

Halton Borough Council Local Plan Site Screening

**Level 2 Strategic Flood Risk
Assessment – Site W28 Screening**

Draft Report

July 2019

www.jbaconsulting.com



Municipal Building

Kingsway

Widnes

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Revision history

Revision Ref/Date	Amendments	Issued to
P01 / July 2019	N/A	Alasdair Cross

Contract

This report describes work commissioned by Anne Moyers, on behalf of Halton Borough Council, by an email dated 3 May 2019. Hannah Bishop, Joseph Landells-Molloy and Mike Williamson of JBA Consulting carried out this work.

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1 W28 (DALP Sub)

Proposed Site	W28 (DALP Sub)
Site area (ha)	0.33
Existing use	Employment
Existing flood risk vulnerability classification	Less vulnerable
Proposed use	Residential
Proposed development flood risk vulnerability classification	More vulnerable
Proposed development impermeable area (ha)	0.28

Flood outlines (current day)

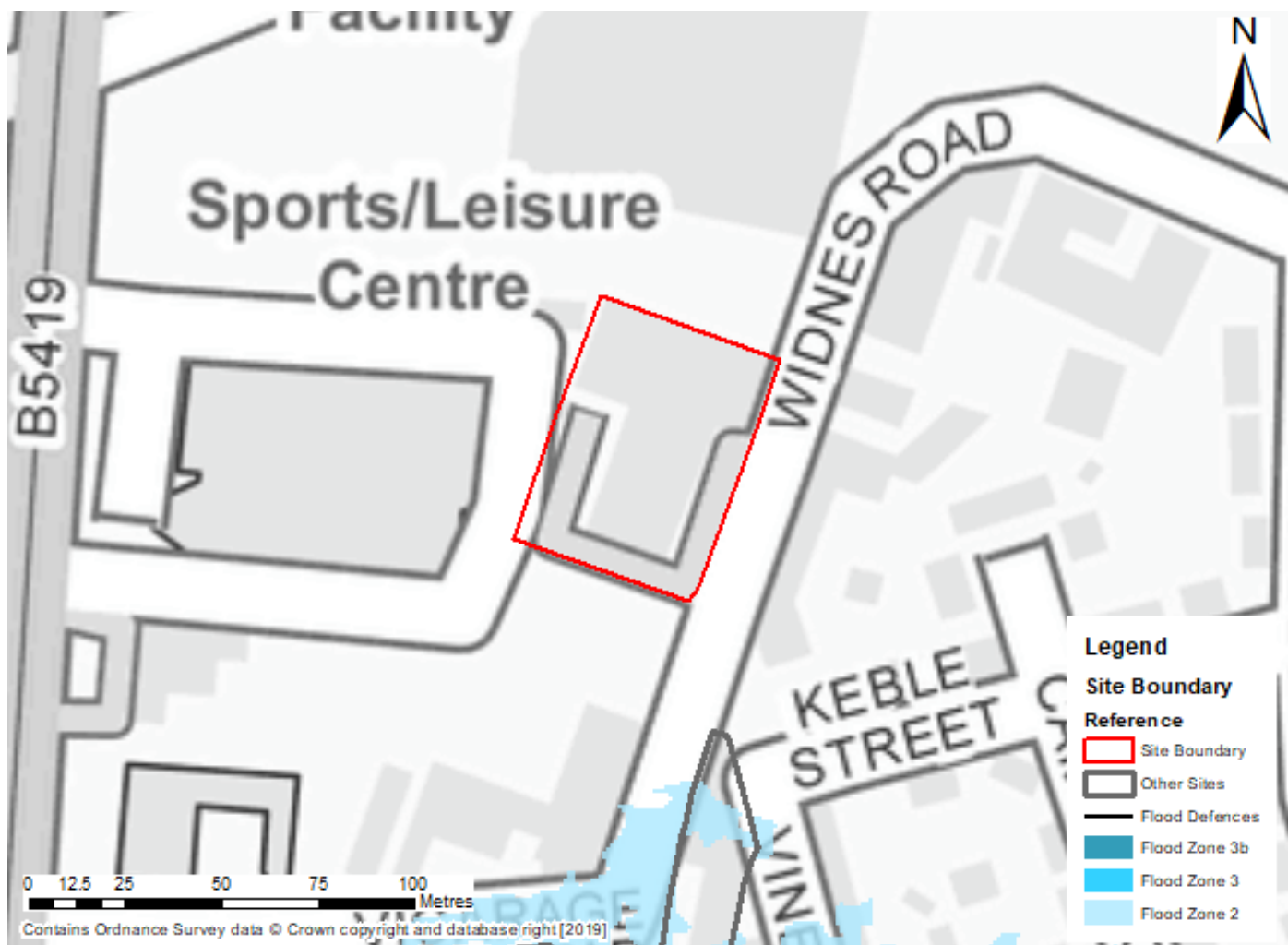


Figure 1-1: Flood Zone Mapping with Flood Defences (no flood zone mapping immediately close to the site)

