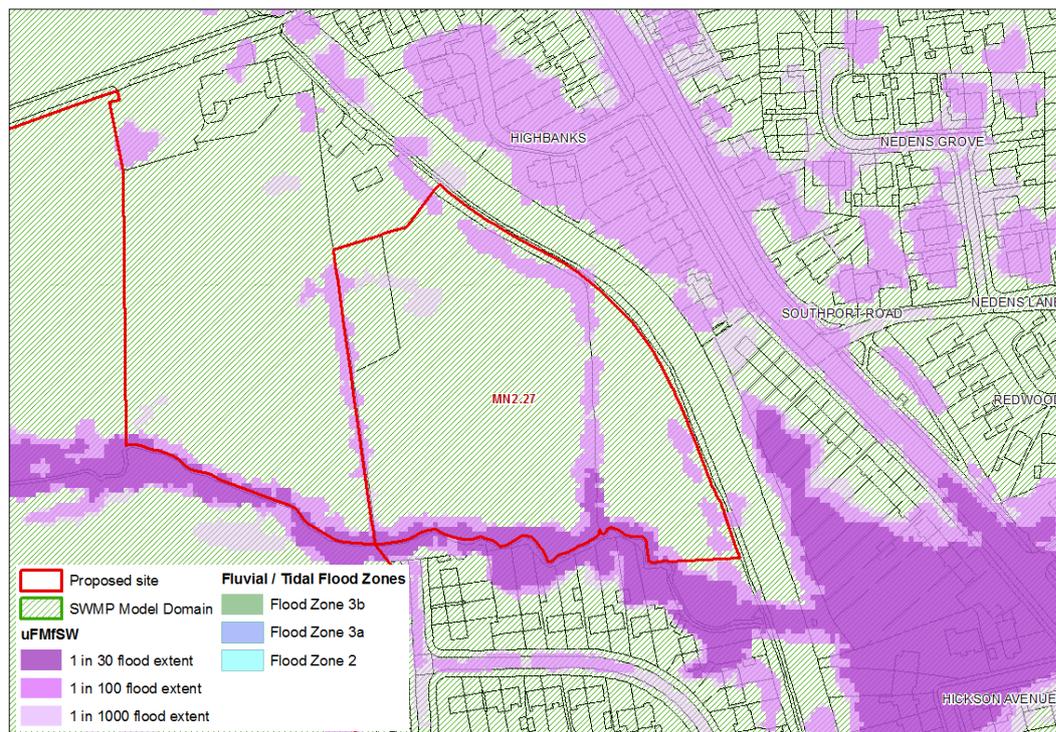


Site	MN2.27 - Land at Turnbridge Lane, Maghull
Area	1.6 ha
Proposed Use	Housing

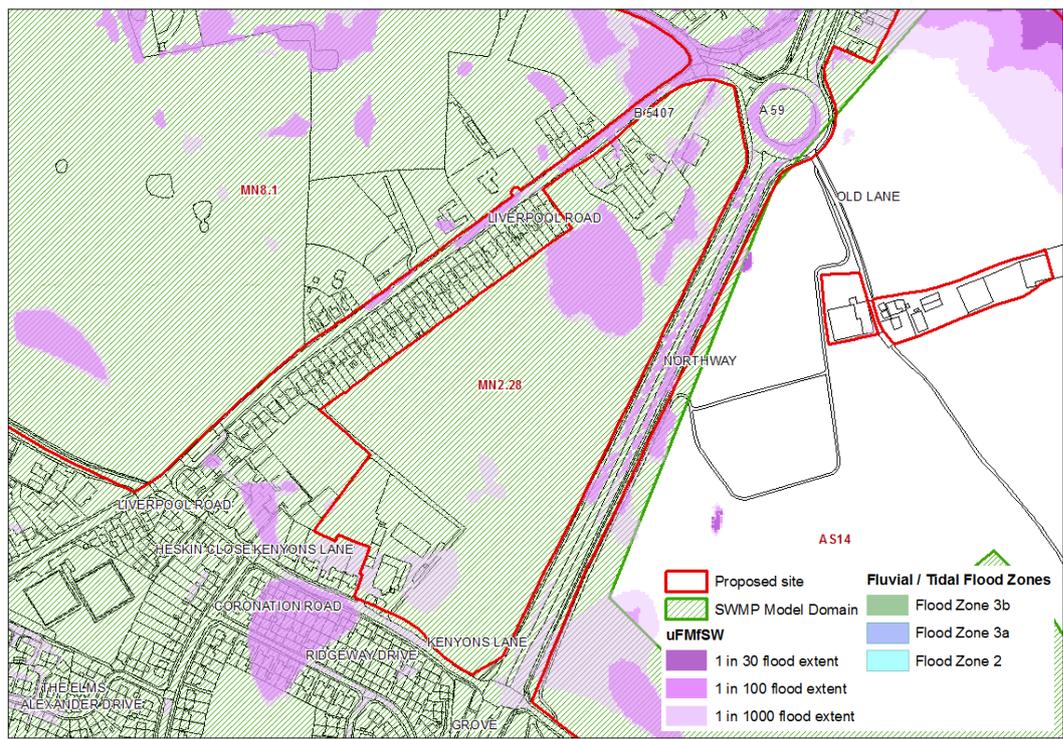


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	5%	12%		3%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	1.45 m	1.69 m		1.77 m
SWMP Average Depth	0.05 m	0.09 m		0.09 m
SWMP Max Hazard	Extreme	Extreme		Extreme
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	No risk			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	The indicative suitability for infiltration SuDS is considered to be very high. Linear swales or soakaways may be most appropriate on this site given the nature of the risk.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. This site is surrounded by watercourses including Maghull Brook (Main River) along the southern boundary, Leeds Liverpool Canal along the eastern boundary and two drainage ditches, one along the western boundary and the other running through the central eastern part of the site. There is however no fluvial risk to the site according to the Flood Map for Planning. It is likely that surface water drains into the two ditches and Maghull Brook. A FRA should confirm current drainage and may look at options for installing swales or linear soakaways running alongside the watercourses. Development should be kept back from the 8 m easement applicable for Maghull Brook as it is Main River. This approach should also be followed			

Site	MN2.27 - Land at Turnbridge Lane, Maghull
	for the drainage ditches though is not required by the Environment Agency. Safe access and egress point should be investigated as part of the FRA with the site enclosed on three sides by watercourses.
Recommendations & Further Work	FRA required to assess SuDS options and safe access and egress points.
Existing FRA Available for Site? (Information Provided by the Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the residual area of the site.

Site	MN2.28 - Land north of Kenyons Lane, Lydiate
Area	10.1 ha
Proposed Use	Housing

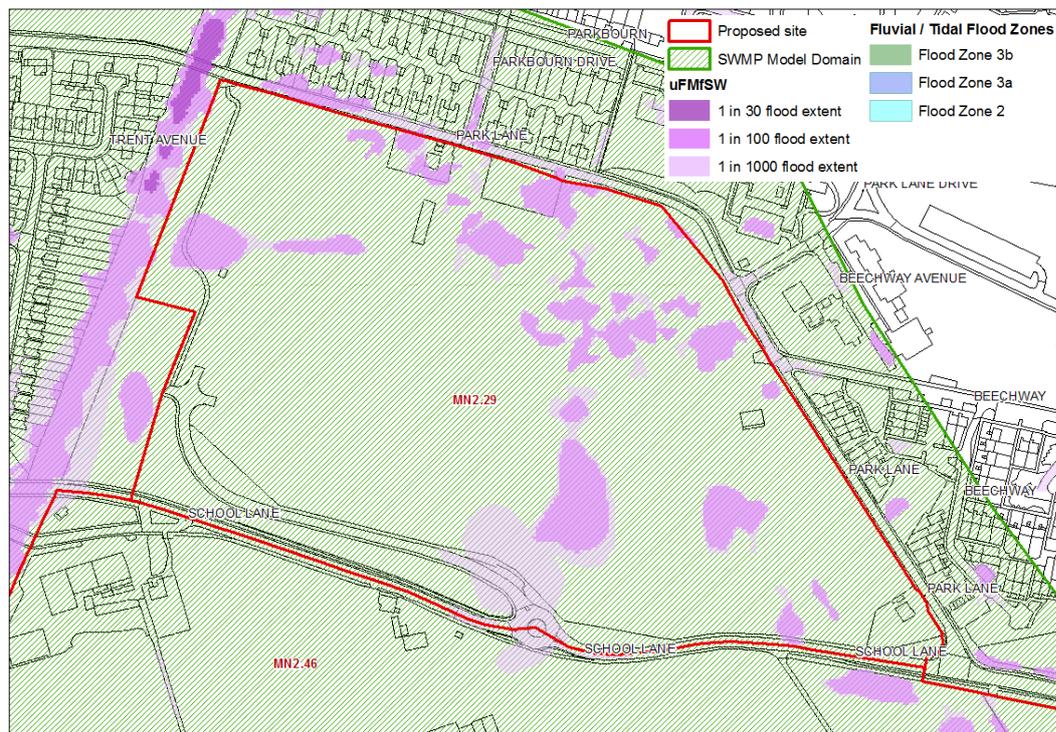


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	10%		7%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.67 m		0.71 m
SWMP Average Depth	0 m	0.04 m		0.05 m
SWMP Max Hazard	None	Significant		Significant
SWMP Average Depth	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	No risk			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	The indicative suitability for infiltration SuDS is considered to be very high. Risk areas should ideally be retained as open greenspace assuming surface water will drain away rapidly based on indicative infiltration suitability and lack of groundwater risk.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. FRA should examine infiltration rates to check whether risk areas could be retained as open space. The FRA should also look to ensure safe access and egress to Liverpool Road and / or Kenyons Lane.			
Recommendations & Further Work	FRA required to assess infiltration rates with a view to leaving risk areas as open space and safe access and egress to Liverpool Road / Kenyons Lane.			
Existing FRA Available for Site? (Information Provided by the Council)	No			

Site	MN2.28 - Land north of Kenyons Lane, Lydiate
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within public open space or within the residual area of the site.

Site	MN2.29 - Former Prison Site, Park Lane, Maghull
Area	13.6 ha
Proposed Use	Housing

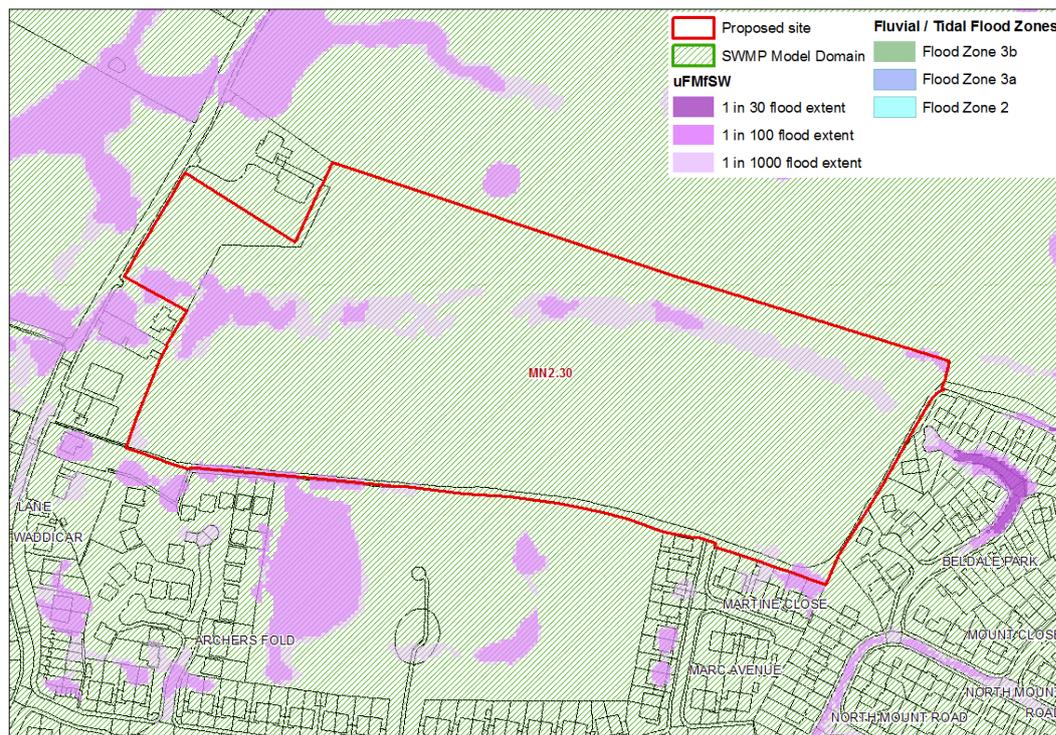


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	10%	7%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	1.15 m	1.27 m	
SWMP Average Depth	0 m	0.04 m	0.05 m	
SWMP Max Hazard	None	Significant	Significant	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	No risk			
Historical Incidents	2 previous flood incidents on the site in 1990 and 1991. Not within an area of surface water flooding			
Defended	No			
SuDS Requirements	The indicative suitability for infiltration SuDS is considered to be very high. Risk areas should ideally be retained as open greenspace assuming surface water will drain away rapidly based on indicative infiltration suitability and lack of groundwater risk.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. FRA should examine infiltration rates to check whether risk areas could be retained as open space. Filter drains could deal with the risk on the highways surrounding the site, ensuring safe access and egress routes.			
Recommendations & Further Work	FRA required to assess infiltration rates with a view to leaving risk areas as open space and safe access and egress to surrounding roads.			
Existing FRA Available for Site? (Information)	No			

Site	MN2.29 - Former Prison Site, Park Lane, Maghull
Provided by the Council)	
Council's comment	This site now has outline planning permission for 370 dwellings (ref DC/2014/00980).

