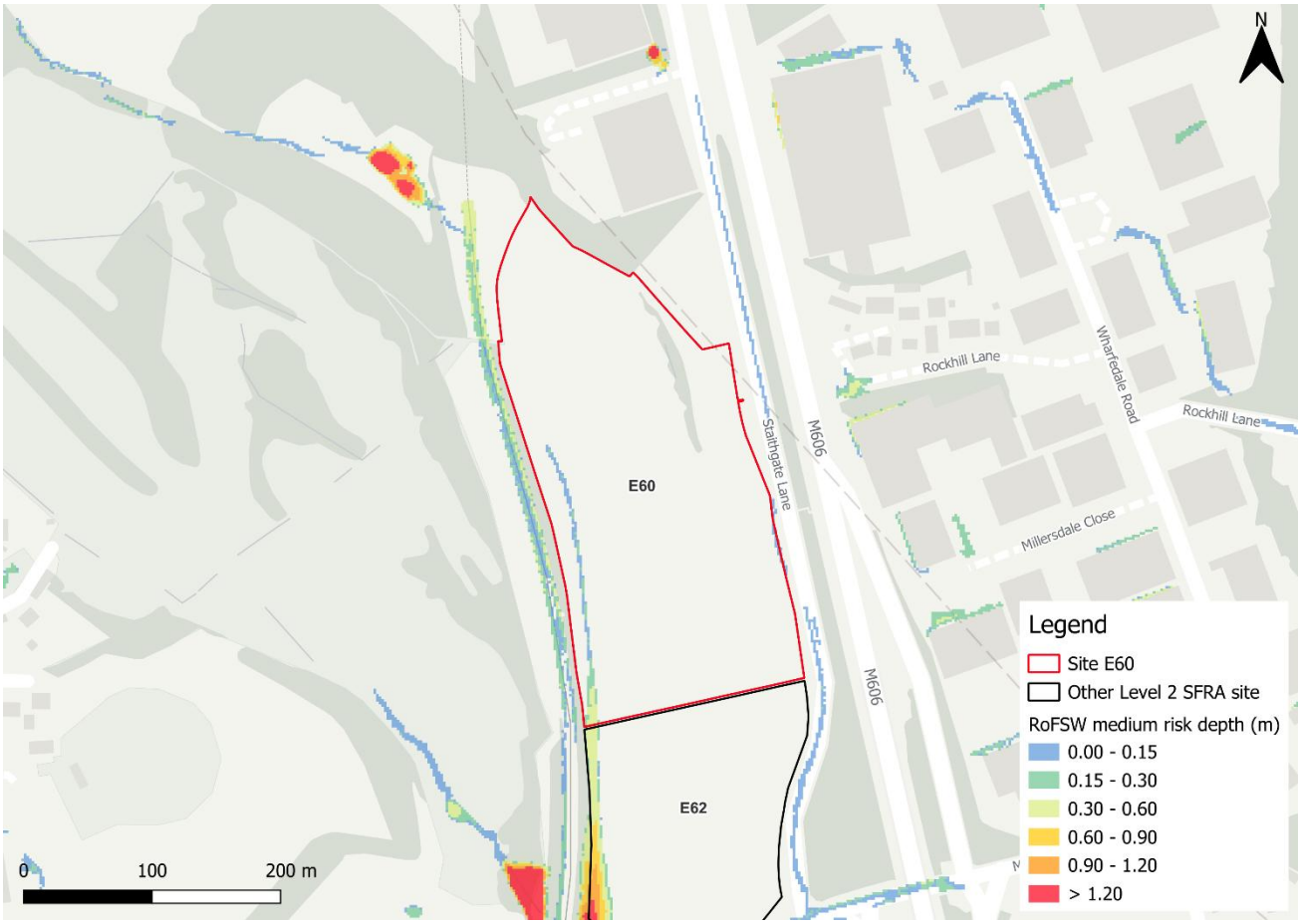


Figure 2-158: Medium risk event surface water flood depths within E60 (Risk of Flooding from Surface Water)

2.59.3 Groundwater

Across the majority of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas. Within the north and

south of the site, there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-159). Groundwater conditions in this area should be considered further as part of a site-specific FRA.

