Bassetlaw Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables	
Site details	
Site Code	**HS10**
Address	St Michaels View, Hallcroft Road, Retford DN22 7NE. Grid reference: SK 70102 81563
Area	0.37ha
Current land use	Assisted living residence
Proposed land use	Residential
Sources of flood risk	
Location of the site within the catchment	The site is within the River Idle catchment. The River Idle is an Environment Agency designated main river and flows in a northerly direction to the east of Retford towards its confluence with the River Trent.
Existing drainage features	The site is located 460m west of the River Idle. The River Idle flows from south to north through Retford. An unnamed tributary of the River Idle is located 330m east of the site and flows south towards its confluence with the River Idle, 390m from the site. The Chesterfield Canal is located 370m south 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 assessment of flood risk is based on detailed 1D-2D Flood Modeller Tuflow modelling of the River Idle. Modelling was completed by the Environment Agency in 2020. Climate change uplifts were provided by the Environment Agency in line with latest guidance these are based on UKCP18 projections. **Flood characteristics:** The site is not at risk of fluvial flooding from the River Idle.
Coastal and Tidal	The site is not at risk of coastal or tidal flooding.
Surface Water	**Proportion of site at risk (RoFfSW):** **3.3% AEP-year** – 0% Max depth 0m, Max velocity 0m/s **1% AEP** – 0% Max depth 0m Max velocity 0m/s **0.1% AEP** – 13% Max depth 0.3m-0.6m Max velocity 0.25m/s- 0.5m/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. 1% AEP extent includes the 3.3 % AEP extent) **Description of surface water flow paths:** The site is not shown to flood during the 3.3% AEP or the 1% AEP flood events. In the 0.1% AEP event, surface water ponds around the southern and eastern edges of the existing building to depths of up to 0.6m. These areas have a flood hazard rating of 'Caution' to 'Dangerous for some'.
Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.
Canals	The site is a significant distance from the Chesterfield Canal and would be unlikely to be affected if the canal was to breach.
Groundwater	The Environment Agency's Areas Susceptible to Groundwater Flooding dataset, provided as 1km grid squares, shows an area's susceptibility 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 from superficial deposits. This assessment does not negate the requirement that an appropriate groundwater regime assessment should be carried out at the site-specific FRA stage.
Sewers	The Level 1 SFRA indicates that 36 incidences of sewer flooding have occurred in the DN22 7 postcode area. NCC does not hold any records of flooding within 100m of the site.
Flood history	The Environment Agency's historic flooding map does not hold a record of flooding at the site. NCC does not have any records of flooding within 100m of 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 or flood alert area.
Access and egress	Access to the site would be from West Furlong, where two small access tracks are currently present. In terms of surface water flood risk, surface water flooding impacts the site and some of the surrounding road network in the 1000-year modelled event. In the 1% AEP flood event, the two surface water ponding areas are away from the site access roads and will not restrict site access. In the 0.1% AEP flood event, surface water flooding should not impact access and egress from the site as flood depths are shallow (less than 0.3m).
Climate change	
Implications for the site	The site is not at risk of flooding from the climate change extents of the River Idle. The significant increase in risk between the 1% and 0.1% AEP surface water flood event suggests that the site is sensitive to climate change. Flood depths on the site are predominantly between 0.3m-0.6m. The flow path velocities are between 0.25m/s and 0.5m/s across the site. The flow path has a flood hazard rating of 'caution' to 'dangerous for some'.
Requirements for drainage control and impact mitigation	