Site	MN2.30 - Land east of Waddicar Lane, Melling
Area	5.96 ha
Proposed Use	Housing

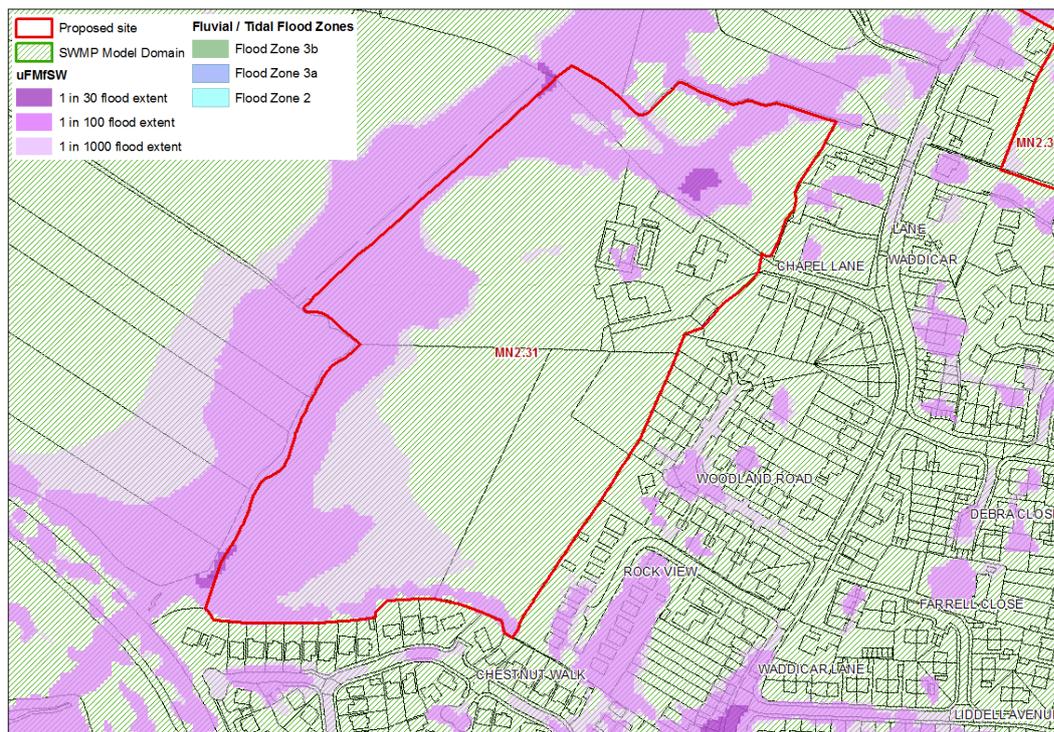


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	4%		8%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.52 m		0.54 m
SWMP Average Depth	0 m	0.04 m		0.04 m
SWMP Max Hazard	None	Significant		Significant
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Low			
Groundwater	Susceptibility to groundwater emergence <25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	The indicative suitability for infiltration SuDS is considered to be low therefore the site conditions are likely to be most suited to water storage / retention.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The surface water risk gathers within a shallow valley running the length of the site. Ideally, this linear area would be landscaped as a feature for water retention. A FRA is required to assess options.			
Recommendations & Further Work	FRA required to assess SuDS options.			
Existing FRA available for site? (Information provided by Sefton)	Waddicar Lane site, Waddicar, Liverpool Flood risk assessment for housing March 2015			

Site MN2.30 - Land east of Waddicar Lane, Melling			
Council)			
From preliminary review - does current data match FRA? (Y/N)	Site area	Fluvial/tidal flood risk (based on EA flood outlines)	Surface water flood risk (based on EA flood outlines)
	N	Y	N
Preliminary comments on available FRA	<ul style="list-style-type: none"> • According to the FRA the site area is 5.8 ha, however the current red line boundary equates to 5.96 ha. • The FRA states that there is no surface water flood risk to the site, but does not reference the source of the data. • The uFMfSW indicates that the site is at risk of surface water flooding. • No flood mitigation measures are proposed in the FRA. • An updated FRA is required (taking all sources of flood risk into account). 		
Council's comment	<ul style="list-style-type: none"> • FRA required for this site at application stage.. It is anticipated that any mitigation measures can be contained within public open space or within the residual area of the site. 		

Site	MN2.31 - Wadacre Farm, Chapel Lane, Melling
Area	5.48 ha
Proposed Use	Housing

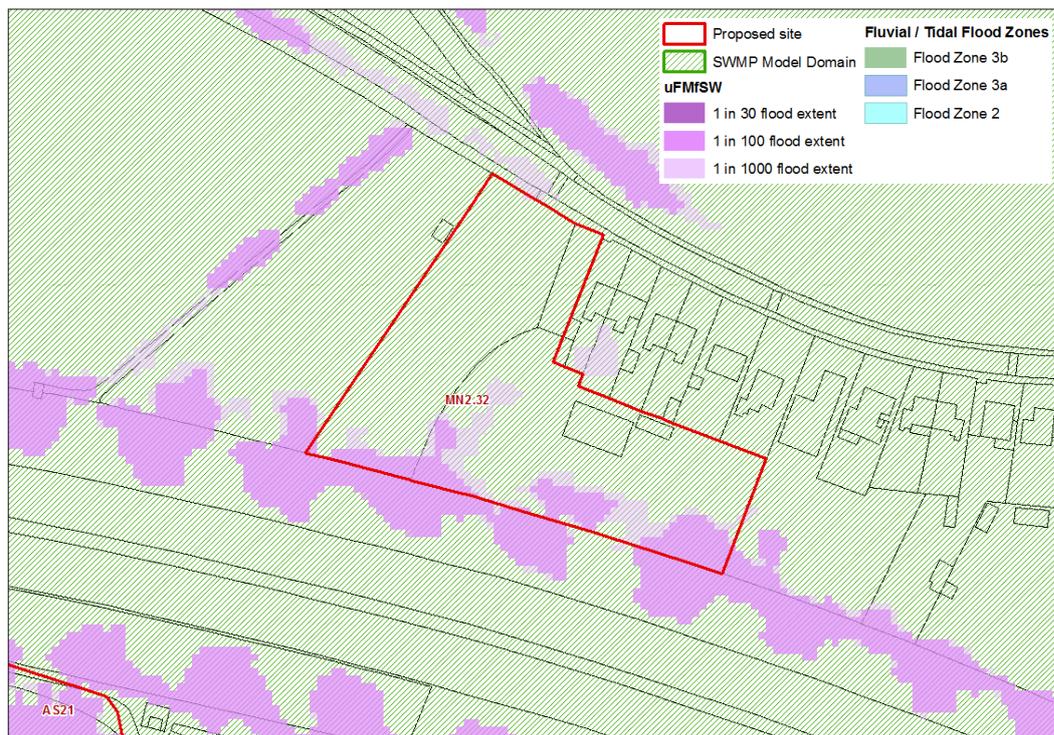


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	1%	29%		30%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0.6 m	1.12 m		1.38 m
SWMP Average Depth	0.02 m	0.11 m		0.17 m
SWMP Max Hazard	Significant	Significant		Significant
SWMP Average Hazard	Moderate	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	The approximate northern half of the site is considered to have a very high suitability for infiltration SuDS whereas the majority of the southern half is of low suitability.			
Groundwater	Susceptibility to groundwater emergence <25%			
Historical Incidents	There have been several previous flood incidents on the site throughout the 1990's with the majority occurring around Wadacre Farm.			
Defended	No			
SuDS Requirements	The indicative suitability for infiltration SuDS is considered to be low therefore the site conditions are likely to be most suited to water storage / retention.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The site slopes gently downwards from east to west with the majority of surface water risk occurring at the foot of this slope where there is an Ordinary Watercourse running along the eastern boundary. Surface water also gathers along the southern and northern boundaries of the site where there are also Ordinary Watercourses running along the site boundaries. With up to 60% of the site at some level of surface water risk, any mitigation could impact on housing yields. Mitigation in the form of SuDS should be assessed through a detailed FRA which should include detailed surface water modelling. Any remedial			

Site			
MN2.31 - Wadacre Farm, Chapel Lane, Melling			
	works on this site are likely to prove expensive. The capacities of the drains surrounding the site are most likely too small to act as conduits for the surface water. Options could explore widening and / or deepening of the ditches to accommodate surface water volumes, underground storage tanks, or a large detention basin with swales directing surface water into it from other parts of the site. The most economical option may be wetland habitat creation. Options modelling should be carried out to assess the most effective and most cost effective SuDS option.		
Recommendations & Further Work	FRA required to assess SuDS options including detailed surface water modelling of preferred options. Recommendation for wetland creation and associated environmental benefits		
Existing FRA available for site? (Information provided by Sefton Council)	Wadacre Farm, Melling Flood Risk and Drainage Study July 2014		
From preliminary review - does current data match FRA? (Y/N)	Site area	Fluvial/tidal flood risk (based on EA flood outlines)	Surface water flood risk (based on EA flood outlines)
	Y	Y	Y
Preliminary comments on available FRA	<ul style="list-style-type: none"> The FRA used the Sefton Council SWMP maps. The uFMfSW matches the flood outlines of the SWMP maps. The FRA stated that mitigation of the surface water flood risk along the eastern and northern site boundaries will be required. Following the sequential process in developing a Masterplan was suggested in addition to increasing the capacity of the perimeter drainage ditches as measures to mitigate the flood risk. 		
Council's comment	An FRA will be required for this site at application stage. The developer has submitted an FRA as part of their representations. The housing capacity of the site has been derived from a masterplan informed by the FRA. The FRA is available from the Council website http://www.sefton.gov.uk/planning-building-control/planning-policy/developer-representations-allocated-sites.aspx .		