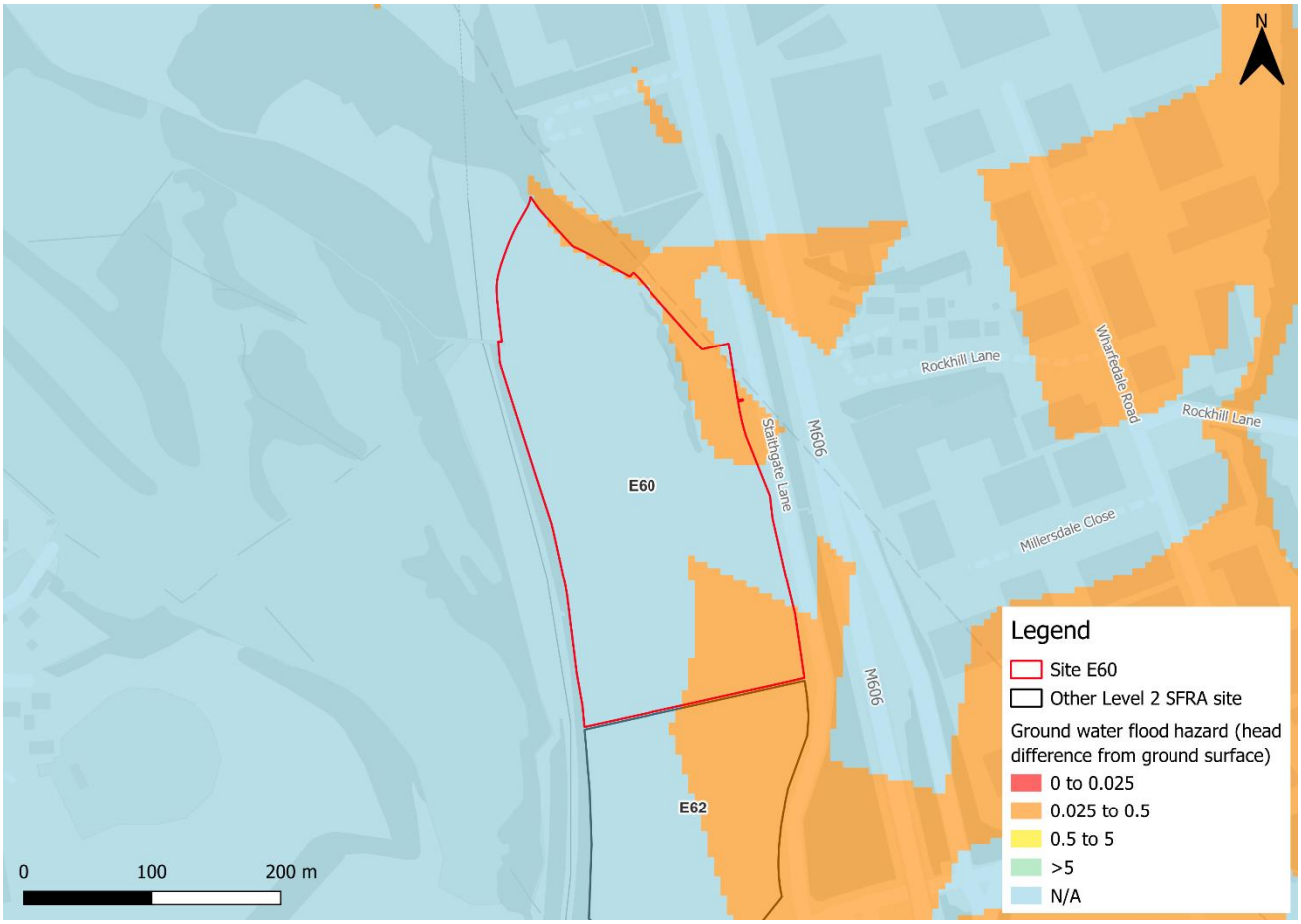


Figure 2-159: JBA 5m Groundwater Emergence Map (E60)

2.59.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- The proposed development would see a change in the risk classification from water compatible to less vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.

- Topographic flow paths should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.60 E62

Site summary (Figure 2-160)	
Location	Staithgate Lane South
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	2.9 hectares

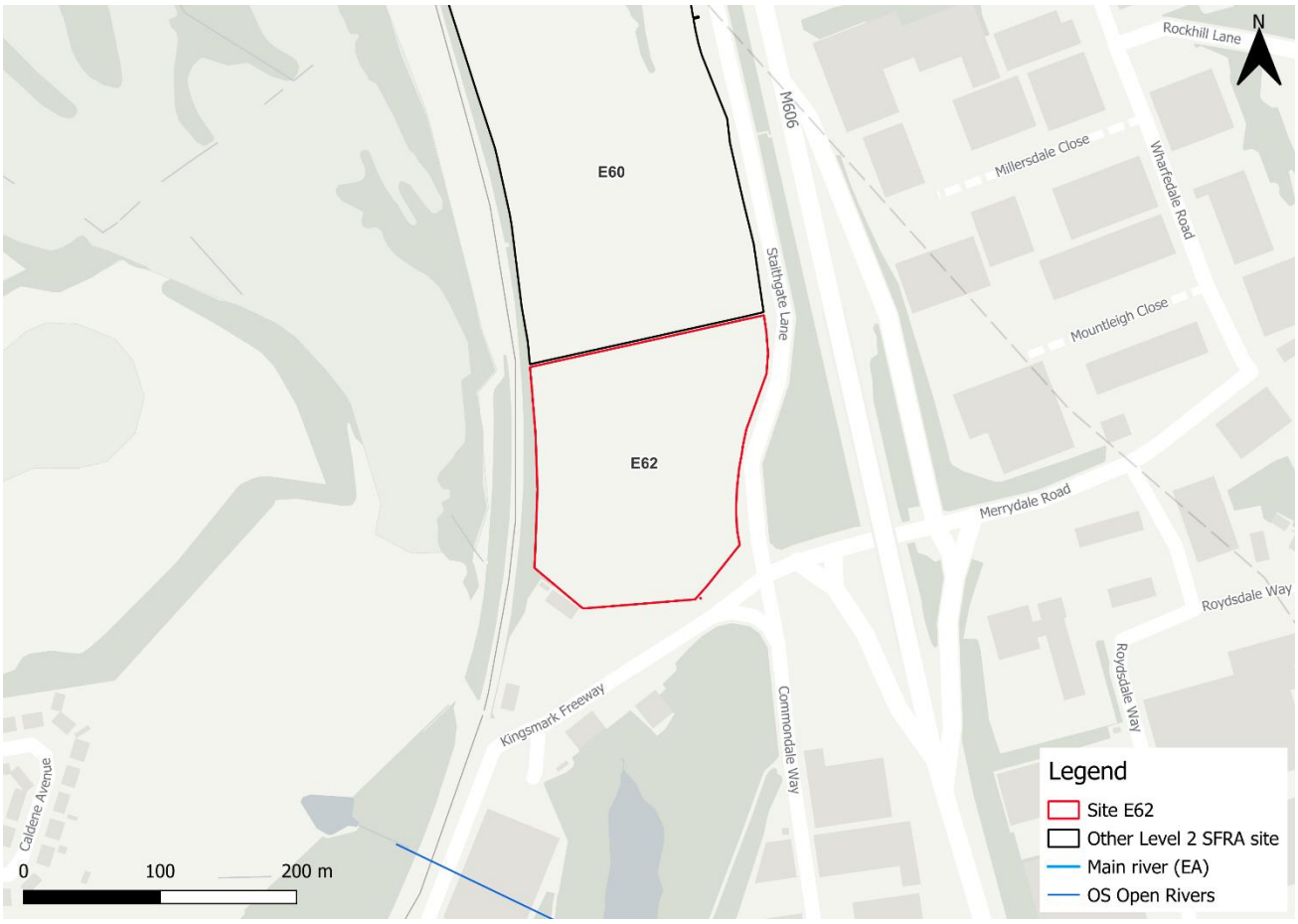


Figure 2-160: E62 site location boundary

2.60.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.60.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-60). Surface water risk is confined to a flow path within the west and an area of ponding within a topographic depression along the southern boundary of the site in all events. Maximum depths within the site in the medium risk event are > 1.2 m (Figure 2-161). The flow path within the west of the site increases in both extent in the medium risk event +45% climate change, with maximum depths of > 1.2 m.

Based on available information, safe access and escape routes should be achievable via Staithgate Lane to the east of the site given the low flood depths along this route.