Broad-scale assessment of possible SuDS	**Geology & Soils**
	• Geology at the site consists of:
	  ○ Bedrock- Chester Formation- Sandstone, Pebbly (Gravelly).
	  ○ Superficial- River terrace deposits, 1- Sand and Gravel.
	• Soils at the site consist of:
	  ○ Naturally wet, very acid sandy and loamy soils.
	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 sandstone 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 entire site is mainly located within Groundwater Source Protection Zone 1 (SPZ), and infiltration techniques may not appropriate for anything other than clean roof drainage. If infiltration is proposed for anything other than clean roof drainage, a hydrogeological risk assessment should be undertaken to ensure that the system does not pose an unacceptable risk to the supply source. Proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible opportunities and constraints. • The site is not located within a historic landfill site. • 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. • The Risk of Flooding from Surface Water (RoFSW) mapping indicates surface water flow paths during the 0.1% AEP event. Existing flow paths should be retained and integrated with blue-green infrastructure and public open space. Care should be taken to ensure that SuDS are not at risk of being overwhelmed during a surface water flood event. • If it is proposed to discharge runoff to a watercourse or sewer system, the receiving watercourse or asset's condition and capacity 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 more comprehensive 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 • It is recommended that hard paving areas be designed to ensure that flood water can be stored during a flood event alongside green features such as rain gardens and tree pits.
NPPF and planning implications	
Exception Test requirements	The Local Authority will need to confirm that the sequential test has been carried out. The site is located entirely within Flood Zone 1 so the Exception test is not required for this site. Residential development is classified as 'More Vulnerable'. No part of the site is within the national Flood Zones that show river flooding in the Borough.
Requirements and guidance for site-specific Flood Risk Assessment	**Flood Risk Assessment:** • It is recommended that a site-specific Flood Risk Assessment is completed at the planning application stage as the development to assess the risk of surface water flooding. • All flooding sources, particularly the risk of surface water, should be considered part of a site-specific flood risk assessment. • The site-specific FRA should be carried out according to the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance, Bassetlaw Council's Local Plan policies, and the Nottinghamshire County Council Lead Local Flood Authority's Statutory Consultee for Planning Guidance Document. **Guidance for site design and making development safe:** • The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by development across any surface water flow routes. A drainage strategy should help inform site layout and design to ensure no increase in runoff beyond current rates. • Areas at risk from surface water flooding should ideally be integrated into green infrastructure, presenting wider opportunities to improve biodiversity, amenity, and climate change adaptation. An integrated flood risk management and sustainable drainage scheme for the site is advised. A detailed surface water flooding model using the existing drainage system, topographical and asset survey must be constructed at the FRA stage. This will further determine the risk from

	surface water flooding and ensure that overland flows do not overwhelm future sustainable drainage features. • New developments should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. This should include allowance for climate change. • Betterment on the existing site runoff rate should be sought to ensure no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate. • Developers should refer to Nottinghamshire County Council's 'Nottinghamshire County Council's Guidance Note on the Validation Requirements for Planning Applications and the Level 1 SFRA for information on SuDS guidance on the information required by the LLFA from applicants to enable it to respond to planning applications.

Key messages

The site is located entirely within Flood Zone 1; the Exception test need not be applied. However, there is a risk of surface water flooding, particularly when considering climate change, that must be regarded further to ensure the development will not increase flood risk elsewhere.

The development is likely to be able to proceed if:

- A site-specific FRA, including a detailed model of surface water flooding and the existing drainage system using topographical and asset survey, is undertaken to further determine the risk from surface water to the site and ensure surface water flows do not overwhelm any planned SuDS features.
- Space for surface water to be stored on the site is provided, and rainwater harvesting should be considered.
- New developments should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. This should include allowance for climate change.

Mapping Information

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

Flood Zones	The extent of flooding from the River Idle is based on detailed 1D-2D Flood Modeller Tuflow modelling. Modelling was completed by the Environment Agency in 2020.
Climate change	Climate change uplifts were provided by the Environment Agency in line with latest guidance- these are base don UKCP18 projections.
Fluvial depth, velocity and hazard mapping	Flood depths, velocity and hazards were not available for the River Idle.
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 and hazard mapping for the 1 in 0.1% AEP event is taken from the Environment Agency's Risk of Flooding from Surface Water mapping.