East Devon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables

Site Code	**Kilm_10**
Address	Land south of the A35, Kilmington
Area	0.8 hectares
Current land use	Car Park and Agricultural land
Proposed land use	Housing and Mixed use
Flood Risk Vulnerability	More vulnerable
Sources of flood risk	
Location of site	The site is located to the north of Kilmington, south of the A35 and west of Whitford Road. The site is located 250m north of an unnamed ordinary watercourse and approximately 900m west of the River Yarty. An additional unnamed watercourse flows approximately 150m north of the site in an easterly direction before joining the Corry Brook and flowing into the River Yarty.
Topography	The Environment Agency's 1m resolution 2022 Composite LiDAR shows that the topography of the site declines from the south (54mAOD) to the north at (52mAOD), with a relatively continuous gradient. The gradient is approximately 1%, therefore the site is considered to have little slope, and is unlikely to affect any proposed SuDS features. The catchment drains east before joining the River Yarty.
Existing drainage features	No existing drainage features have been identified on site, with the exception of the watercourses to the south, east and north of the site. In 2018 Kilmington was granted money to complete ditch and drainage works in relation to the prevention of flooding: https://eastdevon.gov.uk/grants-and-funding/grants-that-we-ve-given-out-in-the-past/parishes-together-fund/what-s-been-funded-by-the-parishes-together-fund/projects-funded-in-2017-2018/#article-content
Fluvial	The proposed development site has not been identified to be in an area at risk of fluvial flooding.
Fluvial plus climate change	The proposed development site has not been identified to be in an area at risk of fluvial flooding.
Surface Water	**Available data and mapping:** Environment Agency's Risk of Flooding from Surface Water dataset for the 3.33%, 1% and 0.1% AEP events. Kilm_10 - Surface Water 3.33% AEP – Depth Kilm_10 - Surface Water 3.33% AEP – Hazard Kilm_10 - Surface Water 3.33% AEP - Velocity Kilm_10 - Surface Water 1% AEP – Depth Kilm_10 - Surface Water 1% AEP – Hazard Kilm_10 - Surface Water 1% AEP - Velocity Kilm_10 - Surface Water 0.1% AEP – Depth Kilm_10 - Surface Water 0.1% AEP – Hazard Kilm_10 - Surface Water 0.1% AEP - Velocity

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Site Code	**Kilm_10**
Address	Land south of the A35, Kilmington
	Data analysis: **3.3% AEP (1 in 30 year) event:** Proportion – 4% Max Depth – 0.69m Max Velocity – 0.7m/s Max Hazard – 1.35 Mean Depth – 0.25m Mean Velocity – 0.12m/s Mean Hazard – 0.81 **1% AEP (1 in 100 year) event:** Proportion – 6% Max Depth – 0.72m Max Velocity – 1.02m/s Max Hazard – 1.37 Mean Depth – 0.23m Mean Velocity – 0.17m/s Mean Hazard – 0.76 **0.1% AEP (1 in 1000 year) event:** Proportion – 18% Max Depth – 0.79m Max Velocity – 1.79m/s Max Hazard – 1.45 Mean Depth – 0.19m Mean Velocity – 0.31m/s Mean Hazard – 0.73 **Flood characteristics:** The site is shown to be at risk of flooding in the 3.3% and 1% AEP events with localised flooding in the northwest of the site averaging 0.23m. During the 0.1% AEP event flow paths extend south reducing average depths to 0.19m, with additional localised flooding to the south. It is therefore evident that as the flooding extent increases, the average flood depth decreases. The average hazard and velocity on site during the 0.1% AEP event are shown to be a rating of 0.73 'a danger to some' and 0.31m/s respectively.
Surface water plus climate change	**Available data and mapping:** Environment Agency's Risk of Flooding from Surface Water dataset for the 3.33%, 1% and 0.1% AEP events with 65% Climate Change scenarios. Kilm_10 - Surface Water 3.33% AEP plus 65% Climate Change – Depth Kilm_10 - Surface Water 3.33% AEP plus 65% Climate Change – Hazard Kilm_10 - Surface Water 3.33% AEP plus 65% Climate Change - Velocity Kilm_10 - Surface Water 1% AEP plus 65% Climate Change – Depth Kilm_10 - Surface Water 1% AEP plus 65% Climate Change – Hazard Kilm_10 - Surface Water 1% AEP plus 65% Climate Change - Velocity Kilm_10 - Surface Water 0.1% AEP plus 65% Climate Change – Depth Kilm_10 - Surface Water 0.1% AEP plus 65% Climate Change – Hazard Kilm_10 - Surface Water 0.1% AEP plus 65% Climate Change - Velocity **Management Catchment:** Kilm_10 is located within the East Devon Management Catchment. The Environment Agency guidance recommends that the Upper End allowance is considered for both the 3.3% and 1% AEPs for the 2070's epoch, unless the allowance for the 2050's epoch is higher, in which case this should be used. This is appropriate for development with a lifetime beyond 2100. The recommended uplift on peak rainfall intensity for the 3.3% AEP is 40% and for the 1% AEP is 45%. As Risk of Flooding from Surface Water data with a 65% uplift was already available this has been used as the best available data for the 3.3%, 1% and 0.1% AEPs.