Table 2-60: Existing surface water flood risk within E62 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
89	3	2	6

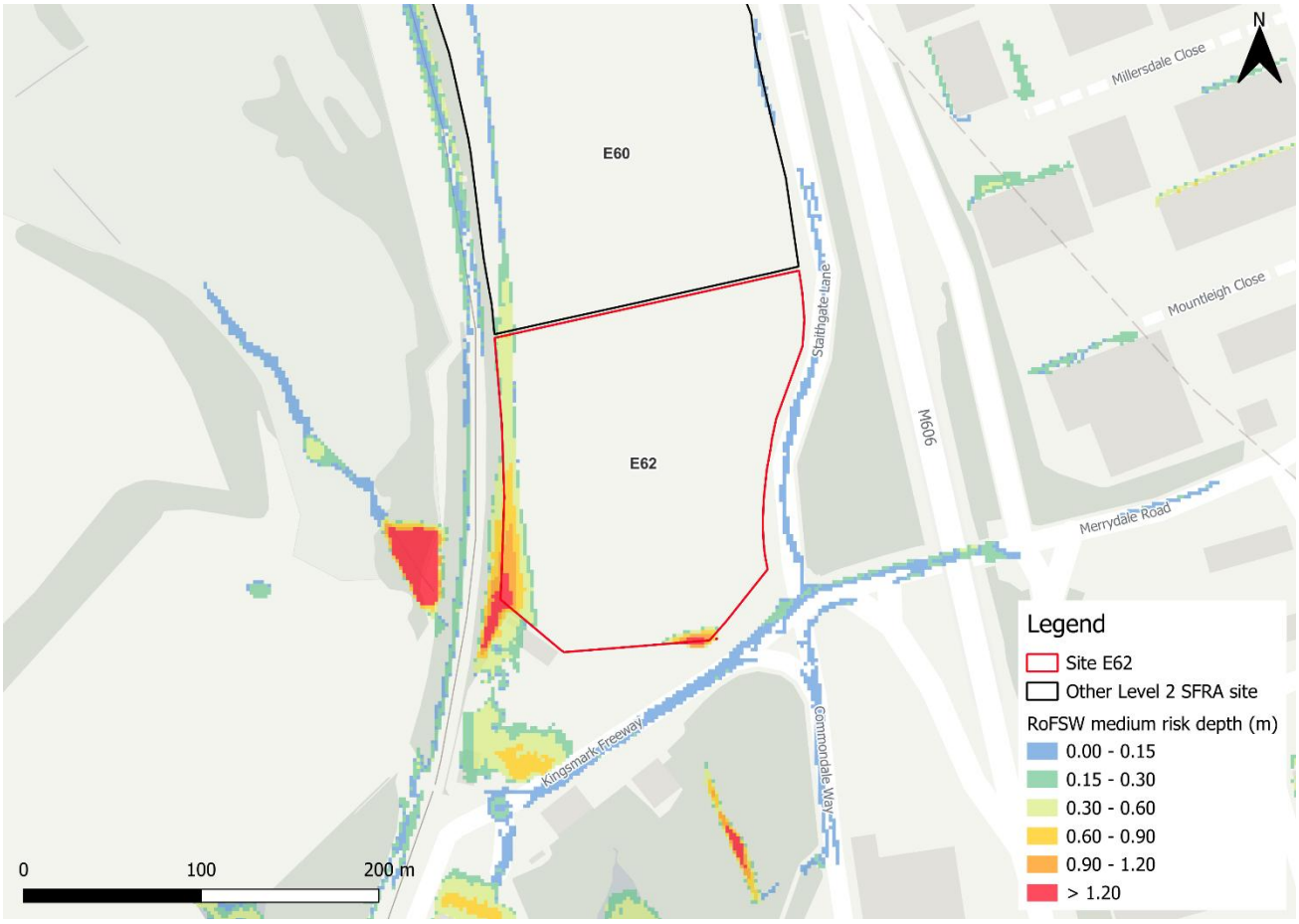


Figure 2-161: Medium risk event surface water flood depths within E62 (Risk of Flooding from Surface Water)

2.60.3 Groundwater

Within the west of the site there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS in these areas. Within the east of the site, there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-162). Groundwater conditions in this area should be considered further as part of a site-specific FRA.

