Harborough District Council

Level 2 Strategic Flood Risk Assessment

Detailed Site Summary Table

Site details

Site Code	**8737: Proposed Allocation MH5**
Address	**Land OS3070, Leicester Road**
Area	0.6 hectares
Current land use	Greenfield
Proposed land use	Employment
Flood Risk Vulnerability	Less Vulnerable

Sources of flood risk

Location of the site	The site is situated on the northwest outskirts of Market Harborough, immediately west of Leicester Road (B6047). A car dealership borders the site to the south, while residential developments are located to the west. Beyond these immediate surroundings, the area opens up into predominantly rural farmland. The site is within the Langton Brook catchment, which covers a 58.8km^2 area and falls under the Welland Upper Operational Catchment. The Langton Brook flows 2.5km north of the site in an easterly direction towards its confluence with the River Welland. The Grand Union Canal also runs along the western border of the site.
Topography	The Environment Agency (EA)'s 1m resolution 2022 Composite LiDAR shows that the site is bordered by higher ground to the north and west, while the southern and eastern areas lie at lower elevations. The terrain is also ridged and uneven in the centre of the site, marked by a banded pattern. The maximum elevation is 105.5m AOD in the northwest of the site, and the lowest elevation is 102.4m AOD in the south.

Existing drainage features	There are no existing drainage features within the site.
Fluvial	**Available data and mapping:** The Environment Agency's (EA) Flood Map for Planning has been used within this assessment. This mapping was updated in March 2025 with the release of the new National Flood Risk Assessment 2 (NaFRA2). **Fluvial Modelling:** There is 1d modelling of the River Welland (2016), however it does not show the site to be at risk of fluvial flooding. **Flood Map for Planning** **Flood characteristics:** • Flood Zone 1 represents areas which have less than 1 in 1000 (0.1%) chance of river flooding in a given year. Flood Zone 1 covers of 100% of the site. • Flood Zone 2 represents areas which have less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of river flooding in a given year. Flood Zone 2 covers 0% of the site. • Flood Zone 3 representing an area greater than 1 in 100 (1%) chance of river flooding in a given year. Flood Zone 3 covers 0% of the site. The site is not shown the be at risk of fluvial flooding.
Fluvial plus climate change	The site is not shown the be at risk of fluvial flooding.
Surface water	**Available data and mapping:** The Environment Agency's (EA) Risk of Flooding from Surface Water dataset for the 3.3%, 1% and 0.1% AEP events have been used within this assessment. This mapping was updated in January 2025 with the

	release of the new National Flood Risk Assessment 2 (NaFRA2). This analysis is based on depths and flood extents only, as the updated dataset does not include velocity or hazard information. **Data analysis:** **3.3% AEP (1 in 30 year) event:** Proportion is 11% Maximum depths are up to 0.3m **1% AEP (1 in 100 year event):** Proportion is 16% Maximum depths are up to 0.3m **0.1% AEP (1 in 1000 year) event:** Proportion is 29% Maximum depths are up to 0.3m **Flood characteristics:** The site is affected by surface water ponding in the south and east of the site in the 3.3%, 1%, and 0.1% AEP events. In the 3.3% AEP event, there is a large area of pooling in the east of the site by the boundary, parallel to Leicester Road (B6047). Here the maximum depths reach up to 0.3m. There is also a smaller area of ponding in the south, west of the car dealership. This area of ponding has maximum depths of up to 0.2m. In the 1% AEP event, both of these areas of ponding increase in their coverage of the site, particularly in the east. Maximum depths remain consistent with those observed during the 3.3% AEP event; however, these depths now extend across a slightly larger area. In the 0.1% AEP event, the percentage of the site at risk of surface water

	flooding almost doubles to 29%, from 16% in the 1% AEP event. The risk has increased particularly in the south of the site, where a large flow path has formed and encroaches across the southern border. This flow path starts in the 3.3% AEP event in the fields northeast of the site, travelling southwest, and covering a significant area both east and south of the site.
Surface water plus climate change	**Available data and mapping:** The Risk of Flooding from Surface Water dataset updated for climate change has been used, based on the 'Central' allowance for the 2050s epoch (2040-2060) for risk of flooding from surface water (+20%). This mapping was updated in January 2025 with the release of the new National Flood Risk Assessment 2 (NaFRA2). **Management Catchment:** The site is located within the Welland Management Catchment. The EA's 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 central and upper estimates are 25% and 35%, and 25% and 40% for the 1% AEP event. The available climate change uplifts are therefore not appropriate for assessing risk for planning purposes, and developers should consider the latest climate change allowances as part of a site-specific flood risk assessment. **Data analysis:** **3.3% AEP (1 in 30 year) central climate change event:** Proportion is 14% Maximum depths are up to 0.3m **1% AEP (1 in 100 year) central climate change event:** Proportion is 17% Maximum depths are up to 0.3m

