South Norfolk Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables

Site details

Site Code	**SN0348**
Address	South of Old Yarmouth Road, Kirby Cane TM 37299 92967
Area	1.13 ha
Current land use	Greenfield
Proposed land use	Residential

Sources of flood risk

Location of the site within the catchment	The site is located within the catchment of the River Waveney, between Ellingham Mill and Burgh St. Peter, which is designated a Main River by the Environment Agency. The Waveney flows in an easterly direction towards Carlton Marshes, where it is joined by Oulton Dyke. The Waveney then flows northwards until it joins the River Yare at Burgh Flats.
Existing drainage features	The site is located approximately 1.5km north of the River Waveney which is designated as heavily modified by the Environment Agency. Local topography shows the site has its highest elevations along the north and west and slopes downhill towards the southeast. Online imagery shows there are a number of drainage channels located to the southeast of the site.
Fluvial	**The proportion of site at risk:** **FZ3b – 0%** **FZ3a – 0%** **FZ2 – 0%** **FZ1 – 100%** *The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%).* **Available data:** The Environment Agency's Flood Zone mapping has been used in this assessment. **Flood characteristics:** The site is not currently at risk of flooding from fluvial sources. The site is not located in Flood Zone 2 or Flood Zone 3 of the Environment Agency's Flood Map for Planning.
Coastal and Tidal	The site is not at risk from coastal or tidal flooding.
Surface Water	**Proportion of site at risk (RoFfSW):** **3.3% AEP** – <1% Max depth 0.15 – 0.30m Max velocity 0.50 – 1.00m/s **1% AEP** – 2% Max depth 0.15 – 0.30m Max velocity 0.50 – 1.00m/s **0.1% AEP** – 19% Max depth 0.15 – 0.30m Max velocity 1.00 – 2.00 m/s

	The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %) **Description of surface water flow paths:** The site is shown to be at risk during all the modelled flood events. In the 3.3% AEP, there is predicted to be a small amount of surface water on the northwest corner of the site, which is from a small flow path flowing east along Old Yarmouth Road. This flow path has a classification of 'Very Low Hazard'. In the predicted 1% AEP event, this existing flow path along Old Yarmouth Road extends slightly further onto the site. There is also a small area of surface water ponding in the centre of the site. The hazard classification for both remains at 'Very Low Hazard'. In the predicted 0.1% AEP event, the surface water ponding from the 1% AEP event is connected in a flow path flowing in a southerly direction along Old Yarmouth Road. This flow path bisects the site, entering on the western boundary and curving round to exit the site on the southern boundary. Branches of this flow path also enter the northwest and southwest corners of the site. The predicted hazard across the site remains predominantly as 'Very Low Hazard' with a small area of 'Danger for Some' in the northwest corner.
Reservoir	The site is not shown to be at risk from reservoir flooding from available online maps.
Groundwater	The Environment Agency Areas Susceptible to Groundwater Flooding dataset, provided as 1km grid squares, shows the susceptibility of an area to groundwater flood emergence. The following comments can be made about groundwater flood risk: • Most of the site has a >=75% susceptibility to groundwater flood emergence. • There is a small area in the northwest corner of the site which has a <25% susceptibility to groundwater flood emergence. This assessment does not negate the requirement that an appropriate assessment of the groundwater regime should be carried out at the site-specific FRA stage.
Sewers	The site is not located in a postcode with recorded sewer flooding.
Flood history	The Environment Agency's historic flooding and recorded flood outlines dataset have no record of flooding on the site.
Flood risk management infrastructure	
Defences	The site is not protected by any formal flood defences.
Residual risk	There is no residual risk to the site from flood risk management structures.
Emergency planning	
Flood warning	The site is not located within any of the Environment Agency's flood warning areas.
Access and egress	Access to the site is along Old Yarmouth Road which runs to the north and west of the site. Access along Old Yarmouth Road from the west of the site is impacted in all modelled scenarios by a surface water flow path flowing in a southerly direction along the road. Access from the east of the site is also impacted in all the modelled surface water scenarios by a number of surface water flow paths bisecting the road. During the 0.1% AEP event, the flood depths along the road are no greater than 0.3m however there are some areas with increased depths of up to 0.6m. The flows are mainly classified as 'Very Low Hazard' or 'Danger for Some' however there are small areas of 'Danger for Most'. During the 0.1% AEP event, the site is bisected by a surface water flow path and access to the south-western portion of the site is likely to be significantly impeded. Developers will need to demonstrate safe access and egress in the 0.1% AEP event. Raising of access routes must not impede surface water flows. The depths, velocities, hazards, durations and speeds of onset of surface water along access/egress routes should be investigated further in a site-specific assessment, to confirm whether access for emergency vehicles could still be obtained.