Site	MN2.32 - Land South of Spencers Lane, Melling
Area	0.6 ha
Proposed Use	Housing

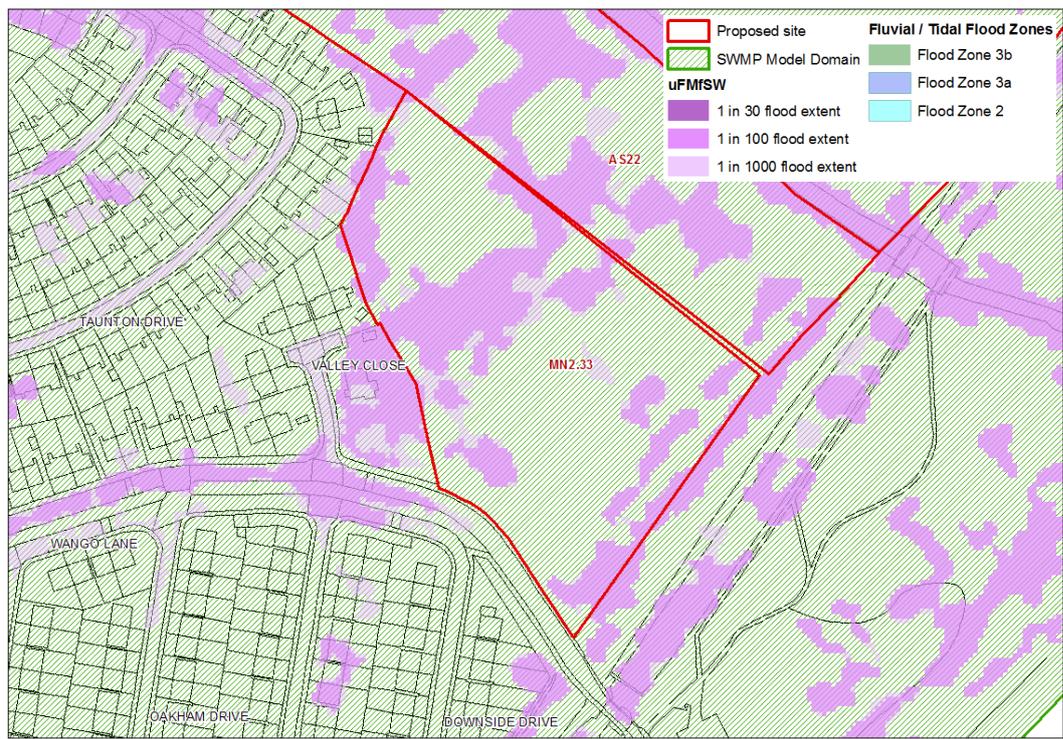


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	11%	9%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	0.37 m	0.39 m	
SWMP Average Depth	0 m	0.06 m	0.07 m	
SWMP Max Hazard	None	Significant	Significant	
SWMP Average Depth	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Low to very low.			
Groundwater	Susceptibility to groundwater emergence $\geq 75\%$ in western third of the site and $<25\%$ in eastern two thirds of the site			
Historical Incidents	Several recorded flood incidents on the north western boundary occurring throughout the 1990's.			
Defended	No			
SuDS Requirements	The site is considered to be of low to very low suitability for infiltration SuDS therefore filter strips / drains or soakaways may not be appropriate. A linear above ground detention basin adjacent to the M57 or sub surface storage tank with piped inlets could be the most likely options.			
FRA & Mitigation Options	The surface water risk occurs adjacent to the M57 along the southern boundary. Any FRA should investigate the SuDS options discussed above and infiltration capacities should be ascertained. Surface water modelling and SuDS options testing may therefore be required as part of the FRA to ascertain the most cost effective solution to dealing with this risk.			
Recommendations & Further Work	FRA requested to assess SuDS options including surface water modelling and options testing.			

Site	MN2.32 - Land South of Spencers Lane, Melling
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the residual area of the site.

Site	MN2.33 - Land at Wango Lane, Aintree
Area	1.83 ha
Proposed Use	Housing

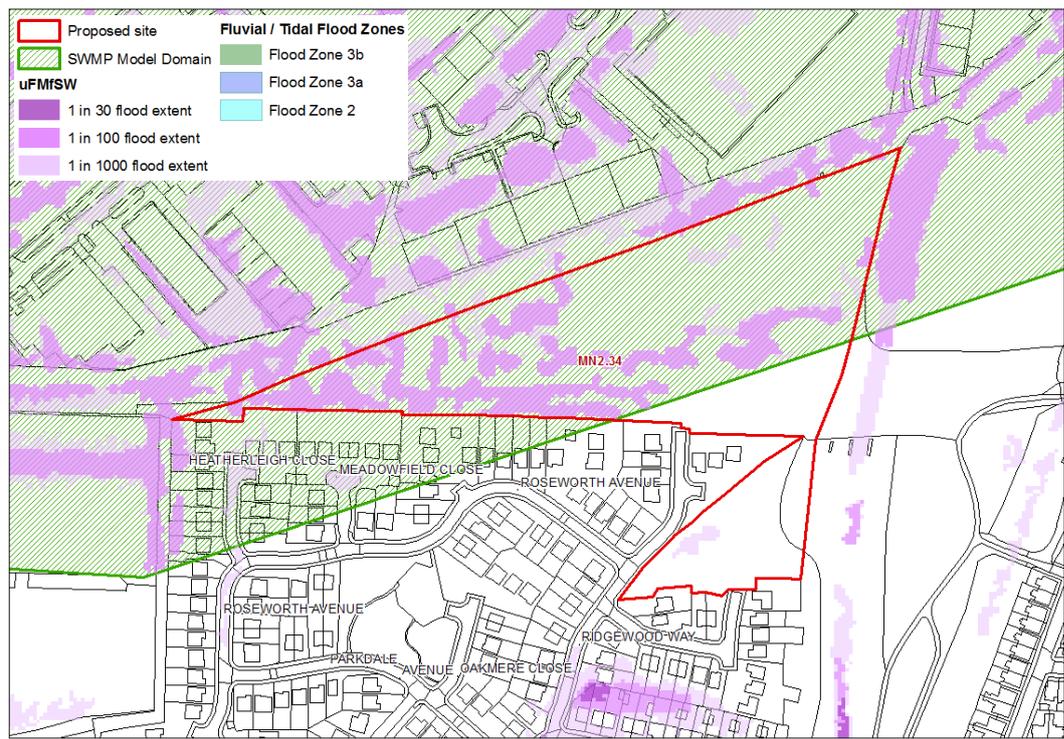


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	29%	7%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	0.52 m	0.56 m	
SWMP Average Depth	0 m	0.08 m	0.09 m	
SWMP Max Hazard	None	Significant	Significant	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Very low			
Groundwater	Susceptibility to groundwater emergence >= 50% <75%			
Historical Incidents	1 previous flood incident on the north western boundary in 2003			
Defended	No			
SuDS Requirements	Detention basins, sub surface storage tanks with piped inlets or wetland creation may be most appropriate for this site			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The sporadic coverage of surface water risk makes it difficult to incorporate SuDS within a housing development. As the risk of groundwater emergence is also high together with the indicative very low infiltration SuDS suitability, it is likely that the ground is highly impermeable. Due to limited space, ground level detention basins may have to be ruled out and underground storage tanks with piped inlets may be the only option. This however may not be economically viable.			
Recommendations & Further Work	FRA required to assess SuDS options including surface water modelling and options testing. Recommendation would be for retaining of open space in terms of cost effectiveness or wetland creation for the associated environmental and social benefits.			

Site MN2.33 - Land at Wango Lane, Aintree	
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. A reduced developable area has already been assumed for this site due to site shape and heritage constraints. It is anticipated that any mitigation measures can be contained within the residual area of the site.

Site	MN2.34 - Aintree Curve Site, Ridgewood Way, Netherton
Area	3.10 ha
Proposed Use	Housing

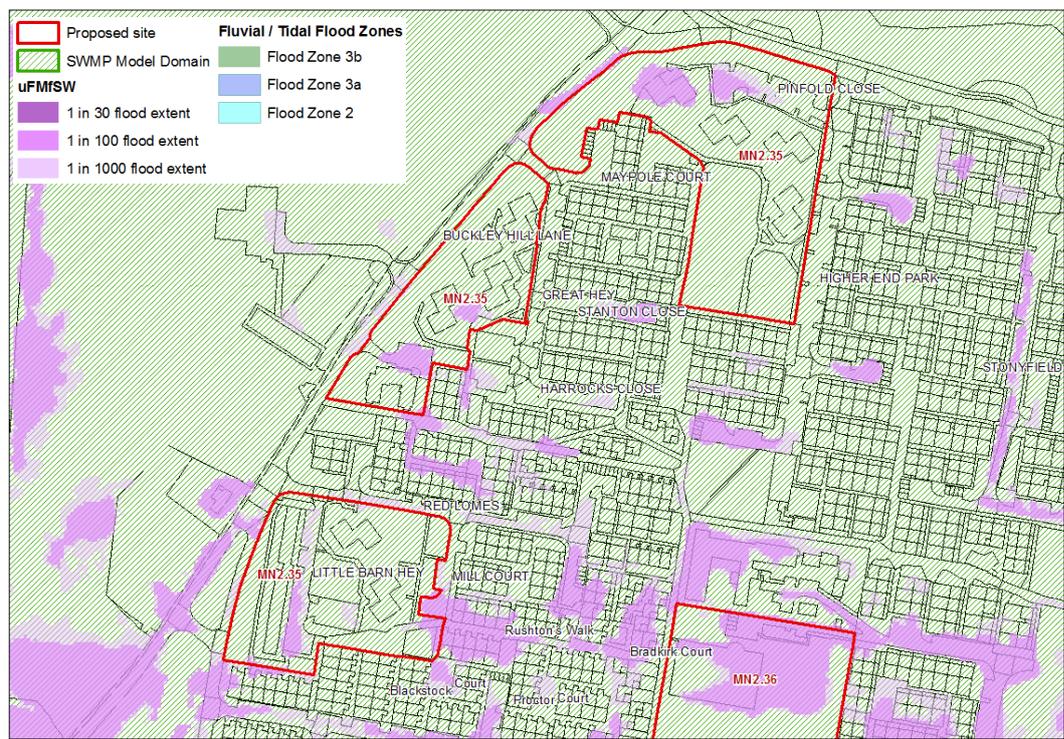


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	20%	5%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	0.53 m	0.53 m	
SWMP Average Depth	0 m	0.08 m	0.09 m	
SWMP Max Hazard	None	Significant	Significant	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	No risk			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS. Therefore soakaways, rain gardens, filter strips / drains, permeable paving or green roofs.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The sporadic coverage of surface water risk makes it difficult to include consistent SuDS techniques within a housing development. Inclusion of SuDS on this site would likely reduce housing yields significantly. There is no risk from the high risk surface water event (1 in 30 year) however a FRA is required to assess the SuDS options discussed above for the large areas at medium and low risk. Infiltration SuDS are suitable here.			
Recommendations & Further Work	FRA required to assess feasibility of different infiltration SuDS techniques. Recommendation would be to cut back housing yields and leave the 1 in 100 year risk areas as open greenspace as it is currently.			

Site	MN2.34 - Aintree Curve Site, Ridgewood Way, Netherton
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	This site now has planning permission for 109 dwellings (ref DC/2014/01655).

Site	MN2.35 - Z Block Sites, Buckley Hill Lane, Netherton
Area	3.49 ha
Proposed Use	Housing

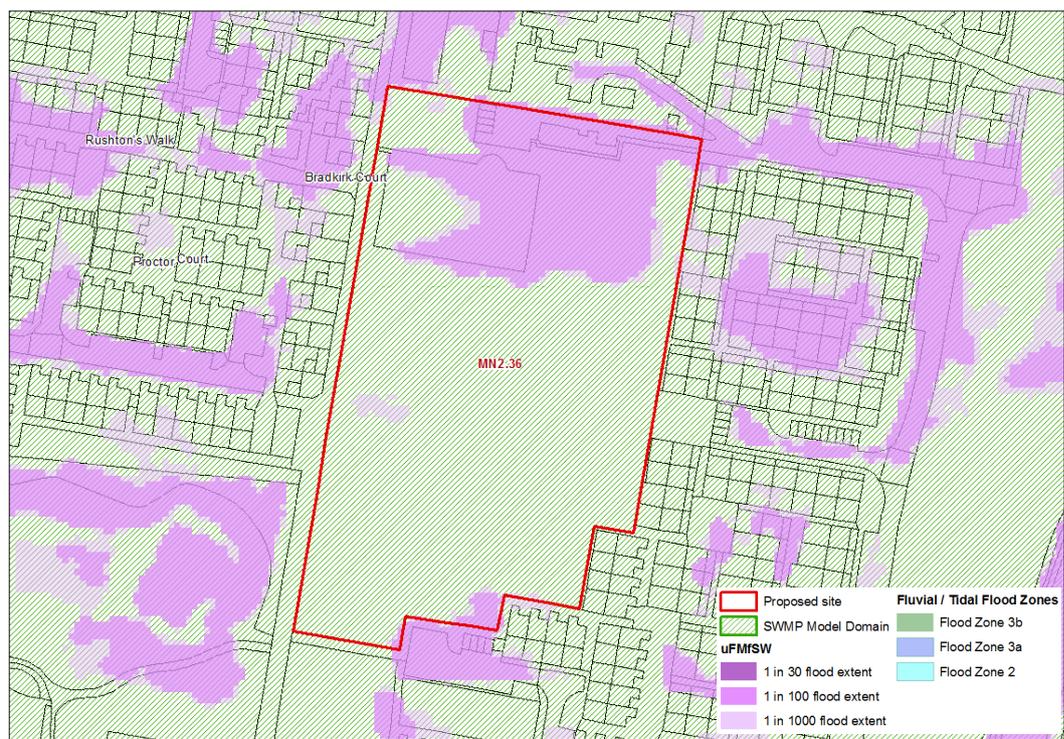


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	6%		4%
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0.06 m	0.32 m	0.35 m	
SWMP Average Depth	0.01 m	0.04 m	0.04 m	
SWMP Max Hazard	Moderate	Moderate	Moderate	
SWMP Average Hazard	Moderate	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Very high for Little Barn and western two thirds of Buckley Hill Lane sites, low for Pinfold Close and eastern third of Buckley Hill Lane			
Groundwater	Susceptibility to groundwater emergence <25%			
Historical Incidents	2 previous flood incidents on the Little Barn Hey site in 1992 and 2006, 1 on the Pinfold Close site in 1990. None of the incidents occurred within an area of surface water flooding			
Defended	No			
SuDS Requirements	Pinfold Close site and the approximate northern half of the Buckley Hill Lane site are considered to be of low suitability for infiltration SuDS. Detention ponds may be suitable for these areas. The Little Barn Hey site and the southern half of the Buckley Hill Lane site are considered to be of very high suitability for infiltration SuDS. Vegetated soakaways, rain gardens, filter strips or permeable paving could be used for these areas.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. It should be possible to accommodate such SuDS systems within each site without detriment to housing yields. There is no risk from the high risk surface water event (1 in 30 year) however a FRA is required to assess the areas at medium and low risk.			