	0.1% AEP (1 in 1000 year) central climate change event: Proportion is 39% Maximum depths are up to 0.6m **Flood characteristics:** The site is shown to be at risk of flooding from all scenarios. The 3.3% AEP and 1% AEP climate change events are similar to their corresponding present-day scenarios, with a 3% and 1% increase respectively in the portion of the site at risk. However, comparing the 0.1% AEP event with the 0.1% AEP plus climate change event shows the site is likely to be quite sensitive to greater increases in rainfall as a result of climate change. The proportion of the site at risk increases by 10%, from 29% to 39%, covering most of the south of the site and extending further into the centre. The maximum depths also increase from up to 0.3m to up to 0.6m. These depths of up to 0.6m are found in two small areas, one in the east of the site and one in the south.
Reservoir	The site is not located in a Wet or Dry day reservoir flooding extent, according to the EA's reservoir flood mapping.
Groundwater	**Available data and mapping:** The JBA Groundwater Flood Data Map (GW5) is provided as a 5m resolution grid. **Flood characteristics:** The JBA Groundwater Flood Data Map shows that the site is at 'no risk' of groundwater emergence.
Sewers	Sewer flood records from Anglian Water were unavailable and therefore cannot be assessed as part of this assessment. The Water Recycling Centre (WRC) for the site is identified to have compliance risk, with risk from internal and external sewer flooding risk until 2050 within Anglian Water's Drainage and Wastewater Management Plan (DWMP). The risk of sewer flooding should be considered within a site-specific flood risk assessment prior to development.

Flood history	The EA's Recorded Flood Outlines dataset shows no recorded historic flood extents within, or in the vicinity of, the site.

Flood risk management infrastructure

Existing defences	The EA's AIMS spatial flood defences dataset shows that there are no formal flood defences at the site or in its vicinity.
Potential defences	There are no potential defences at the site or in its vicinity.
Residual risk	As the site is undefended, and there are no structures in the vicinity, there is no residual risk to the site from failure of defences. The site is adjacent to the Grand Union Canal and may be at risk from breach or overtopping of the canal. Developers should contact the Canals and Rivers Trust for more information on risk from the canal as part of a site-specific flood risk assessment.

Emergency planning

Flood warning	The site is not located in an EA Flood Alert or Flood Warning Area.
Access and egress	At present, the site is accessible from Leicester Road (B6047) that runs parallel to the eastern border of the site. There is also a small road that leads from Leicester Road (B6047) through the car dealership to the southern boundary of the site. In the 3.3% and 1% AEP surface water events, access and egress to the site should be achievable in all directions. There is some ponding covering Leicester Road (B6047) both north and south of the site, but maximum depths are predicted to be up to 0.3m. This means access and egress to the site for emergency vehicles is likely still possible. For the 0.1% AEP event, access and egress to the site is obstructed. Surface water covers approximately 150m of Leicester Road (B6047) south of the site. A large part of this extent has maximum depths up to 0.6m, with a small area reaching up to 0.9m. Travelling north on Leicester Road (B6047), there is an area of risk on the bridge over the canal that has

	maximum depths up to 0.6m (although from mapping this appears associated with the canal, and may be crossed by the bridge safely). For the design surface water climate change event (the 1% AEP plus climate change), flood extents are similar that of the 0.1% AEP event. Access and egress south via Leicester Road (B6047) might be possible despite the large area of risk on the road, as maximum flood depths are up to 0.3m. However, travelling north, maximum flood depths are up to 0.6m at the canal bridge. Safe access and egress will need to be demonstrated in the design (1% AEP plus climate change) surface water event. Given the significant surface water risk to the site, a site-specific flood risk assessment will be required, considering the duration and likely onset of flooding. A flood warning and evacuation plan should be prepared should any development be proposed in an area at risk of flooding and safe access/egress can't be demonstrated in the 1% AEP plus climate change surface water event.