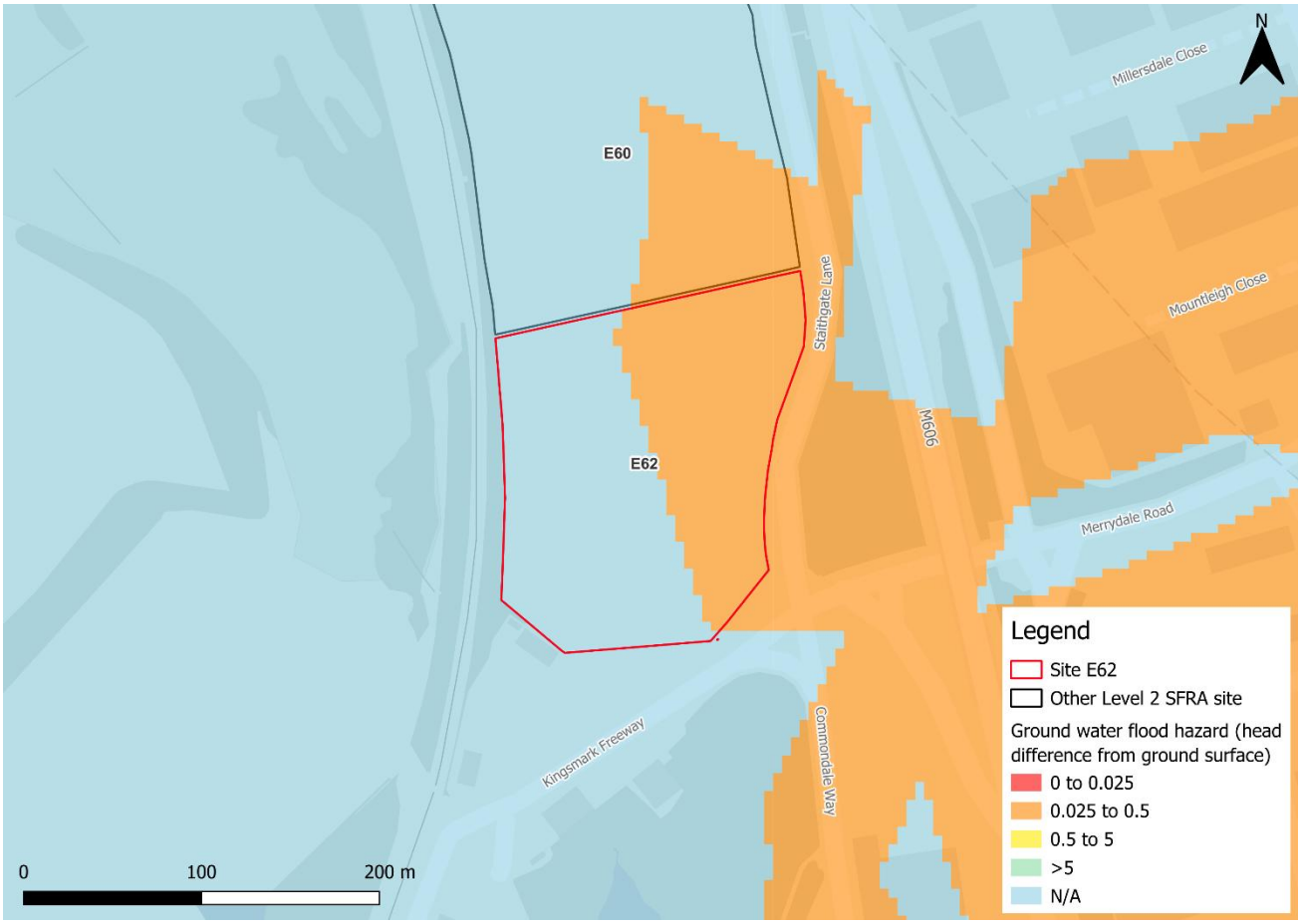


Figure 2-162: JBA 5m Groundwater Emergence Map (E62)

2.60.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- The proposed development would see a change in the risk classification from water compatible to less vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.

- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Development should avoid the areas of the site modelled to be at risk of deep surface water flooding.
- Topographic flow paths should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.61 E77

Site summary (Figure 2-163)	
Location	Bulmer And Lumb Limited Bulmers Mill Royds Hall Lane Bradford West Yorkshire BD6 2NE
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	2 hectares

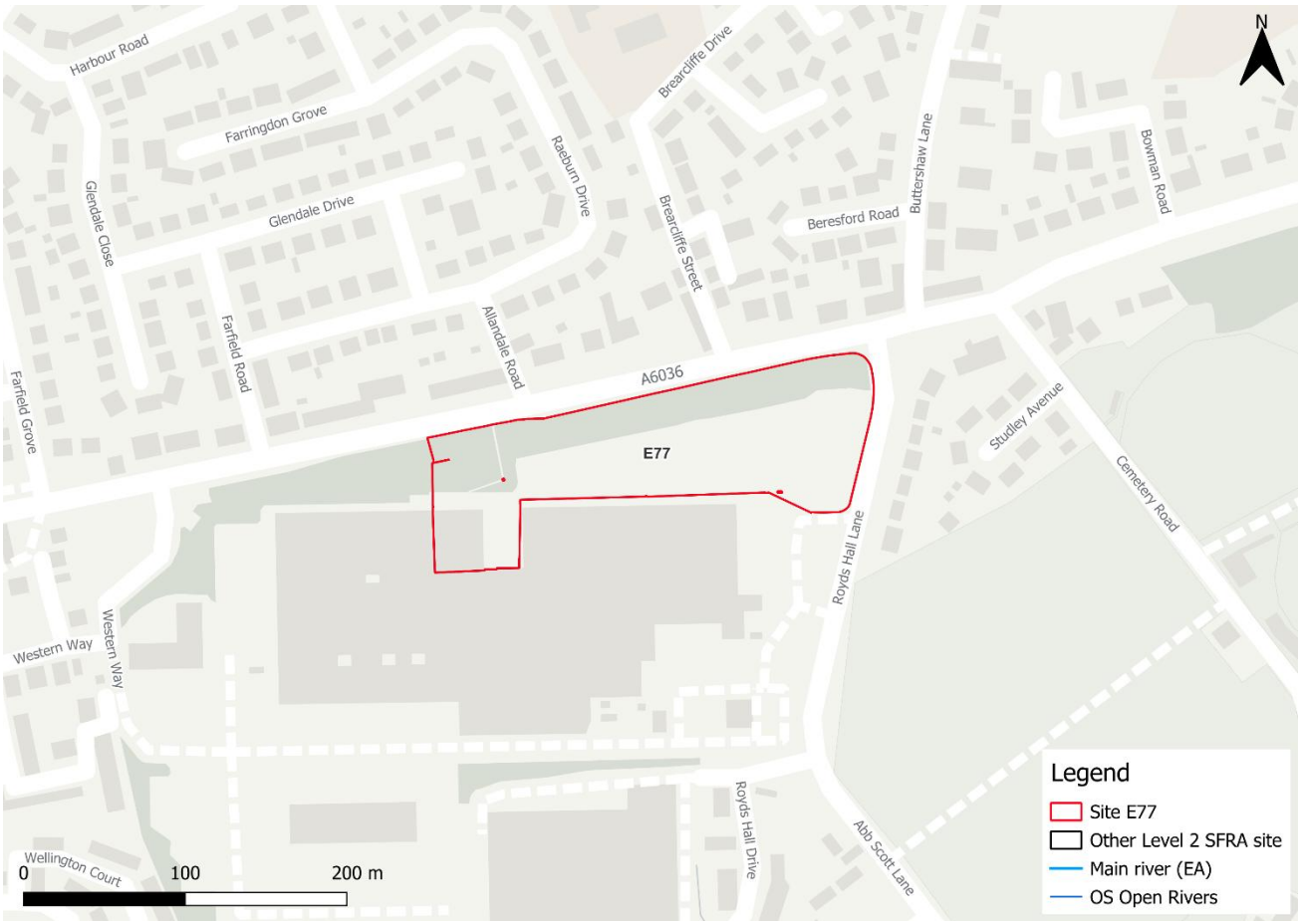


Figure 2-163: E77 site location boundary

2.61.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.61.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-61). Surface water risk is confined to an area of ponding within the east of the site in the medium risk event. This area increases in extent in the low risk event, within some additional shallow flow paths through the central and eastern areas of the site. Maximum depths within the site in the medium risk event are between 0.15 and 0.3 m (Figure 2-164). The present day low risk event is consistent with the medium risk event +45% climate change, with maximum depths of between 0.6 and 0.9 m (Figure 2-165).

Based on available information, safe access and escape routes should be achievable via Royds Hall Lane to the east of the site given the low flood depths along this route.