	As surface water events are typically flashy and short-lived, it is likely that if access is affected this would only be for a short period of time. A Flood Warning and Evacuation Plan should be prepared for the site, with a policy of shelter in situ on the western side of the site likely to be appropriate if access cannot be provided.
Climate change	
Implications for the site	• The predicted present day 0.1% AEP surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a significant increase in the risk from surface water flooding on the site between the 1% and 0.1% AEP surface water events, suggesting the site is sensitive to the impacts of climate change. This would require a detailed Flood Risk Assessment to assess the site layout and design. In addition to the SuDs features designed to accommodate runoff from new development infrastructure the proposals should also address the potential loss of natural storage of rainfall and runoff provided by the land in its natural condition. • Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific Flood Risk Assessment.
Requirements for drainage control and impact mitigation	

Broad-scale assessment of possible SuDS	**Geology & Soils**
	• Geology at the site consists of:
	  ○ Bedrock- Crag Group- Sand and Gravel.
	  ○ Superficial- River Terrace Deposits- Sand and Gravel.
	• Soils at the site consist of:
	  ○ Slightly acid loamy and clayey soils with impeded drainage.
	SuDS
	• The site is considered to be highly susceptible to groundwater flooding. Groundwater flooding could occur at the surface which may flow to and pool within topographic low spots during very wet winters. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.
	• BGS data indicates that the underlying geology is sand and gravel which is likely to be free draining. This should be confirmed through infiltration testing, with the use of infiltration maximised as much as possible in accordance with the SuDS hierarchy.
	• The site is not located within a historic landfill site.
	• Surface water discharge rates should not exceed the existing greenfield runoff rates for the site. Opportunities to further reduce discharge rates should be considered and agreed with the LLFA. It may be possible to reduce site runoff by maximising the permeable surfaces on site using a combination of permeable surfacing and soft landscaping techniques.
	• The site is within the Waveney, Lower Yare & Lothingland Internal Drainage Board district who may have additional requirements regarding discharge rates (directly or indirectly) into their district. The IDB should be consulted during the detailed design of the site to establish the Board's requirements, and determine whether there will be a need to apply for surface water discharge or ordinary watercourse consents.
	• The Risk of Flooding from Surface Water (RoFSW) mapping indicates the presence of surface water flow paths during the 3.3%, 1% and 0.1% AEP events. Existing flow paths should be retained and integrated with blue-green infrastructure and public open space.
	• If it is proposed to discharge runoff to a watercourse or sewer system, the condition and capacity of the receiving watercourse or asset should be confirmed through surveys and the discharge rate agreed with the asset owner.