Proposed Site

W28 (DALP Sub)

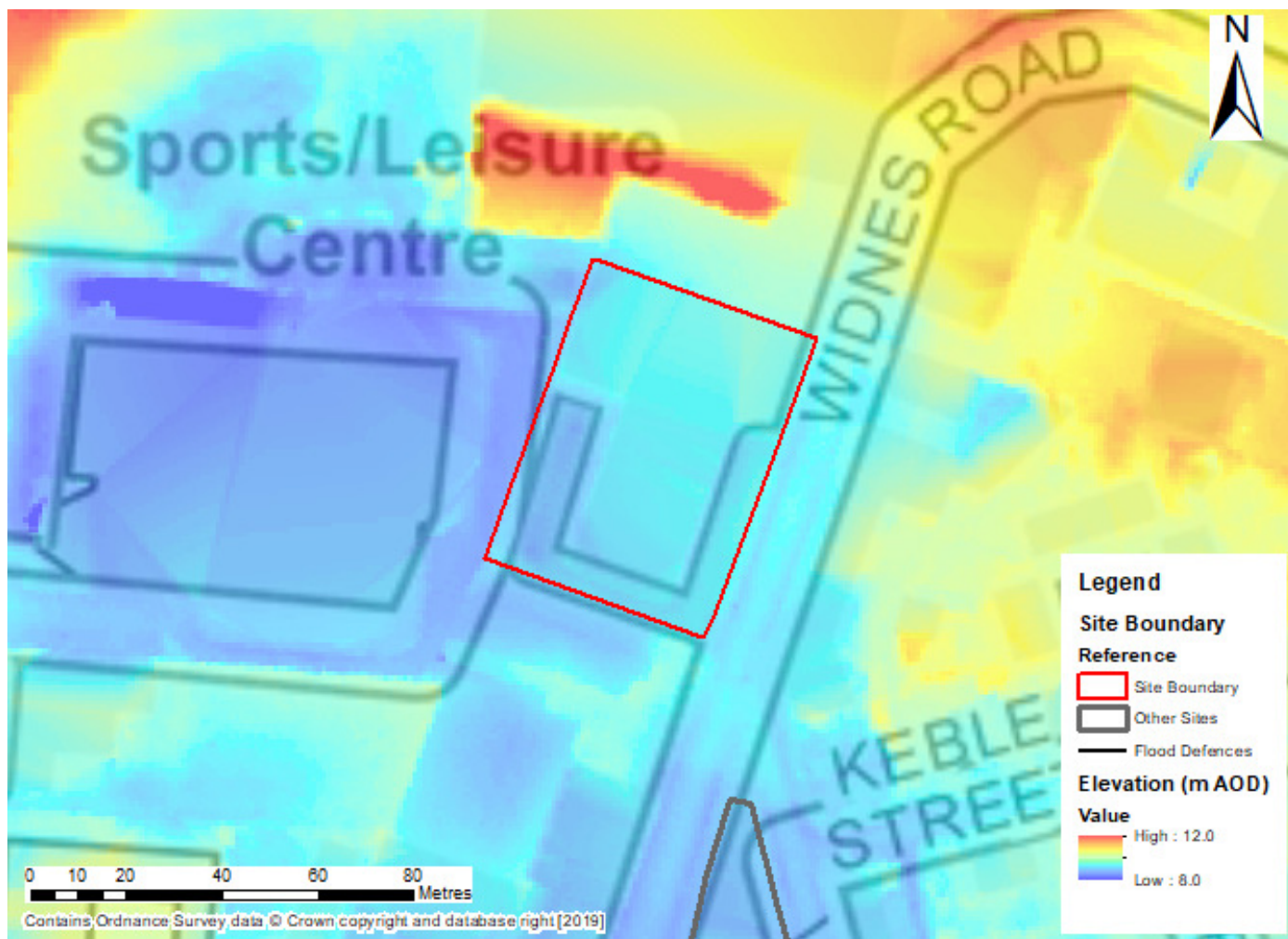


Figure 1-2: Site with 1m LIDAR (elevation data)

- The site has an approximate elevation of 9.7m AOD with the elevation minorly increasing to the east of the site.