Table 2-61: Existing surface water flood risk within E77 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
79	19	2	0

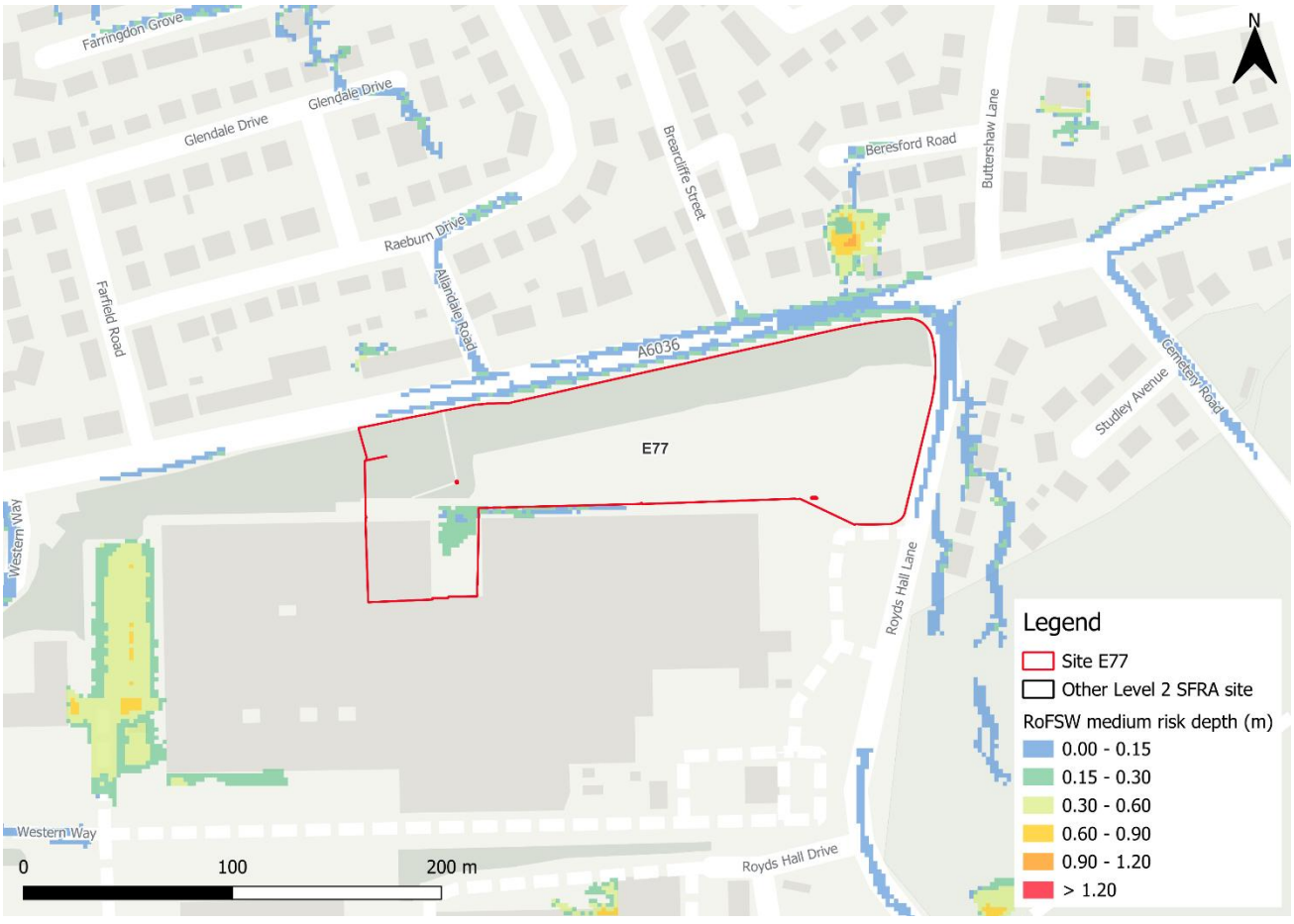


Figure 2-164: Medium risk event surface water flood depths within E77 (Risk of Flooding from Surface Water)