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Site Code	**Kilm_10**
Address	Land south of the A35, Kilmington
	Data analysis: **3.3% AEP (1 in 30 year) plus 65% climate change event:** Proportion – 9% Max Depth – 0.75m Mean Depth – 0.21m Max Velocity – 1.08m/s Mean Velocity – 0.19m/s Max Hazard – 1.4 Mean Hazard – 0.74 **1% AEP (1 in 100 year) plus 65% climate change event:** Proportion – 16% Max Depth – 0.78m Mean Depth – 0.2m Max Velocity – 1.72m/s Mean Velocity – 0.28m/s Max Hazard – 1.44 Mean Hazard – 0.74 **0.1% AEP (1 in 1000 year) plus 65% climate change event:** Proportion – 36% Max Depth – 0.87m Mean Depth – 0.2m Max Velocity – 1.85m/s Mean Velocity – 0.54m/s Max Hazard – 1.54 Mean Hazard – 0.83 **Flood characteristics:** The site is shown to be at risk of flooding in all three scenarios with localised flooding to the northwest during the 3.33% plus climate change event, with an average mean depth of 0.21m. During the 0.1% AEP event a flow path is formed connecting the south to the north, slightly lowering the mean depth to 0.2m. The average velocity on site during the 0.1% AEP plus 65% climate change event is shown to be 0.54m/s, with a maximum of 1.85m/s. The average hazard rating is shown to be 'dangerous to some' at 0.83.
Reservoir	The site is not located near to a Wet or Dry day reservoir flooding extent, according to the Environment Agency's reservoir flood mapping.
Groundwater	**Available data and mapping:** The JBA Groundwater Flood Data Map (GW5) is provided as a 5m resolution grid. Kilm_10 - Groundwater Emergence **Flood characteristics:** Groundwater levels on site are at least 5m below the grounds surface.
Sewers	No evidence of sewer flooding has been identified at or near the development site.
Flood history	The site is not shown to be located within the Environment Agency's Recorded Flood Outlines extent. The nearest recorded incident within Devon County Council's dataset is located to the east of the site having flooded from surface water in December 2019.
Policy zones	
Critical drainage areas	The site has not been identified to be located within a critical drainage area. Mapping: Kilm_10 - Critical Drainage Area