Site	MN2.35 - Z Block Sites, Buckley Hill Lane, Netherton
Recommendations & Further Work	FRA required to assess SuDS options
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage.. It is anticipated that any mitigation measures can be contained within the residual area of the site.

Site	MN2.36 - Former St Raymonds Playing field, Harrops Croft, Netherton
Area	1.88 ha
Proposed Use	Housing

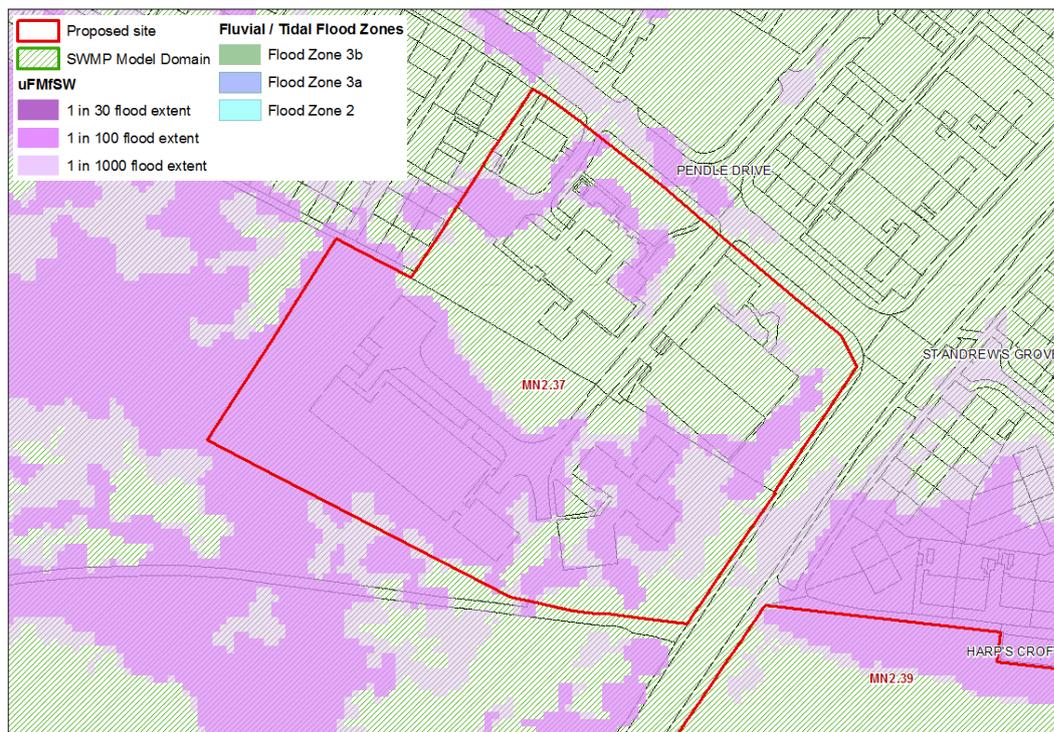


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	23%		4%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.52 m		0.56 m
SWMP Average Depth	0 m	0.08 m		0.1 m
SWMP Max Hazard	None	Significant		Significant
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence predominantly <25%			
Historical Incidents	1 surface water flood incident in 2003 in the north of the site. Located in the area at surface water risk			
Defended	No			
SuDS Requirements	This site is considered to have a very high capacity for infiltration SuDS therefore rain gardens, vegetated soakaways or swales or permeable paving may be the most appropriate at this site.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. There main area at risk in the north of the site is within a low depression. This area should be avoided and converted to a play / recreation area incorporating infiltration SuDS discussed above. Site layout design should not be too complex as the majority of the risk is in the same area.			
Recommendations & Further Work	FRA required to assess SuDS options. Recommend leaving the large northern risk area free from development. A play area may offset the fact that playing fields are to be removed in a social context.			

Site	MN2.36 - Former St Raymonds Playing field, Harrops Croft, Netherton
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site assuming that the net developable area is reduced.

Site	MN2.37 - Land at Pendle Drive, Netherton
Area	1.45 ha
Proposed Use	Housing

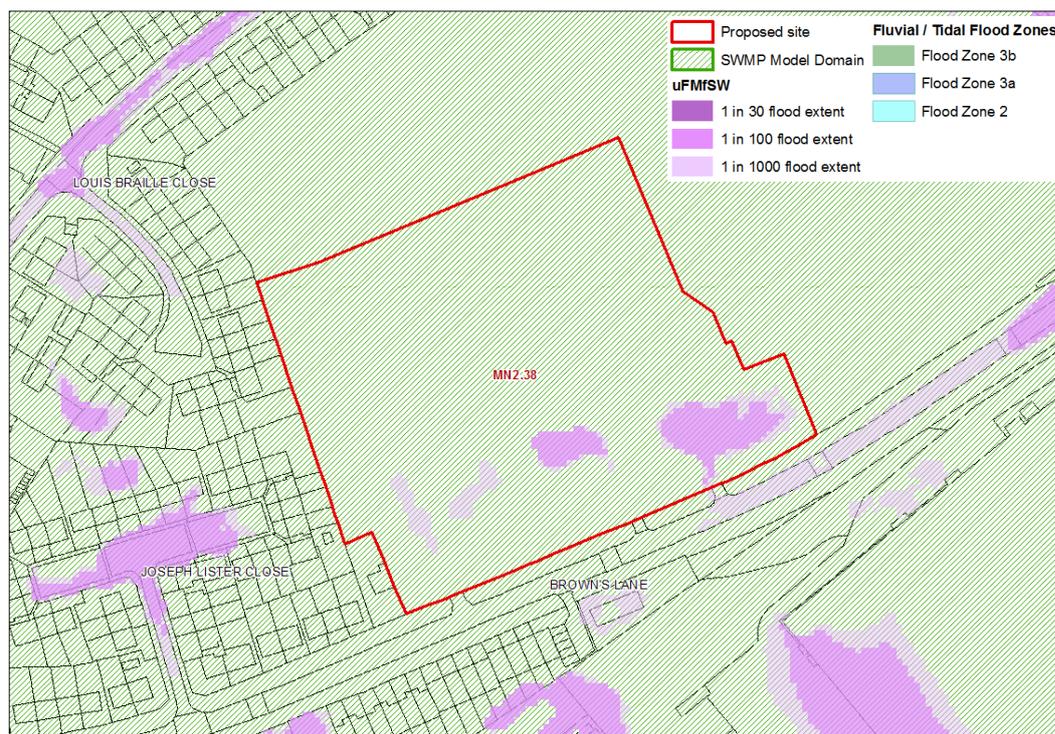


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	46%		11%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0.38 m	0.58 m		0.65 m
SWMP Average Depth	0.03 m	0.13 m		0.17 m
SWMP Max Hazard	Significant	Significant		Significant
SWMP Average Hazard	Moderate	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Predominantly Very low			
Groundwater	Susceptibility to groundwater emergence <25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of predominantly very low suitability for infiltration SuDS. Due to the size of the site and the areas at risk, a subsurface storage tank with piped inlets may be required. Green roofs are another option.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. There are existing buildings on the site, one of which is completely within the 1 in 100 year outline. It is assumed that all current buildings will be demolished and replaced by new residential units. The drainage system servicing the current buildings should be surveyed and assessed for future use. As over half of the site is at risk and infiltration capacity is poor, underground storage may be the only option. There would not be enough space to install anything above ground. An underground tank would be situated in the western corner of the site with subsurface pipes piping surface water from other parts of the site. Green roofs could be used however there subsequent maintenance			

Site	MN2.37 - Land at Pendle Drive, Netherton
	<p>requirements for residential developments makes this option difficult. For the number of units proposed for the site, this option may not have a high cost benefit ratio.</p> <p>The Rimrose Valley Country Park Open Space is located to the south and west of the site. The LPA should consider whether this land could be used to store surface water directed from Site MN2.37.</p> <p>This should be assessed as part of a detailed FRA including surface water modelling analysing required volumes.</p>
Recommendations & Further Work	FRA required to assess current drainage systems cost benefit ratio of underground tank storage and / or directing of surface water to the Rimrose Valley Country Park.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site assuming that the net developable area is reduced.

Site	MN2.38 - Land at Former Bootle High School, Brown Lane, Netherton
Area	1.75 ha
Proposed Use	Housing

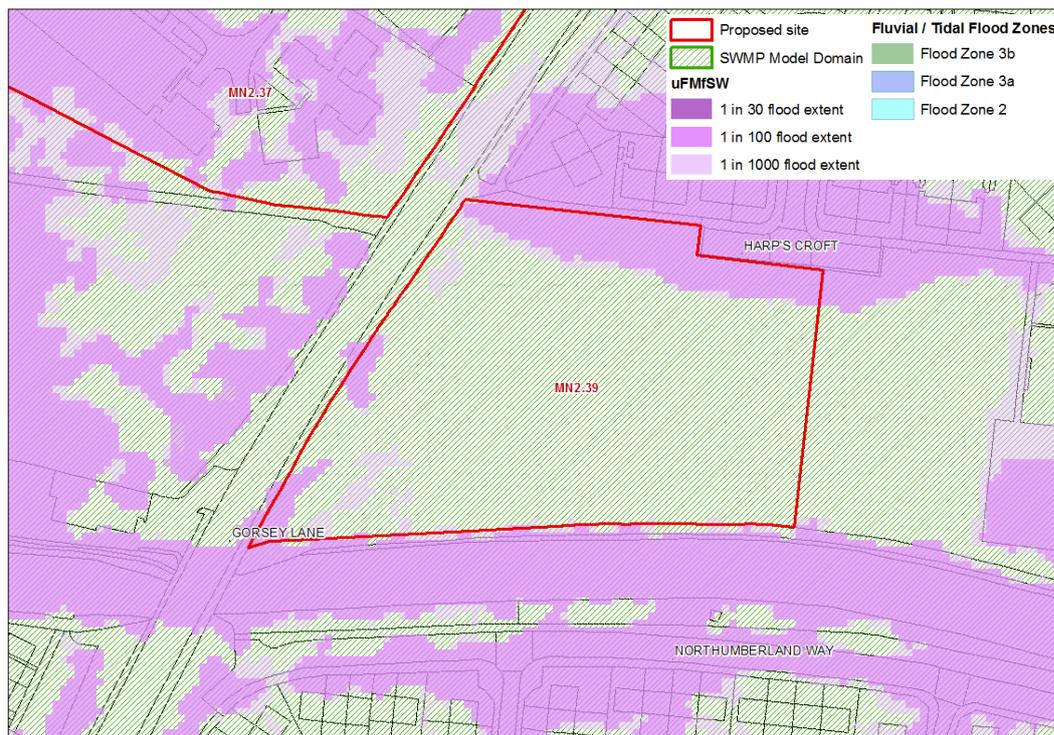


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	5%		4%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.24 m		0.26 m
SWMP Average Depth	0 m	0.04 m		0.04 m
SWMP Max Hazard	None	Moderate		Moderate
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence >= 50% <75%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered very good for infiltration SuDS. Soakaways or rain gardens are recommended for this site. Permeable paving could be used for car parking.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The areas at risk should be mitigated through landscaped soakaways or rain gardens, taking advantage of the high infiltration capacity. There is no risk from the high risk surface water event (1 in 30 year) however a FRA is required to assess the medium and low risk.			
Recommendations & Further Work	FRA required to assess SuDS options			
Existing FRA available for site? (Information provided by Sefton)	No			

Site	MN2.38 - Land at Former Bootle High School, Brown Lane, Netherton
Council)	
Council's comment	An FRA will be required for this site at application stage. It is anticipated that any mitigation measures can be contained within the residual area of the site.