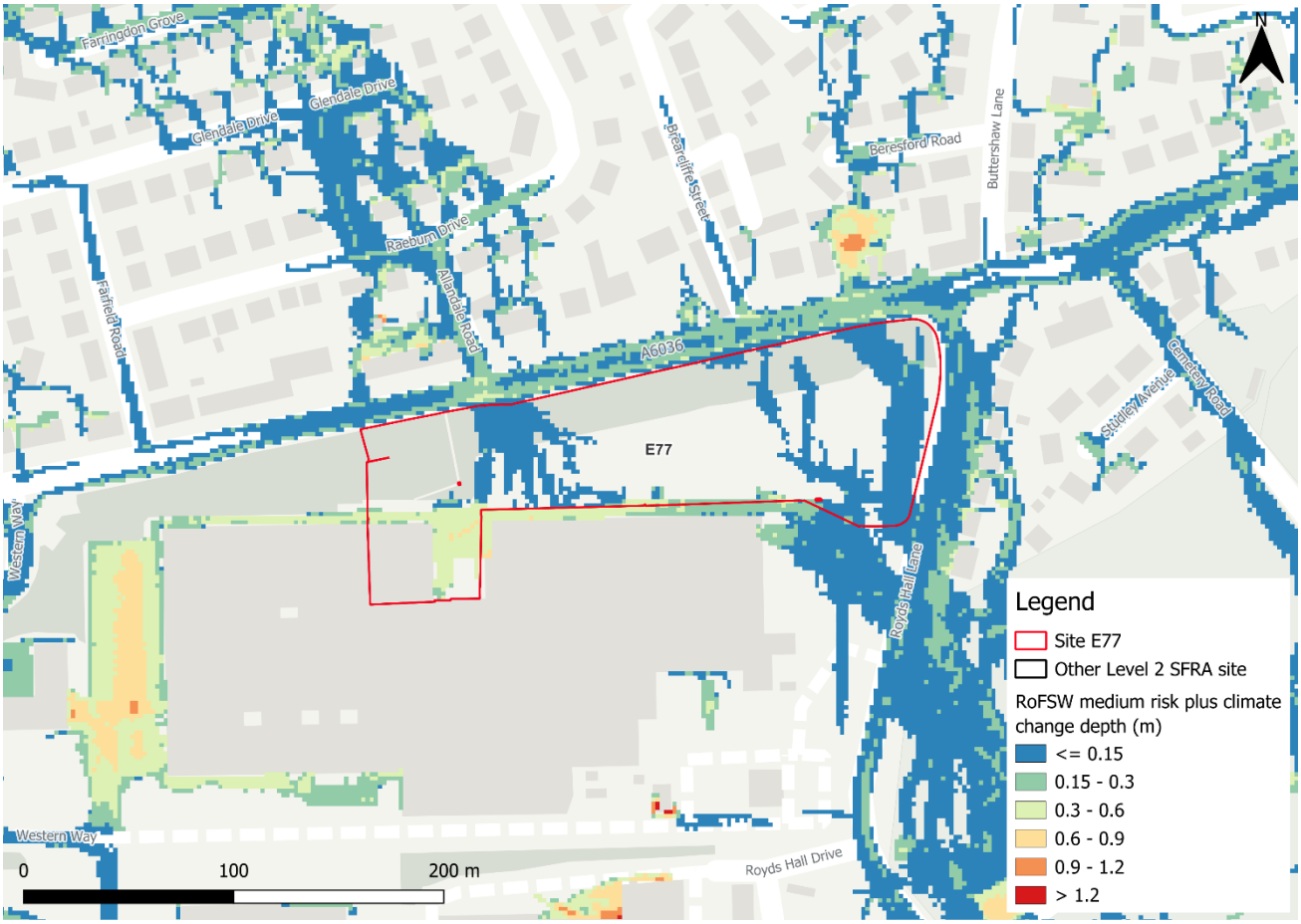


Figure 2-165: Medium risk event surface water flood depths plus 45% climate change within E77 (based on Risk of Flooding from Surface Water map)

2.61.3 Groundwater

Across almost all of the site, there is no risk of groundwater emergence. Groundwater conditions may therefore be suited to infiltration SuDS. There is a small area within the northeastern corner of the site where there is a risk of groundwater emergence to subsurface assets, but surface manifestation of groundwater is unlikely.

2.61.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- The proposed development would see a change in the risk classification from water compatible to less vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.

- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.
- The site is not modelled to be at significant additional fluvial risk as a result of climate change.
- Additional flow paths emerge through the centre and east of the site within the medium risk surface water event plus climate change. Topographic flow paths should be considered and included in site design and ideally left in place to flood naturally when required. Any regrading of land must include for like for like volumes to ensure risk is contained safely onsite for the lifetime of development.

2.62 E83

Site summary (Figure 2-166)	
Location	Northside Road, Girlington
Existing site use	Greenfield
Existing site vulnerability	Water compatible
Proposed site use	Employment
Proposed site vulnerability	Less vulnerable
Site area	4.5 hectares

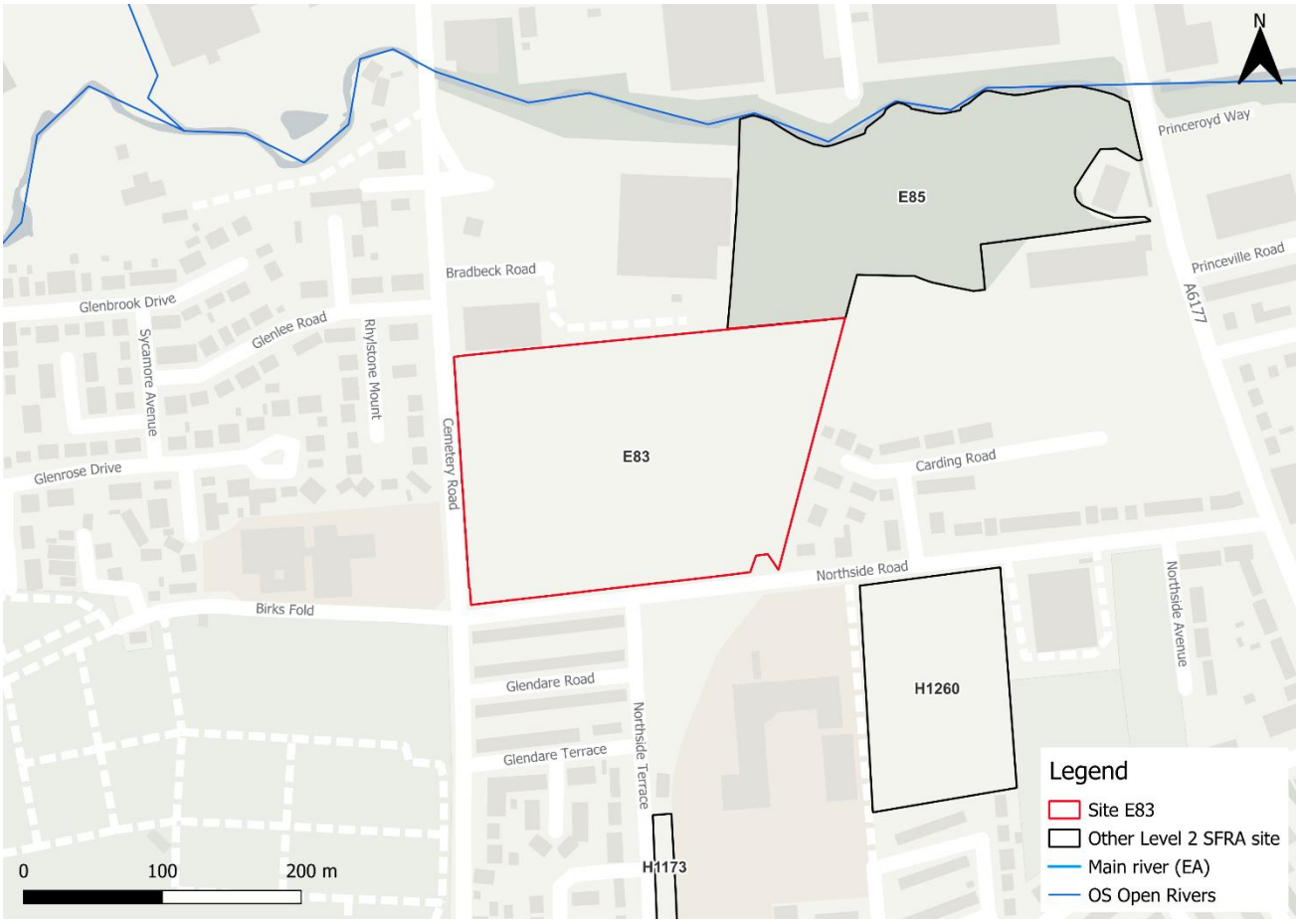


Figure 2-166: E83 site location boundary

2.62.1 Fluvial

The site is wholly located within Flood Zone 1 of the Environment Agency's (EA) Flood Map for Planning which indicates it as at low risk of flooding from rivers. The site is not modelled to be at additional risk from fluvial climate change and is therefore at low risk of flooding from rivers in the future.

2.62.2 Surface water

The site is predominantly at very low risk of surface water flooding, based on the EA's Risk of Flooding from Surface Water (RoFSW) map (Table 2-62). Surface water risk is confined to small areas of ponding within topographic low spots in the medium risk event. These areas increase in extent in the low risk event. Maximum depths within the site in the medium risk event are between 0.9 and 1.2 m in a small area of the site (Figure 2-167). The present day low risk event is consistent in extent and depth to the medium risk event +45% climate change.