Opportunities for wider sustainability benefits and integrated flood risk management	• Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, water quality, amenity and biodiversity. This could provide wider sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints. • Development at this site should not increase flood risk either on or off site. The design of the surface water management proposals should take into account the impacts of future climate change over the projected lifetime of the development. • Opportunities to incorporate filtration techniques such as filter strips, filter drains and bioretention areas must be considered. Consideration should be made to the existing condition of receiving waterbodies and their Water Framework Directive objectives for water quality. The use of multistage SuDS treatment will clean improve water quality of surface water runoff discharged from the site and reduce the impact on receiving water bodies. • Opportunities to incorporate source control techniques such as green roofs, permeable surfaces and rainwater harvesting must be considered in the design of the site. • The potential to utilise conveyance features such as swales to intercept and convey surface water runoff should be considered. Conveyance features should be located on common land or public open space to facilitate ease of access. Where slopes are >5%, features should follow contours or utilise check dams to slow flows.
NPPF and planning implications	
Exception Test requirements	The Local Authority will need to confirm that the sequential test has been carried out. The Sequential Test will need to be passed before the Exception Test is applied. The NPPF classifies residential development as 'More Vulnerable'. • The site is not at risk of fluvial flooding but as it is predicted to be affected by surface water flood risk the Exception Test is required.
Requirements and guidance for site-specific Flood Risk Assessment	**Flood Risk Assessment:** • As the site is greater than one hectare, a site-specific Flood Risk Assessment is required at application stage. **Guidance for site design and making development safe:** • The development should be designed using a sequential approach. Development should be steered away from the surface water flow path which flows in a curve through the site from the western boundary to the southern boundary, preserving this space as green infrastructure. A site specific FRA should be prepared to provide evidence that the proposals satisfy the Exception Test. • Safe access and egress will need to be demonstrated in the 0.1% AEP plus climate change rainfall event, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk. • Resilience measures will be required if buildings are situated in the flood risk area within the western side of the site. Raising Finished Floor Levels above the design event may remove the need for resilience measures. • The risk from surface water flow routes should be quantified as part of a site-specific Flood Risk Assessment, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates. The flow path which forms during the 0.1% AEP surface water event should be integrated into blue-green infrastructure using SuDS. • On site attenuation schemes would need to be tested to ensure flows are not exacerbated downstream within the catchment. • New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.

	• Surface water runoff should be fully attenuated to the greenfield rate to ensure that there is no increase in surface water flood risk elsewhere. • Developers should refer to Norfolk County Council's 'Norfolk County Council Lead Local Flood Authority Statutory Consultee for Planning Guidance Document' and the Level 1 SFRA for information on SuDS for guidance on the information required by the LLFA from applicants to enable it to provide responses to planning applications.

Key messages

The development is likely to be able to proceed if:

- Space for surface water to be stored on the site is provided and rainwater harvesting should be considered.
- The proposed site should discharge surface water at the original pre-development (greenfield) runoff rate. If this is not possible, a significant reduction in the current rate of discharge should be achieved and agreed with the relevant drainage body (LLFA, IDB or Anglian Water).
- Safe access and egress routes must not be in the areas of high surface water risk and raising of access routes should not impede surface water flows. Particular consideration should be given to access and egress to the southwest of the site.
- A Flood Warning and Evacuation Plan should be prepared for the site.
- The risk to the site from groundwater flooding should be considered within a detailed site-specific flood risk assessment. Additional investigative work will be required to support drainage system design. The implications of groundwater flooding should be considered in both present day and climate change scenarios.

Mapping Information

The key datasets used to make planning recommendations regarding this site were the broadscale 2D modelling outputs from the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.

Flood Zones	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning mapping.
Climate change	No modelled climate change data was available for this site. The 0.1% AEP surface water mapping from the Risk of Flooding from Surface Water map has been used as a proxy for the impacts of climate change on surface water.
Surface Water	The Risk of Flooding from Surface Water map has been used to define areas at risk from surface water flooding.
Surface water depth, velocity and hazard mapping	The surface water depth, hazard and velocity mapping are taken from the Environment Agency's Risk of Flooding from Surface Water mapping.