Site	MN2.39 - Former Dale Acre School, Netherton
Area	1.04 ha
Proposed Use	Housing

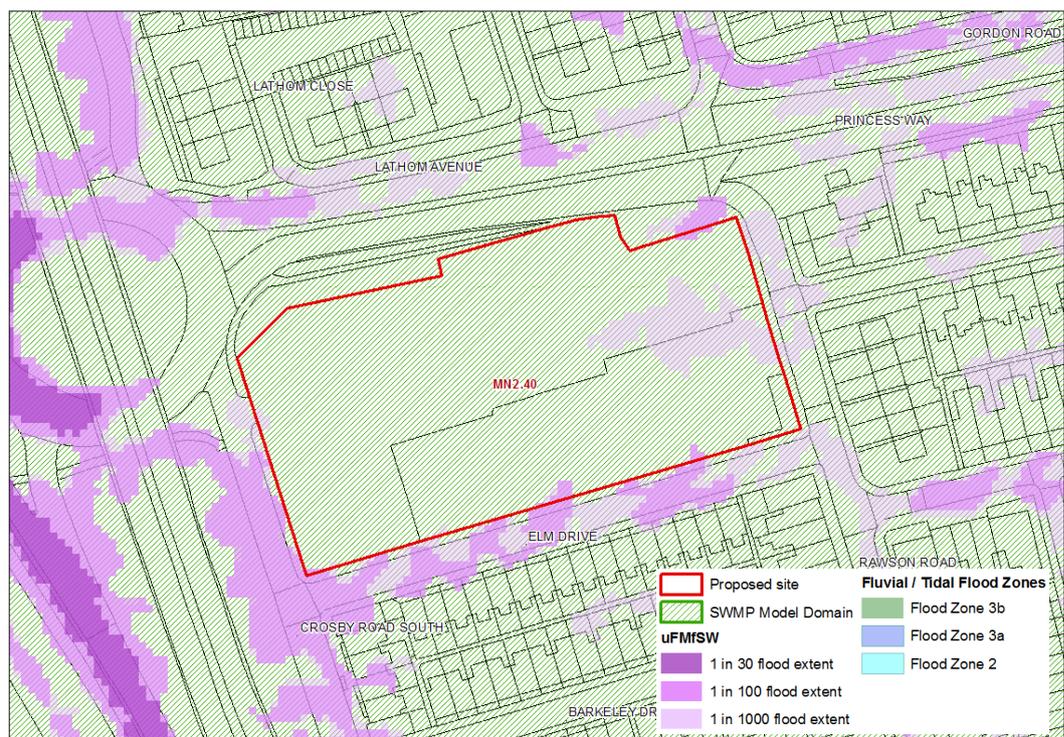


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	13%	5%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	1.3 m	1.48 m	
SWMP Average Depth	0 m	0.09	0.11	
SWMP Max Hazard	None	Extreme	Extreme	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	High to very high			
Groundwater	Susceptibility to groundwater emergence < 25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of high to very high suitability for infiltration SuDS. Swales could be used along the northern boundary and filter strips / filter drains could be installed along Gorse Lane on the western boundary. As the hazards are considered extreme, permeable paving may not be suitable.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. A FRA should investigate the SuDS options discussed above. There is no risk from the high risk surface water event (1 in 30 year) however a FRA is still required to assess the medium and low risk.			
Recommendations & Further Work	FRA required to assess SuDS options			
Existing FRA available for site? (Information)	No			

Site	MN2.39 - Former Dale Acre School, Netherton
provided by Sefton Council)	
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the residual area of the site.

Site	MN2.40 - Former Rawson Road Primary School, Rawson Road, Seaforth
Area	0.96 ha
Proposed Use	Housing

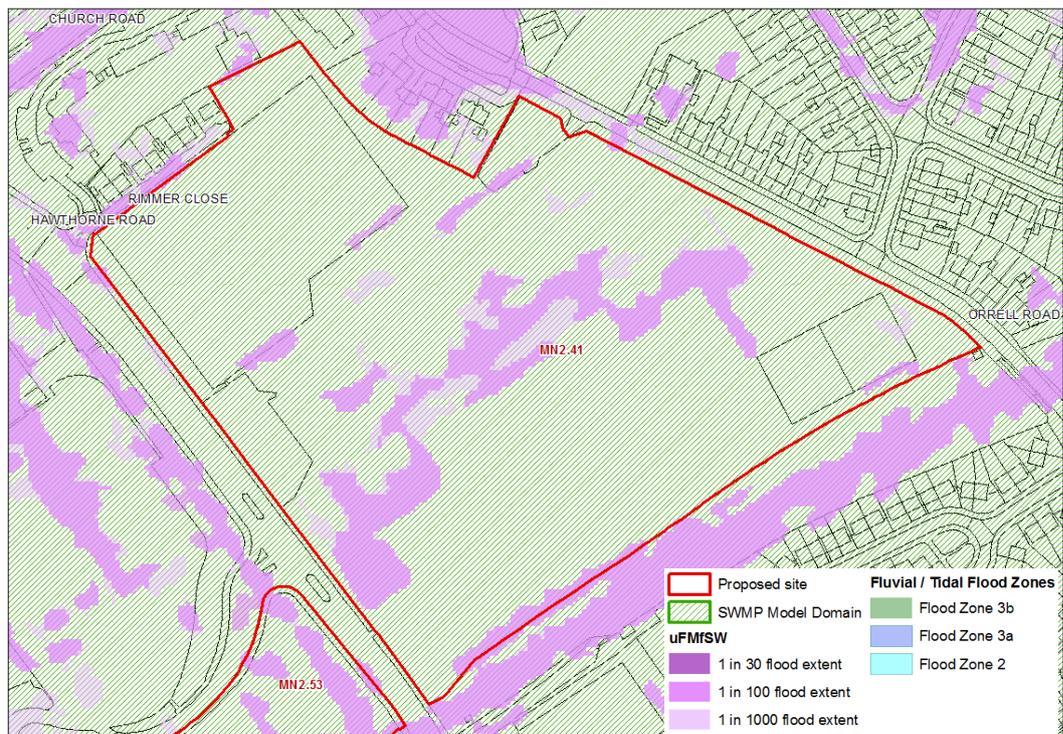


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	1%		7%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.22 m		0.23 m
SWMP Average Depth	0 m	0.04 m		0.04 m
SWMP Max Hazard	None	Significant		Significant
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence < 25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered very good for infiltration SuDS. Permeable paving for car parking / pedestrian walkways may be suitable on this site			
FRA & Mitigation Options	A FRA should be requested as this site is located within a CDA. Risk is mainly from the 1 in 1000 year event in the east of the site.			
Recommendations & Further Work	FRA required to assess SuDS options			
Existing FRA available for site? (Information provided by Sefton Council)	No			

Council's comment	A Site FRA would be required for this site at application stage under policy EQ8. It is anticipated that any mitigation measures can be contained within the residual area of the site.
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Site	MN2.41 - Former St Wilfrid's School, Orrell Road, Bootle
Area	6.64 ha
Proposed Use	Housing

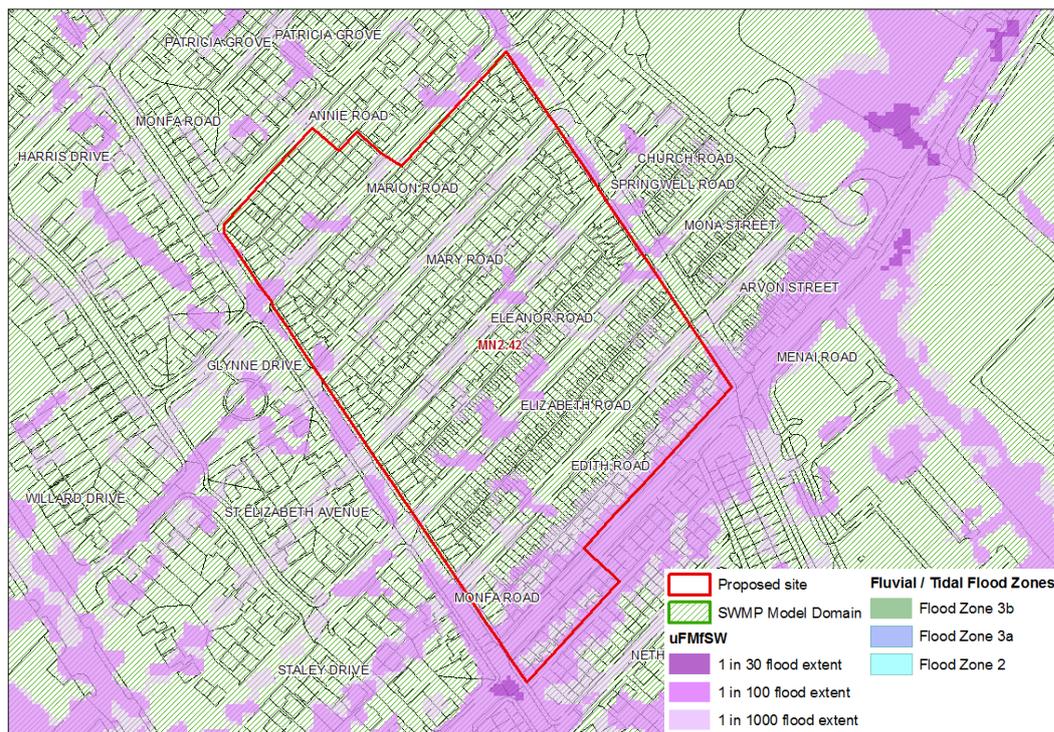


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	12%		4%
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	0.75 m	0.76 m	
SWMP Average Depth	0 m	0.05 m	0.05 m	
SWMP Max Hazard	None	Extreme	Extreme	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high suitability in the northern third of the site and low in the central and southern areas			
Groundwater	Susceptibility to groundwater emergence < 25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	The majority of the site is considered of low suitability for infiltration SuDS. Therefore retention basins, underground storage tanks with piped inlets would suit the low permeability areas. The site is large meaning wetland creation or woodland planting may be more economically feasible.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The risk areas cover the existing school building and hard standing areas. The current drainage system that services the school should be assessed for future use. Spatially, the risk area is predominantly spread across the centre of the site and splits the site into two halves. The risk areas (1 in 100 and 1 in 1000 year outlines) cover an area of around 1 ha which is a considerable area to			

Site	MN2.41 - Former St Wilfrid's School, Orrell Road, Bootle
	mitigate. A FRA should assess such options using appropriate surface water modelling.
Recommendations & Further Work	FRA to assess viability of proposed SuDS scheme including cost estimates and surface water modelling.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within public open space or the residual area of the site.