Based on available information, safe access and escape routes should be achievable via Cemetery Road to the west of the site given the low flood depths along this route.

Table 2-62: Existing surface water flood risk within E83 based on the RoFSW map

Very low risk (%)	Low risk (%)	Medium risk (%)	High risk (%)
94	4	1	1

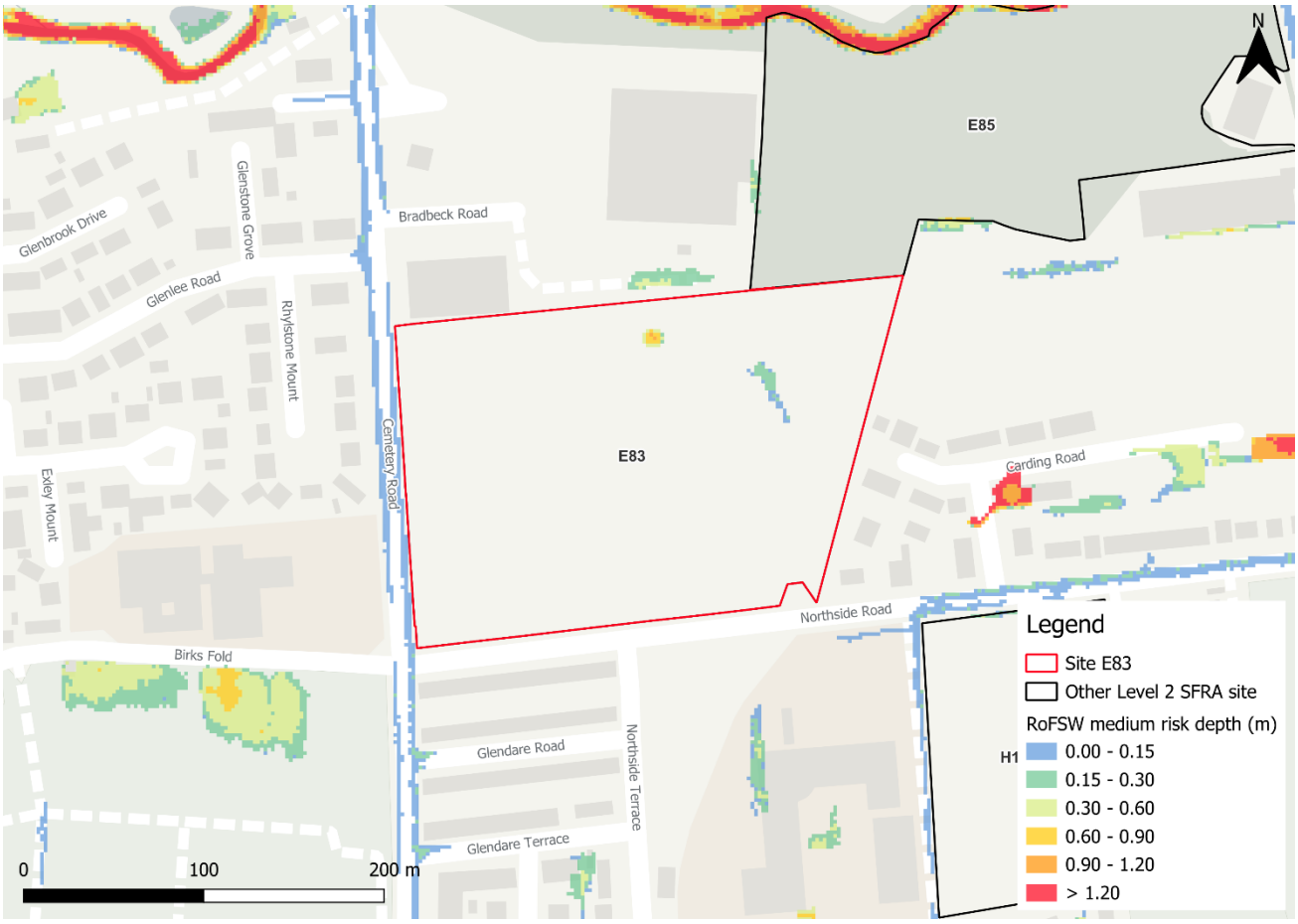


Figure 2-167: Medium risk event surface water flood depths within E83 (Risk of Flooding from Surface Water)

2.62.3 Groundwater

Across the entirety of the site, there is a risk of groundwater emergence to both surface and subsurface assets (Figure 2-168). Groundwater conditions should be considered further as part of a site-specific FRA.