Requirements for drainage control and impact mitigation

Broad-scale assessment of possible SuDS	**Geology and Soils** The geology consists of: • Bedrock geology of siltstone and mudstone, interbedded, forming the Dyrham Formation. • There is no information is available of the superficial deposits for the site. The soils on site consist of slowly permeable, seasonally wet, slightly acidic but base-rich loamy and clayey soils, which are likely to have impeded drainage. This suggests that infiltration is unlikely to be a viable means of surface water disposal. **SuDS** • JBA Groundwater mapping suggests the site is at 'low risk' of groundwater flooding during a 1% AEP flood event, the site is not considered to be susceptible to groundwater flooding, due to the

	nature of the local geological conditions. However, infiltration SuDS may not always be appropriate and the infiltration potential of the site should be confirmed through infiltration testing, in line with BRE 365. • The site is not located within a Source Protection Zone and does not contain known historic landfill. As such there are no restrictions over the use of infiltration techniques with regard to groundwater quality. • The site is located within the River Welland Nitrate Vulnerable Zone. Therefore, early engagement with the LLFA and the EA is recommended to determine requirements for the site to manage the impact to surrounding watercourses. Consideration of water quality is likely to be of high importance and demonstrated through the use of the Simple Index Approach. • 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. • Due to the topography, any surface water not intercepted via infiltration will drain via gravity to the east and south of the site. 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, helping meet requirements for the Nitrate Vulnerable Zone. 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 Leicestershire County Council's SuDS Guidance.

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 employment usage as 'Less Vulnerable', and the site is entirely within Flood Zone 1, therefore the Exception Test is not required. However, there are surface water flooding issues within the east and south of the site, alongside access and egress issues. The council will need to ensure that any development proposal considers the risk carefully

	against the benefits of developing the site. A surface water drainage plan should be adopted to ensure the development can be made safe for its lifetime.
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 Harborough District Council. • 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, and that developments meet objectives of the NPPF's policy on flood risk. Developers will need to demonstrate that site users will be safe in the 1% AEP surface water events, including an allowance for climate change. Developers will need to show that the site is not at an increased risk of flooding in the future and that development of the site does not increase the risk off site. • There is significant risk from surface water at the site, as such flow routes should be quantified as part of a site-specific flood risk assessment, 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. • Consultation with Harborough District Council, Leicestershire County Council, and the Environment Agency should be undertaken at an early stage. • Developers should consult with Anglian Water to ensure that the development aims to help achieve the targets of the Drainage and Wastewater Management Plan. • Developers should consult the Canals and Rivers Trust to understand the risk from the Grand Union Canal. • Development plans should use the Level 1 SFRA for Harborough 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. **Guidance for site design and making development safe:** • The developer will need to show, through a site-specific flood risk assessment, 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). • Safe access and egress may be obstructed by surface water flooding. Therefore, these arrangements will need to be considered further within a site-specific flood risk assessment for the surface water events with an appropriate allowance for climate change, using the depth, velocity, and hazard outputs. • Developers should also seek a Flood Warning and Evacuation Plan if safe access and egress cannot be demonstrated in the 1% AEP plus climate change surface water event. • Finished floor levels should be raised 600mm above the 1 in 100-year plus climate change flood level. • If flood mitigation measures are implemented then they should be tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).

Key messages

The site is affected by surface water flood risk in the 3.3% AEP, 1% AEP and 0.1% AEP events, and the surface water climate change event extents. There are also potential access and egress issues, and careful consideration will be needed as to how the site can be brought forwards safely. Development may be able to proceed if:

- A site-specific FRA, supported by detailed surface water modelling, is undertaken to assess the risk of surface water flooding in relation to the proposed development and access/egress arrangements. Developers will need to demonstrate safe access and egress in the 1% AEP + climate change surface water event. Developers will need to show that the site is not at an increased risk of flooding in the future and that development of the site does not increase the risk off site.
- Safe access and egress to all areas of the site must be demonstrated during the 1% AEP plus climate change surface water event. If there are significant issues, a Flood Warning and Evacuation Plan should be prepared which considers the likely onset and duration of flooding during a breach scenario and demonstrates how residents can safely be evacuated and/or shelter safely in situ during the surface water design events.
- A carefully considered and integrated flood resilient and sustainable drainage design is put forward, including a site-specific Surface Water Drainage Strategy, and SuDS maintenance and management plan and supported by detailed modelling (as above), with development to be steered away from the areas identified to be at highest risk of surface water flooding within the site. This is to be in line with the sequential approach to site layout.

Mapping information

The key datasets used to make planning recommendations for this site were the EA's Flood Map for Planning and the EA's 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 EA's Flood Map for Planning mapping.
Climate change	The latest climate change allowances (updated May 2022) have been applied to the EA's RoFSW dataset.
Fluvial depth, velocity and hazard mapping	Fluvial extents were from the River Welland hydraulic model (2016).
Surface water	The EA's Risk of Flooding from Surface Water (RoFSW) map has been used to define areas at risk from surface water flooding.
Surface water depth, velocity and hazard mapping	The EA's Risk of Flooding from Surface Water (RoFSW) has been used to define areas at risk from surface water flooding.