Site	MN2.42 - Klondyke Phases 2 and 3, Bootle
Area	3.58 ha
Proposed Use	Housing

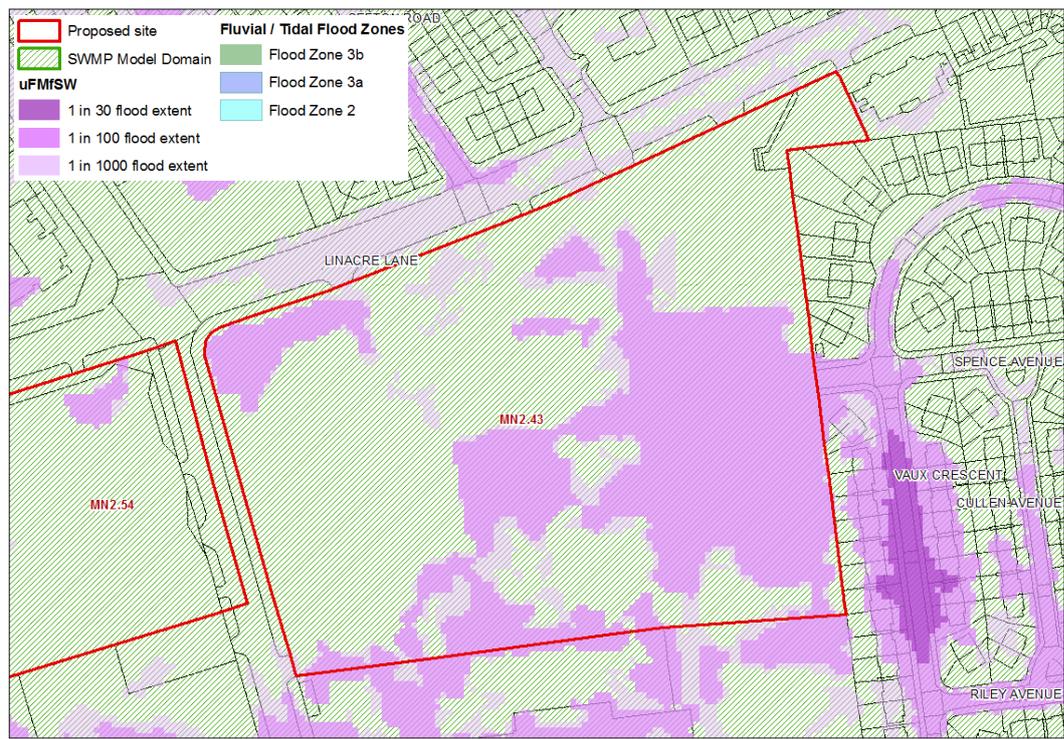


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	10%		15%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0.24 m	0.51 m		0.62 m
SWMP Average Depth	0.03 m	0.06 m		0.08 m
SWMP Max Hazard	Significant	Significant		Significant
SWMP Average Hazard	Moderate	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence < 25%			
Historical Incidents	There are 93 recorded flood incidents within this site, ranging from 1990 to 2003			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS. Therefore permeable paving, soakaways, swales, filter strips and filter drains could be used however this depends on the planned layout for the site which currently contains rows of terraced housing linked by streets.			
FRA & Mitigation Options	The majority of the risk occurs on the current roads. The new site layout should consider this in the design with filter strips and filter drains lining the roadsides, together with permeable paving for pavements. Housing plots should be designed so that garden areas can deal with the surface water through lawns, permeable patios, etc. Green roofs could also be installed, though green roofs on residential buildings brings issues with maintenance responsibilities. A detailed FRA including surface modelling should assess options, including an assessment of the existing drainage system. It is important surface water remains on site as the site is			

Site	MN2.42 - Klondyke Phases 2 and 3, Bootle
	surrounded by residential areas.
Recommendations & Further Work	FRA to assess current drainage system and viability of proposed SuDS options.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	This site now has planning permission for 142 dwellings (ref DC/2014/00642).

Site	MN2.43 - Former Peoples site, Linacre Lane, Bootle
Area	2.94 ha
Proposed Use	Housing

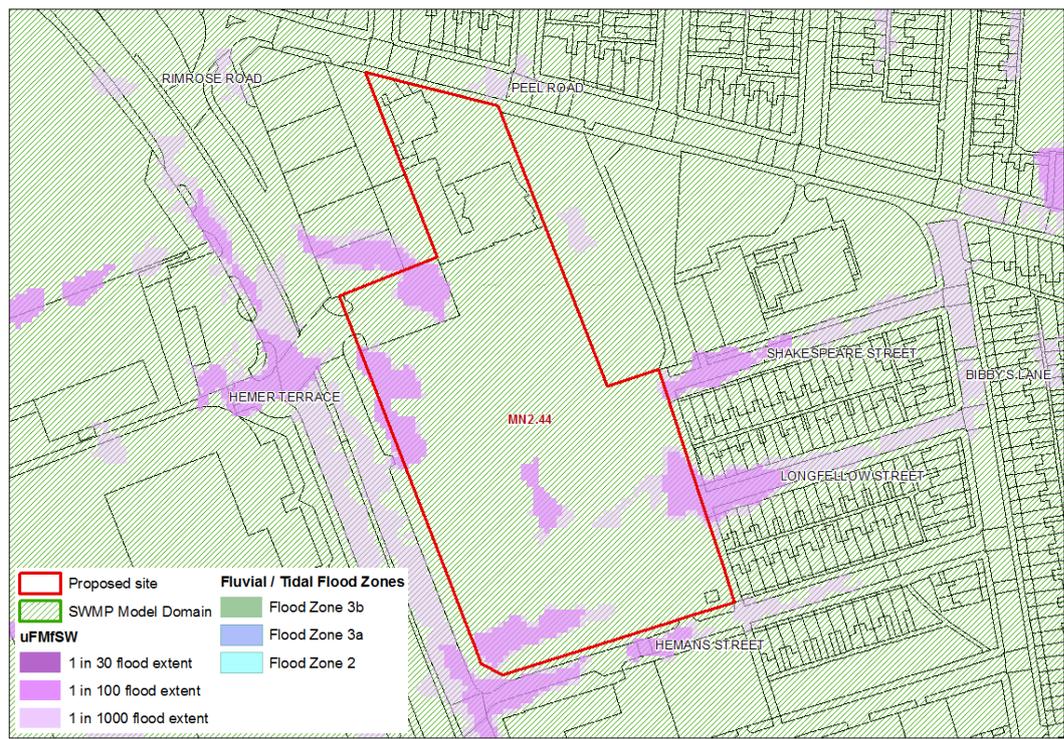


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	35%	9%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0.11 m	0.43 m	0.46 m	
SWMP Average Depth	0.04	0.10 m	0.11 m	
SWMP Max Hazard	Moderate	Significant	Significant	
SWMP Average Hazard	Moderate	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence <25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS. Therefore permeable paving, soakaways, swales, filter strips and filter drains could be used though there may not be the space for this on this site			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. Surface water around the site could be directed, via, swales, to a large soakaway in one location. A FRA would require detailed surface water and options modelling including investigations into volume requirements for the recommended soakaway. The soakaway may be best located in the east of the site where the majority of the risk is. It may be possible to excavate quite deep into the ground to house the soakaway, highlighted by the low risk of groundwater emergence.			
Recommendations & Further Work	FRA required to assess proposed SuDS options, including surface water modelling and volume calculations.			

Site	
MN2.43 - Former Peoples site, Linacre Lane, Bootle	
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	A Site FRA required for this site at application stage; it should take into account potential ground contamination issues in this area. It is assumed that infiltration will not be an appropriate option and that some form of on-site detention system will be used. Given this it is anticipated that any mitigation measures can be contained within the site.

Site	MN2.44 - Former St Joan of Arc School, Rimrose Road, Bootle
Area	1.4 ha
Proposed Use	Housing

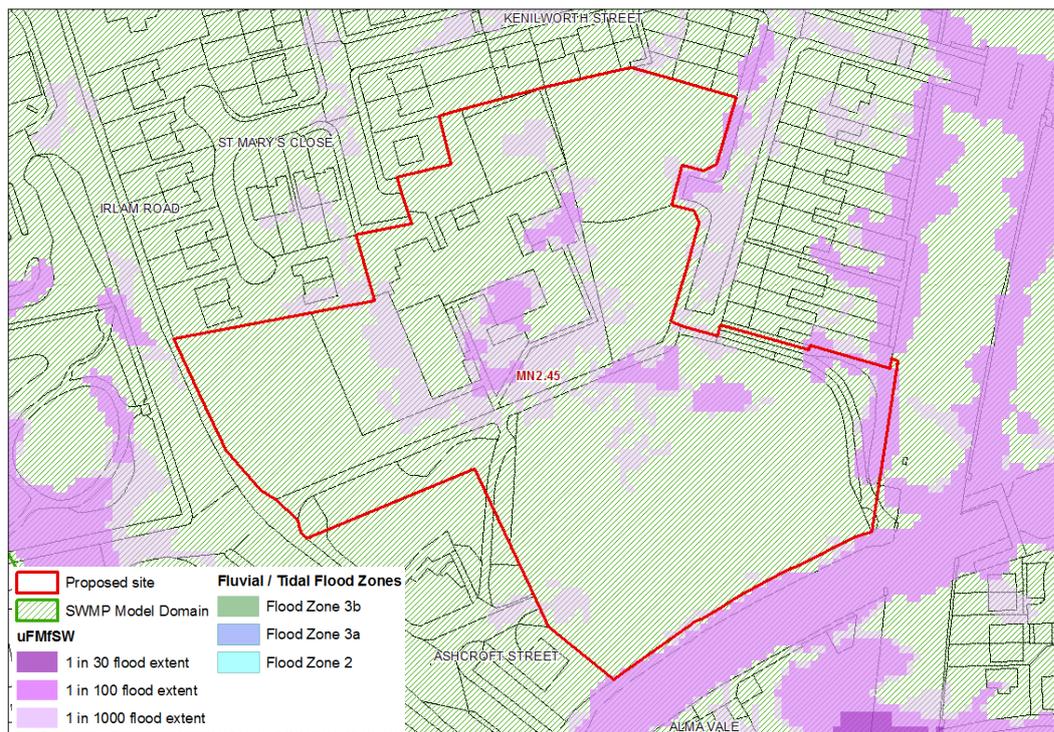


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	9%		4%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.30 m		0.31 m
SWMP Average Depth	0 m	0.04 m		0.05 m
SWMP Max Hazard	None	Moderate		Moderate
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence predominantly $\geq 25\%$ $< 50\%$			
Historical Incidents	2 flood incidents recorded on the site, 1 in the northern corner in 1993 and 1 in the centre of the site in 1994. Neither incident is within a surface water flood outline.			
Defended	No			
SuDS Requirements	This site is considered very good for infiltration SuDS. Soakaways or rain gardens are recommended for this site. Permeable paving could be used for car parking and filter strips / drains could be installed alongside the roads.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. It should be relatively straightforward to accommodate the surface water on site. The areas at risk should be mitigated through landscaped soakaways or rain gardens, taking advantage of the high infiltration capacity. There is no risk from the high risk surface water event (1 in 30 year) however a FRA is required to assess the medium and low risk.			
Recommendations & Further Work	FRA required to assess SuDS options			

Site	MN2.44 - Former St Joan of Arc School, Rimrose Road, Bootle
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	This site now has planning permission for 51 dwellings (ref DC/2014/00605).

Site	MN2.45 - Former St Marys playing field, Waverley Street, Bootle
Area	1.68 ha
Proposed Use	Housing

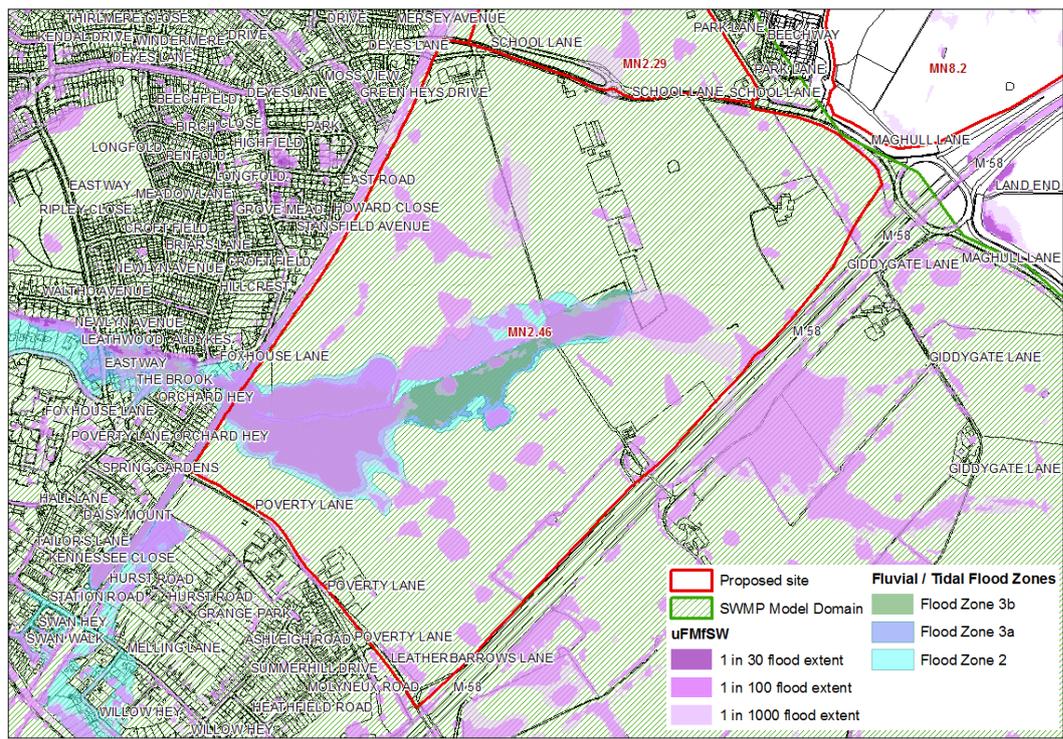


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	6%		13%
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	0.52 m	0.54 m	
SWMP Average Depth	0 m	0.04 m	0.04 m	
SWMP Max Hazard	None	Extreme	Extreme	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence <25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered very good for infiltration SuDS. Soakaways or rain gardens are recommended for this site. Permeable paving could be used for car parking.			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. As the risk is relatively spread out and to take advantage of the high infiltration capacity of the ground, a vegetated soakaway or rain garden should be created with several swales channelling water from other parts of the site. A FRA should assess these options. Much of the risk occurs on the existing building of which it is assumed will be demolished. The FRA should include a survey of the existing drainage system to ascertain capacities. There is no risk from the high risk surface water event (1 in 30 year) however a FRA is required to assess the medium and low risk.			
Recommendations & Further Work	FRA required to assess SuDS options and existing drainage system			

Site	MN2.45 - Former St Marys playing field, Waverley Street, Bootle
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within public open space or within the residual area of the site.

