

Halton Borough Council Local Plan Site Screening

**Level 2 Strategic Flood Risk
Assessment – Site R1 Screening**

Draft Report

July 2019

www.jbaconsulting.com



Municipal Building

Kingsway

Widnes

WA8 7QF

JBA Project Manager

Mike Williamson
Mersey Bank House
Barbould Street
WARRINGTON
Cheshire
UNITED KINGDOM
WA1 1WA

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.

Prepared by Hannah Bishop BSc (Hons)

Technical Assistant

Joseph Landells-Molloy MEng (Hons) GMICE

Assistant Engineer

Reviewed by Mike Williamson BSc MSc CGeog FRGS EADA

Principal Flood Risk Analyst

Approved by..... Howard Keeble MPhil BEng BSc CEng CEnv CSci CWEM
MICE MCIWEM MCMi IMaPS

Technical Director

1 R1 (DALP Sub)

Proposed Site	R1 (DALP Sub)
Site area (ha)	0.23
Existing use	Open space
Existing flood risk vulnerability classification	Water-compatible
Proposed use	Residential
Proposed development flood risk vulnerability classification	More vulnerable
Proposed development impermeable area (ha)	0.20

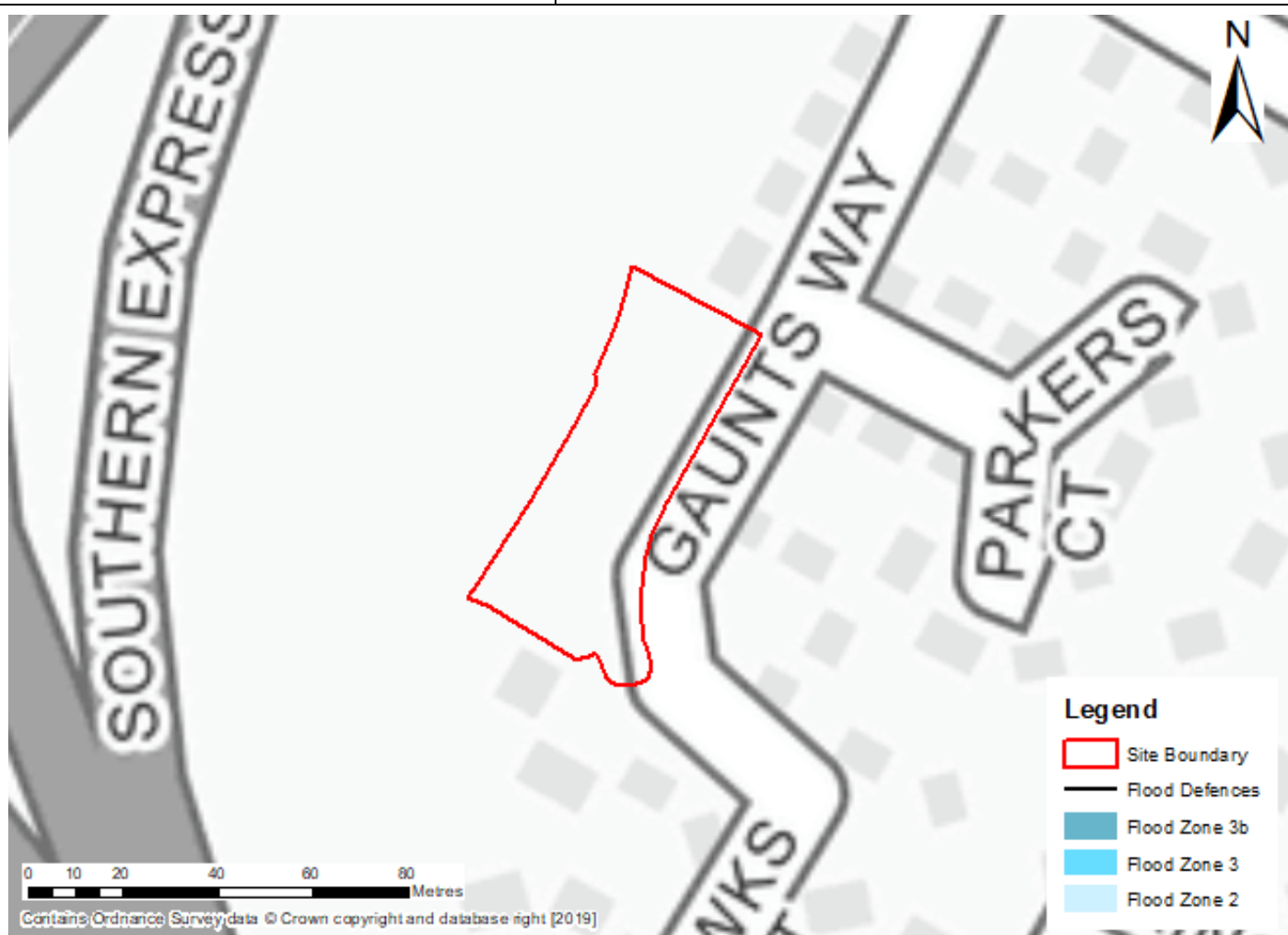


Figure 1-1: Site boundary (entirely within Flood Zone 1)

Proposed Site

R1 (DALP Sub)



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

- The elevation across the site is approximately 54.5m AOD which is consistent with the residential area to the east of the site. The site does slope slightly down towards Gaunts Way. The elevation increases to the west of the site to approximately 66m AOD.

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Observations

- Given the site is wholly within Flood Zone 1, allocation should be possible.
- The site is currently open greenspace and woodland.
- The proposed use of development would see a change in risk classification from water-compatible to more vulnerable according to the NPPF.
- A significant surface water flow path runs along Gaunts Way road on the western boundary of the site (see Figure 1-3).
- 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

Proposed Site		R1 (DALP Sub)	
generally limited to a localised depression at the northern bound of the site and along Gaunts Way.			
- The main access route via Gaunts Way is inundated with floodwaters based on the 1% AEP outline, alternative access/egress should be proposed. - The site boundary encroaches on to Gaunts Way. It is assumed that this is an inaccuracy in the digitisation of the site boundary and the percentage area at risk would actually be lower were the site boundary to be pulled back from the road.			
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	This site lies outside any modelled flood risk outlines from fluvial and/or tidal sources.		
Historic Flooding	The site lies outside of the Environment Agency’s historical flood map.		
Defences	There are no EA flood defences located near to the site.		
Flood Warning Area (FWA)	The site is located outside of any EA FWAs.		
Mitigation options & site suitability	The entirety of the site lies within Flood Zone 1, outside fluvial or tidal modelled risk outlines and could therefore be allocated under the NPPF, assuming the surface water risk can be controlled and mitigated following an FRA.		
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 R1 (DALP Sub)