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Coastal change management areas	The site has not been identified to be located within a coastal change management area.
Flood risk management infrastructure	
Existing defences	The Environment Agency's AIMS dataset shows there are no formal flood defences within the vicinity of the site.
Emergency planning	
Flood warning	The site has not been identified to be located within an area of flood warning or alerts. Mapping: Kilm_10 - Flood Warnings and Alerts
Access and egress	Access and egress are available along the A35 to the north of the site. However, access and egress is shown to be affected during modelled events, with shallow depths up to 0.3m along the A35 in the 1% AEP plus climate change surface water event. Access and egress should therefore be more carefully considered within a site-specific FRA and a Flood Response Plan may be required.
Requirements for drainage control and impact mitigation	
Broad-scale assessment of possible SuDS	**Geology and Soils** The geology consists of mudstone, siltstone and sandstone, with sand and gravel superficial deposits. The soils are shown to be slightly acid loamy and clayey soils with impeded drainage. This suggests that infiltration is unlikely to be a viable means of surface water disposal. **SuDS** • The site has not been identified to be located within a historic landfill site, a groundwater Source Protection Zone or Nitrate Vulnerable Zone. • Groundwater levels on site are at least 5m below the grounds surface, however infiltration on site is unlikely due to impeded drainage from clayey soils. The infiltration potential of the site should be confirmed through infiltration testing, in line with BRE 365. Offsite discharge may therefore be required to discharge surface water runoff. • Surface water discharge rates should not exceed pre-development discharge rates for the site and should be designed to be as close to greenfield runoff rates as reasonably practical in consultation 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. • SuDS measures should follow the discharge hierarchy, and 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. • The topography of the site is relatively flat with a 2mAOD decline from the south to north, however any surface water not intercepted will drain

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	via gravity towards the northern boundary. It is therefore recommended that the LLFA and the EA are consulted about viable discharge locations for surface water from the site and their attenuation potential.
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. • 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 source control techniques such as green roofs, permeable surfaces and rainwater harvesting must be considered in the design of the site. • SuDS are to be designed so that they are easy to maintain, and it should be set out who will maintain the system, how the maintenance will be funded and should be supported by an appropriately detailed maintenance and operation manual. • SuDS should be designed with a holistic approach, combining ecology, landscape and drainage requirements specific to the site, and incorporating Biodiversity Net Gain requirements. • 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 improve water quality of surface water runoff discharged from the site and reduce the impact on receiving water bodies. • 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. • SuDS should be designed in line with Devon County Councils SuDS Guidance. https://www.devon.gov.uk/floodriskmanagement/document/sustainable-drainage-system-guidance-for-devon-2023/#dcc-documents-cpt-contents
NPPF and planning implications	
Exception Test requirements **(Local Authority considerations)**	The Local Authority will need to confirm that the Sequential Test has been carried out in line with national guidelines. The Sequential Test will need to be passed before the Exception Test is applied. The NPPF classifies the usage as "More Vulnerable"; this type is taken into consideration for the Exception Test. Given the site is in Flood Zone 1, and the limited surface water extent in the 0.1% AEP event, provided development is proposed outside of the areas at risk, the Exception Test is not required for this site.

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Requirements and guidance for site-specific Flood Risk Assessment **(Developer considerations)**	**Flood Risk Assessment:** The Level 1 SFRA has more guidance on this section and any relevant policies and information applicable to development within East Devon District Council. • Consultation with the East Devon District Council, and where relevant South West Water, Devon County Council, and the Environment Agency should be undertaken at an early stage. • Developers should consult with South West Water to ensure that the development aims to help achieve the targets of the Drainage and Wastewater Management Plan. • Development plans should use the Level 1 SFRA for East Devon District Council, as well as the Local Flood Risk Management Strategies to identify cumulative flood risk issues. It should also promote an integrated approach to water management. • The site is located within a low risk Cumulative Impact Assessment (CIA) catchment and therefore specific CIA policy documents are unlikely applicable to this site. **Guidance for site design and making development safe:** • The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG). • The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, so runoff magnitudes from the development are not increased by development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure runoff rates do not exceed greenfield rates. • Arrangements for safe access and egress are likely to be possible, however these will need to be considered further within a site-specific FRA for the surface water events with an appropriate allowance for climate change, using the depth, velocity, and hazard outputs.

Key messages

The site is generally identified to be at low risk, and development is likely to progress if:

- A site-specific FRA is undertaken to assess the risk of surface water flooding in relation to the proposed development, and the access and egress arrangements.
- Development is placed outside of the areas at risk from surface water flooding.
- Surface water is not discharged into the combined sewer.
- Infiltration rates are assessed on site as part of a drainage strategy.