South Norfolk Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables

Site details

Site Code	**SN3019SL**
Address	School Road, Poplar Farm TM 07825 81338
Area	0.51ha
Current land use	Greenfield
Proposed land use	Residential

Sources of flood risk

Location of the site within the catchment	The site is located in the River Waveney catchment, near Bressingham. The River Waveney flows from its source in the Regrave and Lopham Fen National Nature Reserve, through the towns of Harleston, Diss, Bungay and Beccles, and joins the River Yare before it reaches the sea at Great Yarmouth.
Existing drainage features	The site is located approximately 1.3km north of the River Waveney. The Environment Agency states that this 10.5km reach is not heavily modified. Online imagery suggests there is a drainage ditch that runs directly along the southern edge of the site and several more within a 0.5km radius of the site. here are no additional watercourses within or near the site. Local topography shows the northern boundary of the site at a higher relief compared to the southern boundary. This indicates that drainage from the site would be in a southerly direction.
Fluvial	**The proportion of site at risk:** **FZ3b –** 0% **FZ3a –** 0% **FZ2 –** 0% **FZ1 –** 100% *The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%).* **Available data:** The Environment Agency's Flood Zone mapping has been used in this assessment. **Flood characteristics:** The site is not currently at risk of flooding from fluvial sources. The Environment Agency's Flood Mapping for Rivers and Sea does not show the site to be within flood zone 2 or 3.
Coastal and Tidal	The site is not at risk from tidal or coastal flooding.
Surface Water	**Proportion of site at risk (RoFfSW):** **3.3% AEP** – 3% Max depth – 0.30m Max velocity – 2m/s **1% AEP** – 16% Max depth – 0.60m Max velocity – 2m/s

	0.1% AEP – 66% Max depth – 0.60m Max velocity – 2m/s *The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)* **Description of surface water flow paths:** There is a predicted risk of surface water flooding affecting the site and surrounding area for all flood events. During the 3.3% AEP event, the site is predicted to experience some pooling of water along the southern boundary. A fragmented surface water flow path forms along the eastern boundary of the site. This flow path originates from the crossroads (located to the north of the site) and flows south down School Road and onto the site. The flow path continues down School Road, south of the site, following the topography. Predicted surface water flood depths for both flow paths are between 0 m-0.3m. Flood velocities vary between 0m/s-2m/s along the front of the site. The flooding for this event is classified as 'Very Low Hazard'. During the 1% AEP event, the predicted surface water flow path is wider, extending further into the site. The flow path originating to the north (in the 3.3% AEP event) connects to the flow path in the south. Predicted surface water flood depths within the flow path vary between 0m-0.6m. Flood velocities vary between 0.25m/s-2.0m/s. The flooding for this event is classified as 'Very Low Hazard'. During the 0.1% AEP event, the predicted surface water flood path extends across the majority of the site, and only the western boundary is unaffected. The flow path continues to extend past the site appearing to be fed by the drainage ditches that are within the vicinity of the site. Predicted surface water flood depths within the flow path vary between 0m-0.60m. Flood velocities vary between 0.25m/s-2m/s across majority of the site, however there are small areas within the path that are modelled to have flood velocities greater than 2m/s. The predicted flooding for this AEP event is predominantly classified as 'Very Low Hazard', however there are areas of flooding with 'Danger for some' and 'Danger for most' classifications.
Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.
Groundwater	The Environment Agency Areas Susceptible to Groundwater Flooding dataset, provided as 1km grid squares, shows the susceptibility of an area to groundwater flood emergence. The following comments can be made about groundwater flood risk: • The entire site has a <25% susceptibility to groundwater flood emergence. This assessment does not negate the requirement that an appropriate assessment of the groundwater regime should be carried out at the site-specific FRA stage.
Sewers	The site is not located in a postcode with recorded sewer flooding.
Flood history	The Environment Agency's historic flooding and recorded flood outlines datasets do not have a record of any flooding on or surrounding the site.
Flood risk management infrastructure	
Defences	This site is not protected by any formal flood defences.
Residual risk	There is no residual risk to the site from flood risk management structures.
Emergency planning	
Flood warning	The site is not located in an Environment Agency Flood Warning Area.
Access and egress	The site is currently accessible from School Road. During a 1% AEP or 0.1% AEP surface water flood event, flooding on this road may prevent safe access and egress to the site.