Site	MN2.46 - Land East of Maghull
Area	86.07 ha
Proposed Use	Mixed Use

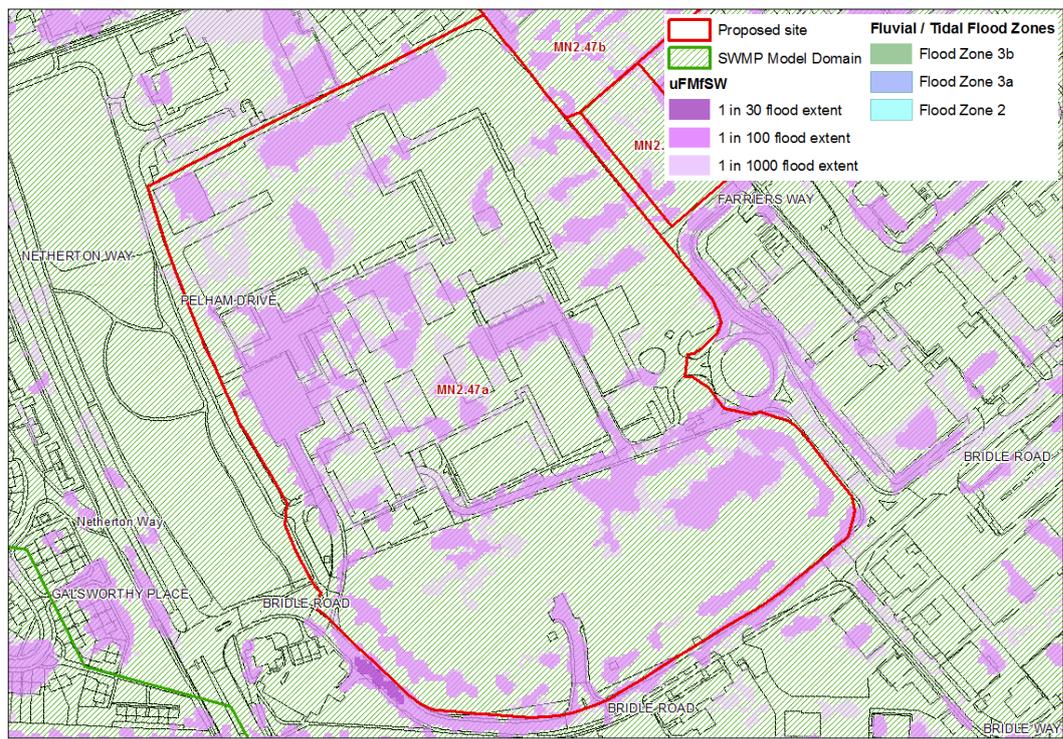


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	86%	5%	2%	8%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	16%		6%
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	2.22 m	2.42 m	
SWMP Average Depth	0 m	0.07 m	0.08 m	
SWMP Max Hazard	None	Extreme	Extreme	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very High			
Groundwater	Susceptibility to groundwater emergence predominantly no risk though approx. western quarter of the site <25%			
Historical Incidents	1 flood incident at adjacent to School Road in 2006. Not within a surface water flood outline			
Defended	No			
SuDS Requirements	This site is considered very good for infiltration SuDS therefore soakaways fed by swales may be suitable for this site.			
FRA & Mitigation Options	Site FRA required. This site has a network of Ordinary Watercourses and drains running through it, with fluvial flooding apparent from Whinny Brook running through the central part of the site. A large part of this fluvial risk is from Flood Zone 3b which is designated as functional floodplain. The FRCC-PPG states development is not permitted within this zone therefore 8% of the site is ruled out from development and should be left as open greenspace (natural floodplain). As the site is proposed for mixed use, the vulnerability category for the overall site must be that of the most vulnerable use which is residential. Therefore the site falls into the more vulnerable category and as such requires the Exception Test. It is			

Site		MN2.46 - Land East of Maghull	
	<p>recommended that the whole of Flood Zone 3a is left as open greenspace, meaning an extra 2% should be undeveloped (10% overall). The majority of the surface water risk is within the fluvial flood zones along Whinny Brook. The Whinny Brook area should be large enough for wetland creation which would bring with it environmental and social benefits.</p> <p>There are a number of other surface water ponded areas scattered across the site, where sympathetically landscaped SuDS features such as vegetated soakaways, rain gardens and swales to connect soakaways. With surface water flood depths potentially >2 m and an extreme hazard to people further highlights the importance of mitigating this surface water risk.</p> <p>The site should be large enough to accommodate such SuDS whilst still delivering large housing yields. The incorporation of the recommended SuDS should be included in the initial design of the site layout, with a supporting FRA.</p>		
Recommendations & Further Work	<p>A detailed FRA is recommended for a more focused investigation into the actual risk at the site. This may include further, more detailed modelling of surface water. The FRA can then advise on the likelihood of the site passing the second part of the Exception Test. The FRA should then include application of the Exception Test which should show that the development will be safe for its lifetime without increasing flood risk elsewhere and where possible reducing risk.</p>		
Existing FRA available for site? (Information provided by Sefton Council)	<p>Proposed Residential and Commercial Development on Land at Maghull East Flood Risk Assessment March 2015</p>		
From preliminary review - does current data match FRA? (Y/N)	Site area	Fluvial/tidal flood risk (based on EA flood outlines)	Surface water flood risk (based on EA flood outlines)
	N	Y	Y
Preliminary comments on available FRA	<ul style="list-style-type: none"> • According to the FRA the site area is 84 ha, however the current red line boundary equates to 86 ha. • The FRA highlighted that the Sefton Council SFRA and SWMP surface water flood risk maps do not match the uFMfSW, stating that “further investigation is required to verify the true extents”. • The FRA proposed flood compensatory works to mitigate the existing flood risk to the site. • An updated FRA will be required based on the change in red line boundary (taking all sources of flood risk into account). Assuming the area where the boundary has changed is at flood risk. 		
Council's comment	<p>FRA completed - see Examination Library. The Environment Agency have withdrawn their objection to this site (original objection submitted at Publication stage and can be found on the Council website http://www.sefton.gov.uk/planning-building-control/planning-policy/statutory-consultees-and-other-organisations.aspx).</p>		

Site	MN2.47a - Senate Business Park
Area	13.5 ha
Proposed Use	Employment

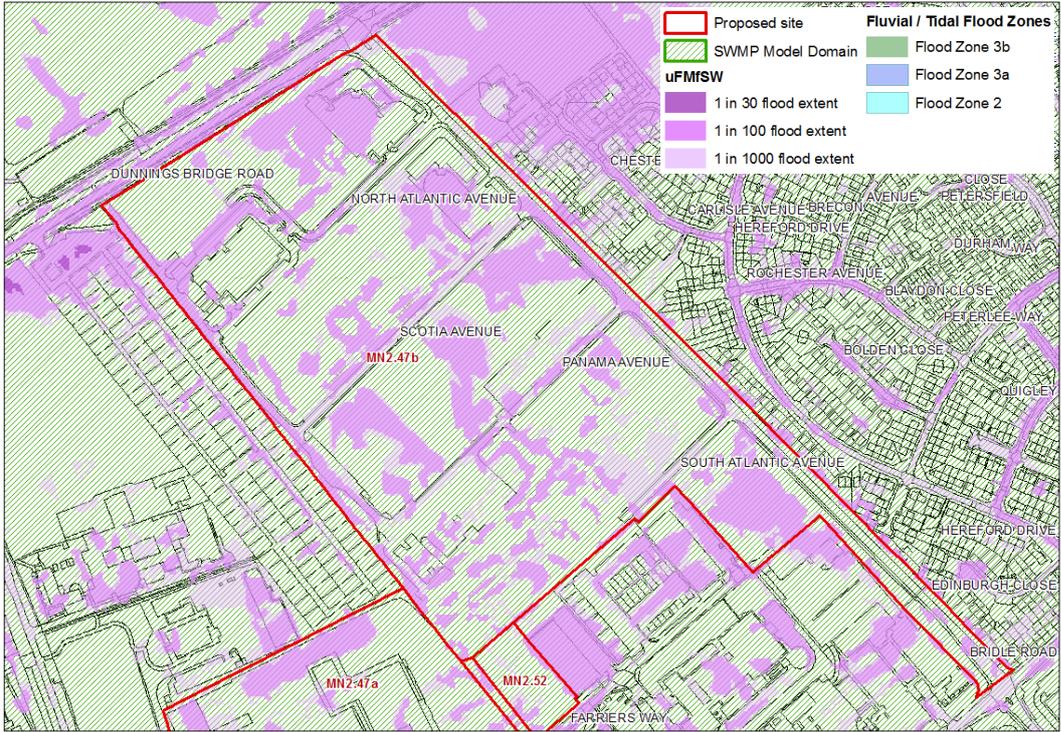


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	22%		14%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0.22 m	1.23 m		1.39 m
SWMP Average Depth	0.02 m	0.08 m		0.09 m
SWMP Max Hazard	Moderate	Significant		Significant
SWMP Average Hazard	Moderate	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Predominantly very high though southern quarter considered low			
Groundwater	No risk			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	Permeable paving, soakaways, swales, filter strips and filter drains could be used. Detention basins could apply to the southern area. Green roofs are also an option			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. It is unknown whether the existing buildings and layout are to remain. As this site is proposed to continue as an employment site, it is likely that large car parking areas will be required. Permeable paving should be used for the car parks which should be situated in the areas of highest risk. As the risk on the site is spatially sporadic, SuDS such as soakaways linked by swales, filter strips and drains should be incorporated within the design of the site layout. Green roofs could be installed on any existing and new buildings. A FRA should assess the options and should be carried out alongside any new layout design to ensure appropriate SuDS are incorporated into the design. Appropriate flood resistance and resilience measures for any			

Site	MN2.47a - Senate Business Park
	existing or new buildings should be investigated as part of the FRA. The current drainage system capacity and condition should be surveyed. Safety of site access and egress should be assessed, particularly at the roundabout on the eastern boundary which is shown to flood during a 1 in 100 year surface water event.
Recommendations & Further Work	FRA required to assess proposed SuDS options and resistance / resilience measures should be carried out at the site design stage. Surface water modelling including modelling of SuDS options is advisable given the large size of the site. A survey of the current drainage system should also be carried out.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site.