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Observations

- The site is currently developed with one large commercial building and areas of small open carparking.
- Given the site is wholly within Flood Zone 1, allocation should be possible, assuming the recommendations in this Level 2 assessment with regards to surface water are followed.
- Much will depend on whether the existing structure is to remain or whether it is to be demolished and replaced. This would change existing surface water flow routes.
- The proposed use of development would see a change in risk classification from less vulnerable to more vulnerable according to the NPPF.
- Approximately 10% of the total site area is at risk of surface water flooding in the 1% AEP event to a maximum depth of 0.15-0.30m (see Figure 1-3). The extent of flooding in the

Proposed Site		W28 (DALP Sub)	
1% AEP event is localised to a low-lying area of hardstanding. The extent of flooding in the 0.1% AEP event is more widespread and largely contained by existing development. Safe access and egress are achievable via Widnes Road based on the 1% AEP outline.			
Flood Source: Fluvial/Tidal			
	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
Flood Zones (%)	0.00	0.00	0.00
Tidal: Depth (m)	N/A	N/A	N/A
Tidal: Hazard	N/A	N/A	N/A
Modelled Flood Risk and Climate Change	The site lies outside any modelled flood risk from fluvial and/or tidal sources.		
Historic Flooding	The site lies outside of any Environment Agency historic flood outlines.		
Defences	There are no flood defences located close to the site according to the EA’s spatial flood defence database.		
Flood Warning Area (FWA)	The site is not located within any current EA FWA.		
Mitigation options & site suitability	The entirety of the site lies within Flood Zone 1, outside fluvial or tidal modelled risk outlines from the Mersey Estuary 2016 model and therefore should be permitted for redevelopment.		
Flood source: Groundwater			
Flood risk: groundwater	Data unavailable. Possible risk from groundwater must be assessed as part of an FRA.		
Flood Source: Infrastructure Failure – Reservoirs			
Flood risk: reservoirs	There is no residual risk from reservoir inundation according to the EA’s Reservoir Flood Map (RFM).		
Flood Source: Infrastructure Failure – Canals			
Flood risk: canal	Data unavailable. Residual risk from canals (if applicable) must be assessed as part of an FRA.		