	The depths, velocities, hazards, durations and speeds of onset of surface water along access/egress routes should be investigated further in a site-specific assessment, to confirm whether access for emergency vehicles could still be obtained. The developer will need to demonstrate safe access and egress during the 0.1% AEP event and raising of access points must not impede surface water flows. Given the significant predicted surface water risk to the site, a Flood Warning and Evacuation Plan should be produced for the site. As surface water events are typically flashy and short-lived, it is likely that access to the site will only be affected for a short period of time.
Dry Islands	The site is not located on a dry island.
Climate change	
Implications for the site	• The present day 0.1% AEP surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a significant increase in the extent of flooding on site between the 1% and 0.1% AEP surface water events, indicating the site is sensitive to the effects of climate change. This would require a detailed Flood Risk Assessment to assess the site layout and design. • Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific Flood Risk Assessment. • Currently, no model data is available for the ordinary watercourse which flows along the south boundary of the site. This should be modelled as part of a site-specific FRA with the most up-do-date climate change allowances to investigate the implications of climate change on the site. • In addition to the SuDs features designed to accommodate runoff from new development infrastructure the proposals should also address the potential loss of natural storage of rainfall and runoff provided by the land in its natural condition.
Requirements for drainage control and impact mitigation	

Broad-scale assessment of possible SuDS	**Geology & Soils**
	• Geology at the site consists of:
	  ○ Bedrock- Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation And Portsdown Chalk Formation (undifferentiated) - Chalk.
	  ○ Superficial- Lowestoft Formation - Diamicton.
	• Soils at the site consist of:
	  ○ Loamy and clayey soils- moderate fertility, impeded drainage.
	SuDS
	• The site is considered to have very low susceptibility to groundwater flooding, this should be confirmed through additional site investigation work. Below ground development such as basements may still be susceptible to groundwater flooding.
	• BGS data indicates that the underlying geology is chalk which is likely to be free draining. This should be confirmed through infiltration testing, with the use of infiltration maximised as much as possible in accordance with the SuDS hierarchy.
	• The site is not located within a historic landfill site.
	• Surface water discharge rates should not exceed the existing greenfield runoff rates for the site. Opportunities to further reduce discharge rates should be considered and agreed with the LLFA. It may be possible to reduce site runoff by maximising the permeable surfaces on site using a combination of permeable surfacing and soft landscaping techniques.
	• The Risk of Flooding from Surface Water (RoFSW) mapping indicates the presence of surface water flow paths during the 3.3%, 1%, 0.1% AEP event. Existing flow paths should be retained and integrated with blue-green infrastructure and public open space.