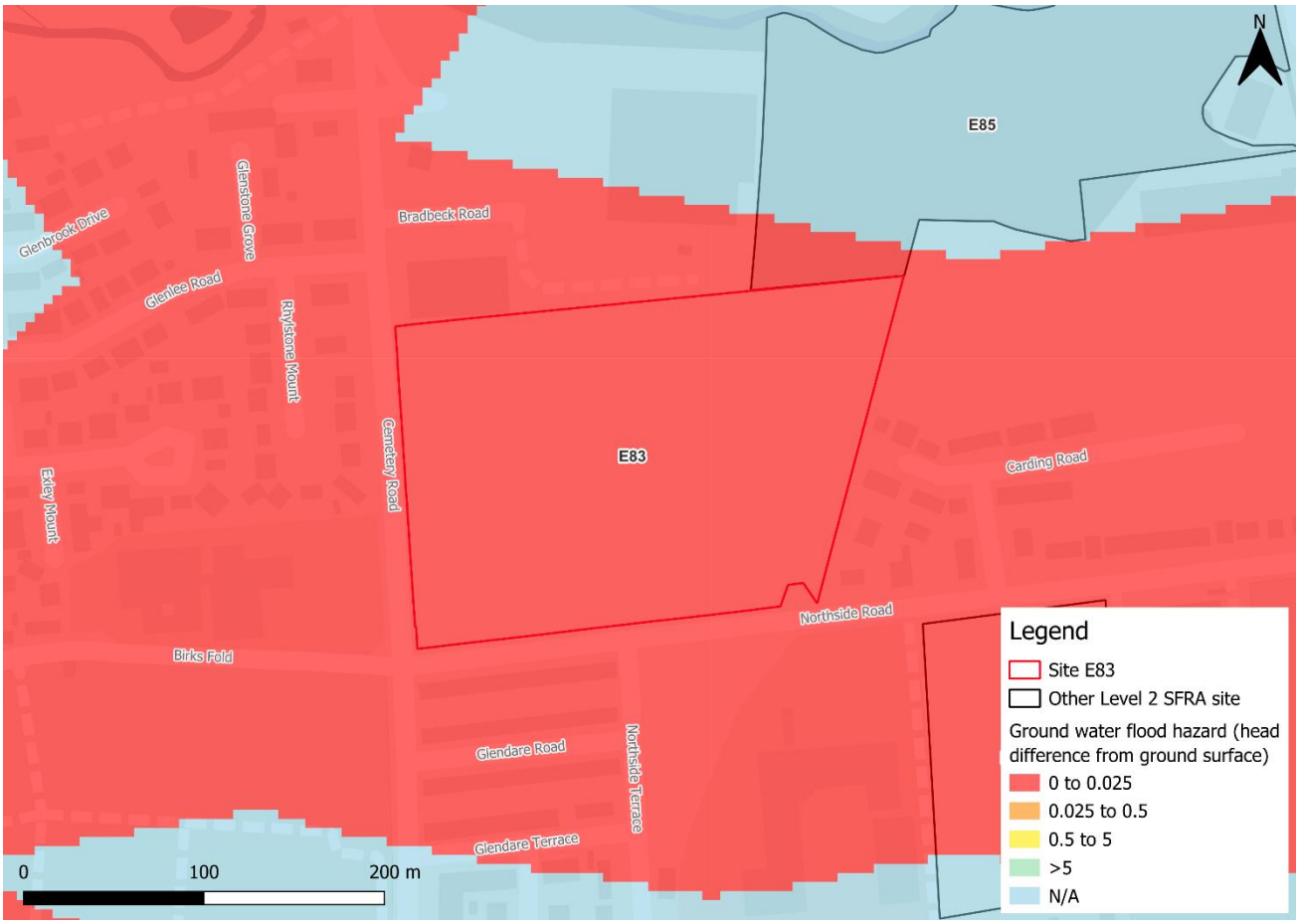
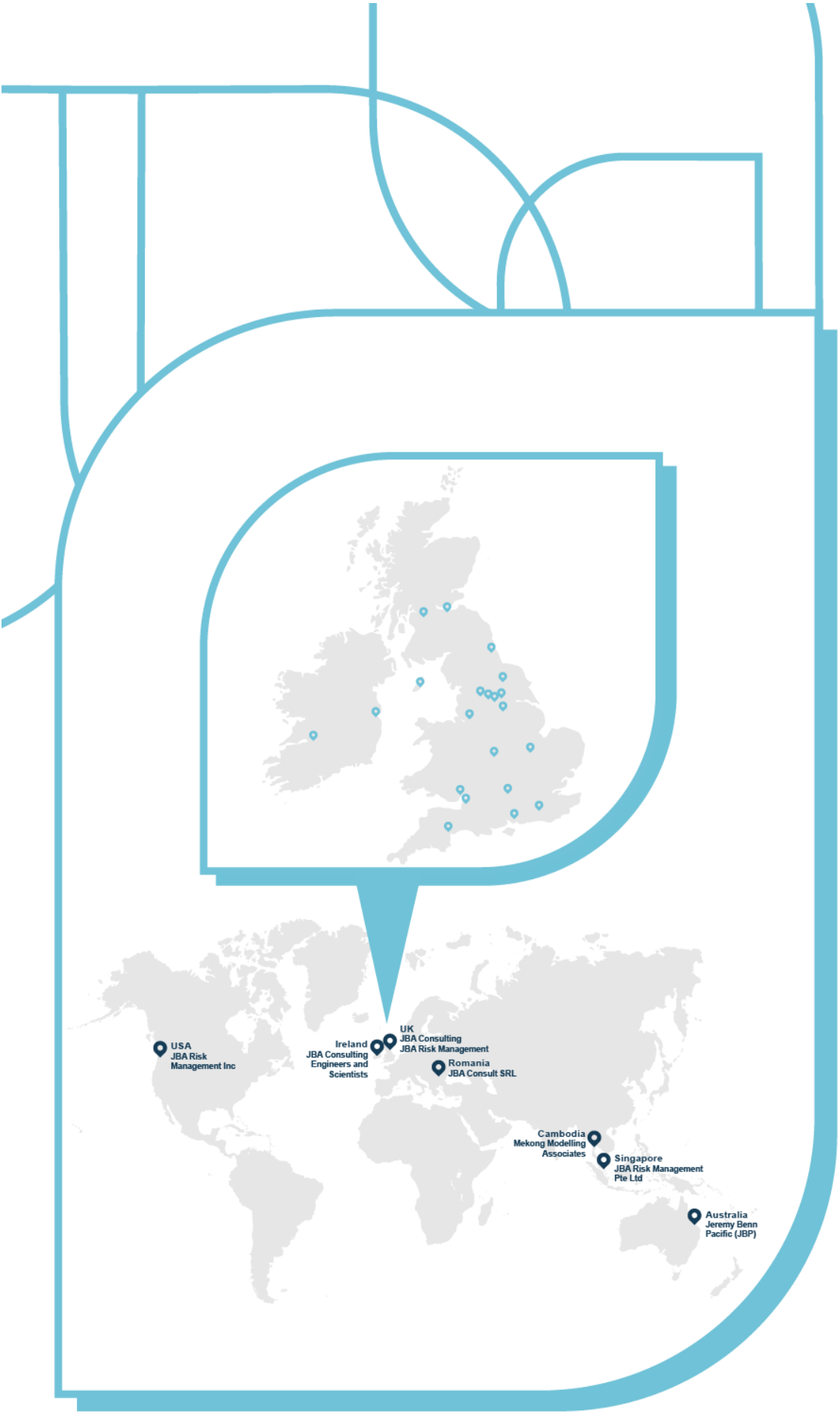


Figure 2-168: JBA 5m Groundwater Emergence Map (E83)

2.62.4 Summary and recommendations

- The site is not required to pass the exception test as it is proposed for less vulnerable uses.
- The proposed development would see a change in the risk classification from water compatible to less vulnerable, according to the NPPF.
- Given the change in use and therefore vulnerability of the site, the FRA must show that the development can be designed to be safe and that there is adequate emergency planning provision (para 014 FRCC-PPG).
- Based on available information, there is no additional risk to the site from reservoir, canal or sewer flooding.
- Development should be possible at this site given the low fluvial and very low surface water flood risk to the site.

- The site is not modelled to be at significant additional fluvial or surface water risk as a result of climate change.
- Groundwater conditions should be considered further as part of a site-specific FRA.



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