Flood Source: Surface Water

Surface Water Flood Risk to Proposed Development Site

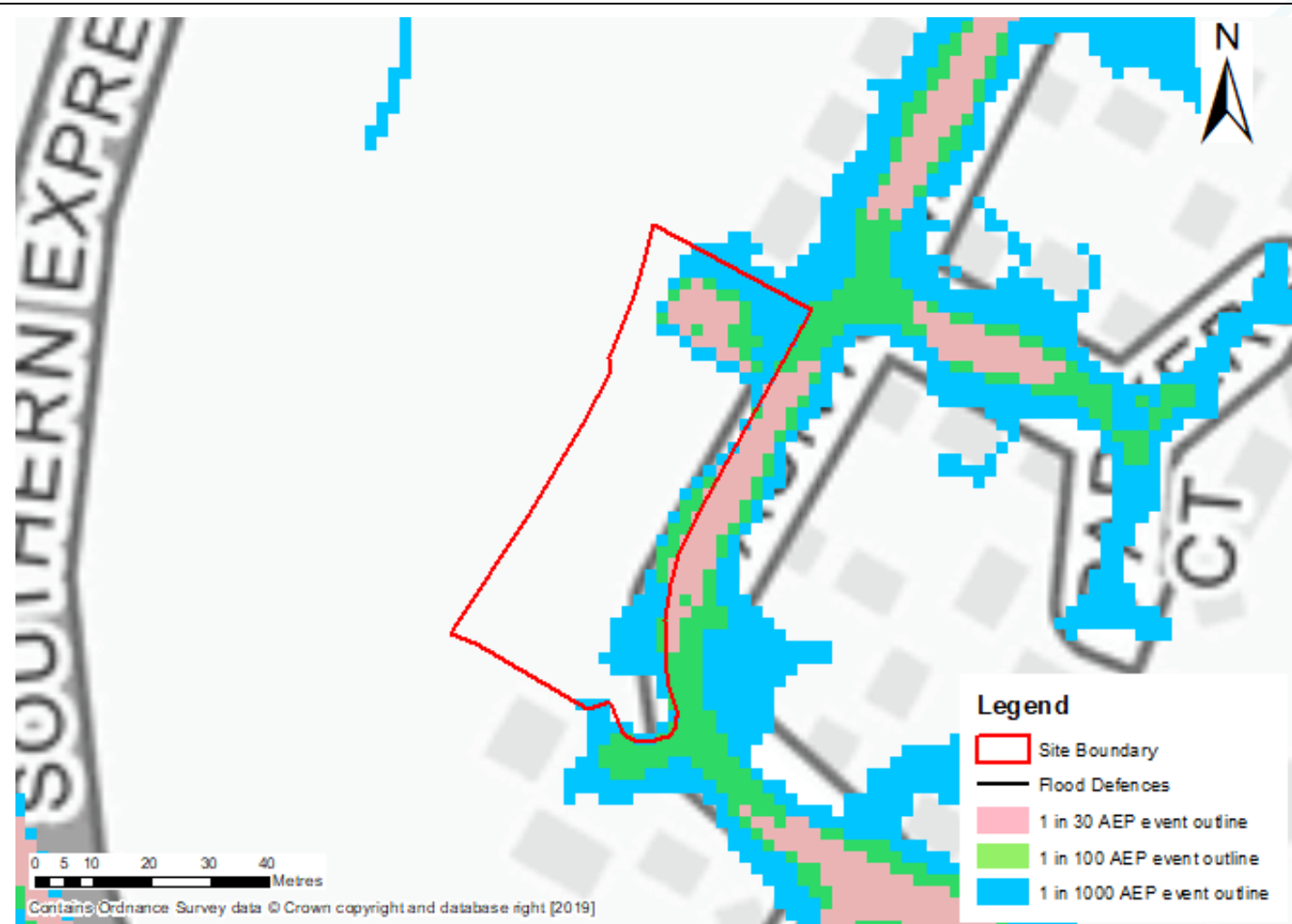


Figure 1-3: Surface Water Flood Risk to the site

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)
	4.95	10.63	27.97
Surface water flooding depths	Max: 0.15-0.30m	Max: 0.15-0.30m	Max: 0.30-0.60m
Surface water hazards	Max: Moderate Mean: Low	Max: Moderate Mean: Low	Max: Significant 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		R1 (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. However, possible inaccuracy in the site boundary therefore area at risk likely to be lower. - The extent of flooding for each event is isolated to a localised depression at the northern bound of the site and the main access route via Gaunts Way acts as a flow path in each event.
Surface water: mitigation options & site suitability		An FRA is required to address the surface water risk and to investigate appropriate site layout and design, including SuDS options as part of a drainage strategy. Development should avoid the ponded area in the north of the site. This area should remain as woodland or open space with infiltration SuDS Safe access and egress are not considered to be achievable via Gaunts Way based on the 1% AEP outline, alternative access/egress should be proposed. This may be difficult to achieve as the site is bounded by woodland on all other sides. As the site is currently greenspace, surface water runoff should be fully attenuated to the greenfield runoff rate, and as such, ensure that there is no increase in surface water flood risk elsewhere. The required volumes of attenuation have been calculated below. Given the site is greenfield infiltration SuDS may be feasible (subject to ground investigation) to control and mitigate the ponded area. 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%	1.5	74	19	55	4.4	0.004 ha 1.594 %
3.33% AEP Rainfall + 40%	1.75	90	22	68	5.4	0.005 ha 1.971 %
1% AEP Rainfall + 20%	2.25	113	28	84 (29 exceedance storage)	6.7	0.006 ha 2.435 %
1% AEP Rainfall + 40%	2.75	138	35	103 (35 exceedance storage)	8.2	0.007 ha 2.986 %
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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Registered Office:

1 Broughton Park
Old Lane North
Broughton
Skipton
North Yorkshire
BD23 3FD
United Kingdom

+44(0)1756 799919
info@JBA - consulting.com
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