Proposed Site **W28 (DALP Sub)**

Flood Source: Surface Water

Surface Water Flood Risk to Proposed Development Site

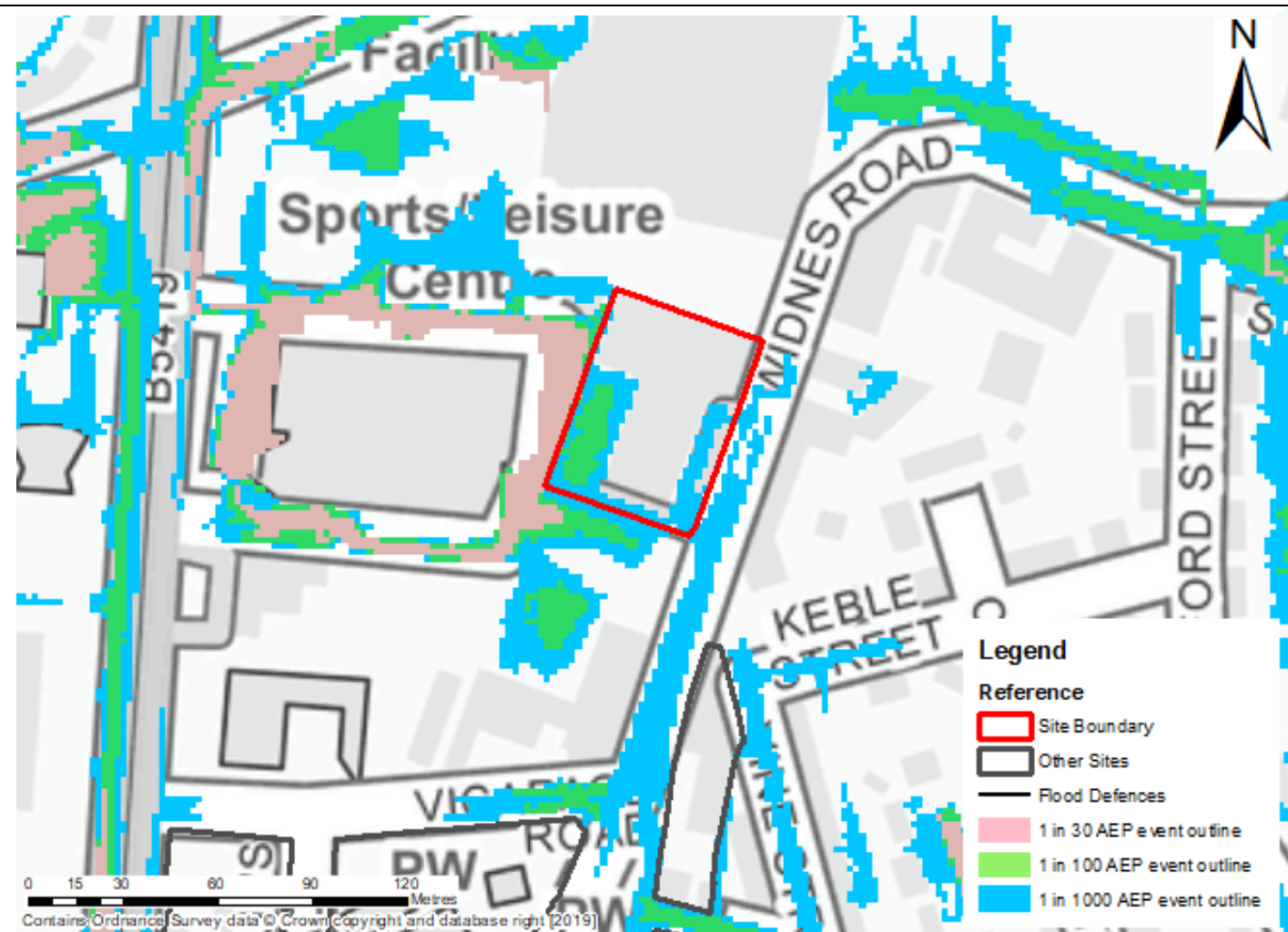


Figure 1-3: Surface Water Flood Risk to the site

Existing development risk of flooding from surface water (%)	High Risk (3.33% AEP outline)	Medium Risk (1% AEP outline)	Low Risk (0.1% AEP outline)
	0.39	10.13	33.52
Surface water flooding depths	Max: 0.15-0.30m	Max: 0.15-0.30m	Max: 0.30-0.60m
Surface water hazards	Max: Low Mean: Low	Max: Moderate Mean: Low	Max: Moderate Mean: Moderate
Climate change	The current day 0.1% AEP outline provides an indication of the likely increase in extent of the more frequent events.		

Proposed Site	W28 (DALP Sub)
Surface water: flood risk to development site	• Approximately 10% of the total site area is at risk of surface water flooding in the 1% AEP event to a maximum depth of 0.15-0.30m. • The extent of flooding in the 1% AEP event is localised to a low-lying area of hardstanding, currently carpark. The extent of flooding in the 0.1% AEP event is more widespread and largely contained by existing development. • The main access route via Widnes Road is generally at very low risk of surface water flooding.
Surface water: mitigation options & site suitability	• Allocation should be possible at this site assuming the recommendations in this Level 2 assessment are followed. • Given there is an existing development, an FRA should assess the current drainage system to assess whether it would be adequate for the redeveloped site and change in use. • Any redevelopment and change in building footprint should avoid the 1% AEP outline – approximately 10% of the total site area. • Safe access and egress are achievable via Widnes Road based on the 1% AEP outline. • Surface water runoff should be fully attenuated to a pre-agreed runoff rate (typically, this is a betterment on the existing runoff rate for currently developed sites) and as such, ensure that there is no increase in surface water flood risk elsewhere. The required volumes of attenuation have been calculated below for discharge at the greenfield rate. This provides a conservative estimate for the storage requirements that will likely be required. • The site is currently developed and therefore, infiltration SuDS may not be feasible (subject to ground investigation and contaminated land assessment). • Surface water flood risk is largely contained by existing development; therefore, any significant redevelopment of the site and change in development footprint may significantly change the behaviour of surface water and this must be accounted for in an FRA. • The minimum discharge rate for the site has been set at 5l/s/ha to provide a practical limit below which it is not reasonable to limit flows based on Rainfall runoff management for developments

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Indicative Surface Water Flood Risk from Proposed Development (for Proposed Site in its Entirety)						
Proposed Development limiting runoff rate: Greenfield – FEH Statistical		Qbar: 5 l/s Q30: 5 l/s Q100: 5 l/s				
Design flood event (inc CC)	Critical storm duration (Hrs)	Inflow volume (m³)	Outflow volume (m³)	Attenuation required (m³)	Time to empty assuming no infiltration (Hrs)	Total storage required: Area (ha) and % of site area
3.33% AEP Rainfall + 20%	2.25	119	28	91	7.2	0.006 ha 1.838 %
3.33% AEP Rainfall + 40%	2.5	142	32	111	8.8	0.007 ha 2.242 %
1% AEP Rainfall + 20%	3.25	176	41	135 (44 exceedance storage)	10.7	0.009 ha 2.727 %
1% AEP Rainfall + 40%	3.75	212	47	165 (54 exceedance storage)	13	0.011 ha 3.333 %
Climate change	Application of the central (20%) and upper band (40%) potential change anticipated for climate change in the table above shows the estimated attenuation volumes for the 1% AEP and 3.33% AEP rainfall events.					
Surface water: flood risk impacts from development site & mitigation	- As part of this Level 2 Screening we have included calculations to provide an estimated land take if a pond with an assumed depth of 1.5m was included as part of the development. - Attenuation volumes are presented for the critical storm duration for the 1 in 30-year events with exceedance flows quantified up to the 1 in 100-year event. To prevent development worsening flood risk elsewhere, surface water runoff must be managed on site.					

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