	• If it is proposed to discharge runoff to a watercourse or sewer system, the condition and capacity of the receiving watercourse or asset should be confirmed through surveys and the discharge rate agreed with the asset owner.
Opportunities for wider sustainability benefits and integrated flood risk management	• Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, water quality, amenity and biodiversity. This could provide wider sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints. • Development at this site should not increase flood risk either on or off site. The design of the surface water management proposals should take into account the impacts of future climate change over the projected lifetime of the development. • Opportunities to incorporate filtration techniques such as filter strips, filter drains and bioretention areas must be considered. Consideration should be made to the existing condition of receiving waterbodies and their Water Framework Directive objectives for water quality. The use of multistage SuDS treatment will clean improve water quality of surface water runoff discharged from the site and reduce the impact on receiving water bodies. • Opportunities to incorporate source control techniques such as green roofs, permeable surfaces and rainwater harvesting must be considered in the design of the site. • The potential to utilise conveyance features such as swales to intercept and convey surface water runoff should be considered. Conveyance features should be located on common land or public open space to facilitate ease of access. Where slopes are >5%, features should follow contours or utilise check dams to slow flows.
NPPF and planning implications	
Exception Test requirements	The Local Authority will need to confirm that the sequential test has been carried out. The Sequential Test will need to be passed before the Exception Test is applied. The NPPF classifies residential development as 'More Vulnerable'. As the site is in Flood Zone 1 but affected by surface water flood risk it should be considered that the Exception Test should be satisfied and an FRA is required.
Requirements and guidance for site-specific Flood Risk Assessment	**Flood Risk Assessment:** • Although the site is not located in a Flood Zone, a large proportion of the site is subject to surface water flooding in event of a 1% and 0.1% AEP flood. Therefore, it is recommended that a site-specific flood risk assessment is undertaken, including an assessment of future surface water flood risk accounting for climate change. • The site-specific FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance, Norwich City Council's Local Plan policies, and the Norfolk County Council Lead Local Flood Authority's Statutory Consultee for Planning Guidance Document. • Consultation with the Local Authority, Lead Local Flood Authority and the Environment Agency should be undertaken at an early stage. **Guidance for site design and making development safe:** • The development should be designed using a sequential approach with development located away from areas of flooding and where located in areas of flood risk development must be designed to provide appropriate standards of protection and not adversely affect risk to others. • Safe access and egress will need to be demonstrated in the 0.1% AEP plus climate change rainfall event, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk. • The risk from surface water flow routes should be quantified as part of a site-specific Flood Risk Assessment, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates. The drainage strategy will need to carefully consider the significant surface water flow

	path through the centre of the site, and how it is preserved and incorporated into SuDS/blue-green infrastructure. • If development is proposed within the area at risk from surface water flooding, it is recommended that finished floor levels are raised to 600mm above the design flood level to prevent surface water flooding within the site. Raising Finished Floor Levels may remove the need for resilience measures. • On site attenuation schemes would need to be tested to ensure flows are not exacerbated downstream within the catchment. • New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects. • Surface water runoff should be fully attenuated to the greenfield rate to ensure that there is no increase in surface water flood risk elsewhere. • Developers should refer to Norfolk County Council's 'Norfolk County Council Lead Local Flood Authority Statutory Consultee for Planning Guidance Document' and the Level 1 SFRA for information on SuDS for guidance on the information required by the LLFA from applicants to enable it to provide responses to planning applications.

Key messages

There is a significant surface water flow path covering most of the site in the 0.1% AEP and careful consideration will be needed if the site is to be brought forward. The development is likely to be able to proceed if:

- A carefully considered drainage strategy is prepared for the site, setting out how the surface water flow route is to be incorporated into SuDS,how runoff from the site will be limited to greenfield rates and how the natural flood storage provided by the pre-developed site is preserved.
- A site-specific Flood Risk Assessment demonstrates that the site is not at an increased risk of flooding in the future as a result of climate change, and that the development of the site does not increase the risk of surface water flooding on the site and to neighbouring properties.
- Safe access and egress can be demonstrated in the 0.1% AEP surface water event, and a Flood Warning and Evacuation Plan should be prepared for the site. Safe access and egress routes must not be in the areas of high surface water risk.

Mapping Information

The key datasets used to make planning recommendations regarding this site were the broadscale 2D modelling outputs from the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.

Flood Zones	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning mapping
Climate change	No modelled climate change data was available for this site. The 0.1% AEP surface water mapping from the Risk of Flooding from Surface Water map has been used as a proxy for the impacts of climate change on surface water.
Surface Water	The Risk of Flooding from Surface Water map has been used to define areas at risk from surface water flooding.
Surface water depth, velocity and hazard mapping	The surface water depth, hazard and velocity mapping are taken from the Environment Agency's Risk of Flooding from Surface Water mapping.