Site	MN2.47b - Atlantic Business Park
Area	19.89 ha
Proposed Use	Employment

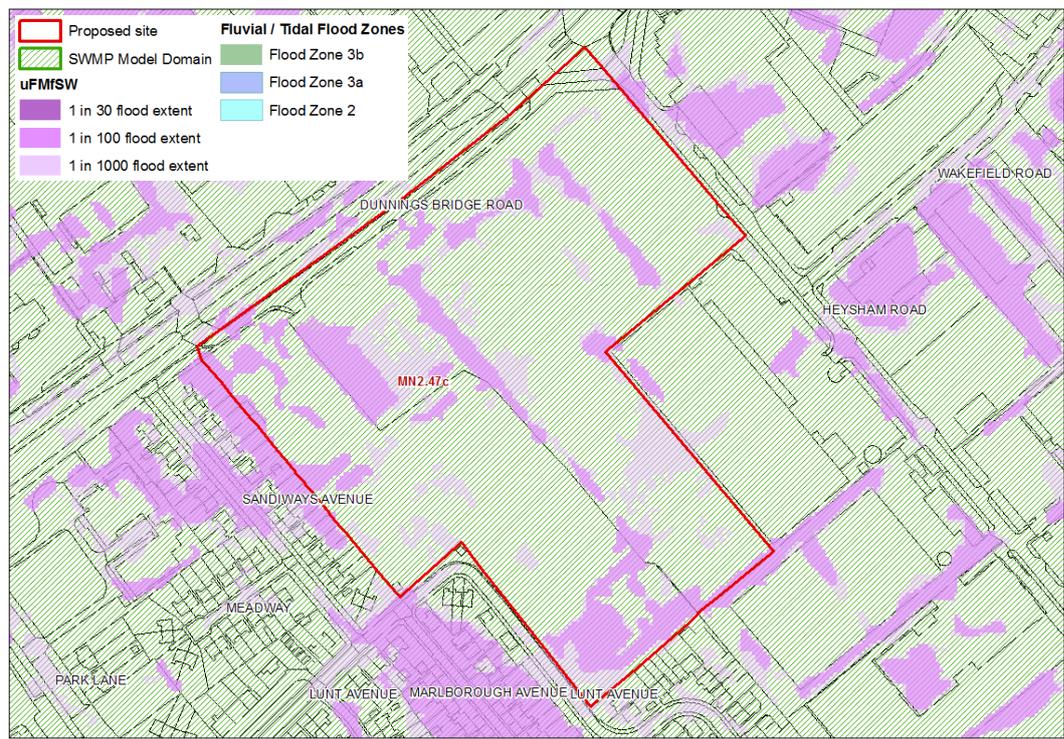


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	30%		14%
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0.08 m	1.09 m	0.94 m	
SWMP Average Depth	0.03 m	0.09 m	0.11 m	
SWMP Max Hazard	Moderate	Extreme	Extreme	
SWMP Average Hazard	Moderate	Moderate	Moderate	
SWMP Climate Change	There is a decrease in max flood depth. This is likely to be an error in the SWMP source data			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	No risk			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS. Therefore permeable paving, soakaways, swales, filter strips and filter drains could be used. Green roofs are also an option			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. It is unknown whether the existing buildings and layout are to remain. As this site is proposed to continue as an employment site, it is likely that large car parking areas will be required. Permeable paving should be used for the car parks which should be situated in the areas of highest risk. As the risk on the site is spatially sporadic, SuDS such as soakaways linked by swales, filter strips and drains should be incorporated within the design of the site layout. Green roofs could be installed on any existing and new buildings. It may be more difficult to install green roofs on the existing buildings as rooves appear to be sloping rather than flat. A FRA should assess the options and should be carried out alongside any new layout design to ensure			

Site	MN2.47b - Atlantic Business Park
	<p>appropriate SuDS are incorporated into the design. Appropriate flood resistance and resilience measures for any existing or new buildings should be investigated as part of the FRA. The current drainage system capacity and condition should be surveyed. Safety of site access and egress should be assessed as Dunnings Bridge Road on the north western boundary and Bridle Road to the south are at risk from the 1 in 100 year surface water event.</p>
Recommendations & Further Work	<p>FRA required to assess proposed SuDS options and resistance / resilience measures should be carried out at the site design stage. Surface water modelling including modelling of SuDS options is advisable given the large size of the site. A survey of the current drainage system should also be carried out.</p>
Existing FRA available for site? (Information provided by Sefton Council)	<p>No</p>
Council's comment	<p>FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site.</p>

Site	MN2.47c - Former Peerless Refinery Site
Area	5.68 ha
Proposed Use	Employment

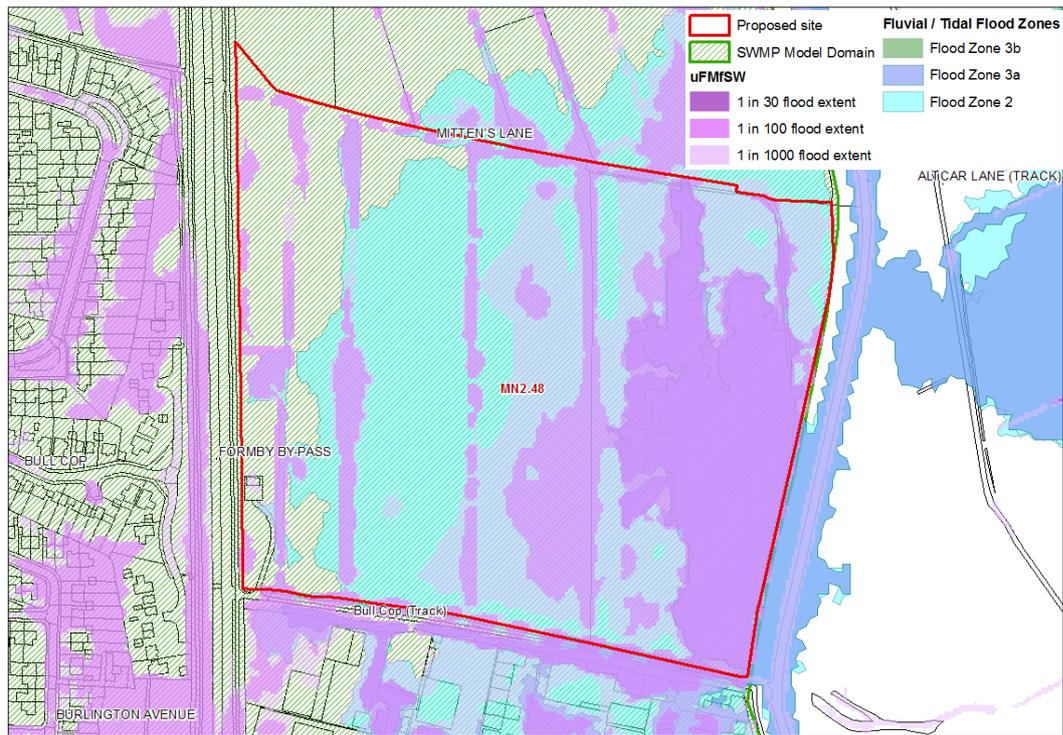


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	16%		13%
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	0.92 m	0.96 m	
SWMP Average Depth	0 m	0.06 m	0.07 m	
SWMP Max Hazard	None	Extreme	Significant	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence >= 50% <75%			
Historical Incidents	2 incidents, 1991 and 1993, in the same location in the south eastern corner of the site. Surface water flooding is shown to occur nearby.			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS. Therefore permeable paving, soakaways, swales, filter strips and filter drains could be used. Green roofs are also an option			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The site is currently cleared land with several hardstanding areas. As this site is proposed to continue as an employment site, it is likely that large car parking areas will be required. Permeable paving should be used for the car parks which should be situated in the areas of highest risk such as the north west corner and the far southern corner. As the risk on the site is spatially sporadic, SuDS such as soakaways linked by swales, filter strips and drains should be incorporated within the design of the site layout. Green roofs could also be installed. A FRA should assess the SuDS options and should be carried out alongside the layout design to ensure appropriate			

Site	MN2.47c - Former Peerless Refinery Site
	SuDS are incorporated into the design. Appropriate flood resistance and resilience measures may be required and should be assessed through the FRA.
Recommendations & Further Work	FRA required to assess proposed SuDS options and resistance / resilience measures should be carried out at the site design stage. Surface water modelling including modelling of SuDS options is advisable given the large size of the site.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site.

Site	MN2.48 - Land North of Formby Industrial Estate
Area	12.6 ha
Proposed Use	Employment

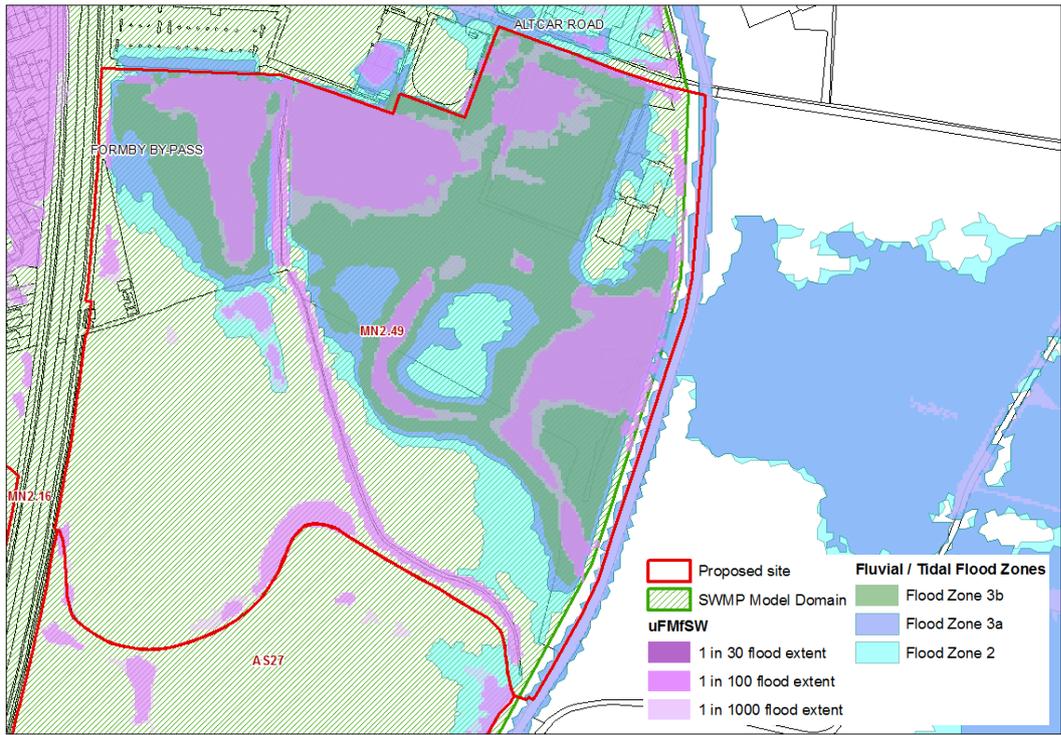


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	17%	64%	19%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	39%		23%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0.02 m	0.98 m		1.08 m
SWMP Average Depth	0.02 m	0.11 m		0.22 m
SWMP Max Hazard	None	Extreme		Extreme
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	High in north western half and moderate in south eastern half of the site			
Groundwater	Susceptibility to groundwater emergence >=75% in western half and >=25% <50% in eastern half of the site			
Historical Incidents	None on site			
Defended	A raised man-made embankment exists on Downholland Brook though judging from the Risk of Flooding from Rivers and the Sea map, this defence does not benefit the site.			
SuDS Requirements	This site has high suitability in the approximate north western half of the site and moderate suitability in the approximate south eastern half.			
FRA & Mitigation Options	<p>Site FRA required. The site is flanked by 2 main rivers, Downholland Brook along the eastern boundary and Bull Cop along the southern boundary. Bull Cop also runs through the western quarter of the site. The source of Flood Zone 3a and Flood Zone 2, which is predominantly fluvial rather than tidal, comes from Downholland Brook. Surface water flooding mostly occurs within the fluvial risk zones though also tends to gather around the several drains running through the site which become submerged by flooding from Downholland Brook. The site is currently an agricultural field which would explain the drainage</p>			

Site			
MN2.48 - Land North of Formby Industrial Estate			
	<p>network. These drains would have to be incorporated into the site layout design.</p> <p>As this site is proposed for employment uses, the Exception Test is not required though a detailed FRA should assess resistance and resilience measures. Safety of access and egress should be assessed including a full evacuation plan in case of a flood. Emergency Planning should be consulted during the design of the site.</p>		
Recommendations & Further Work	Any development will require a detailed FRA, including modelling and volumetric calculations. Emergency Planning should have input to the design of the site.		
Existing FRA available for site? (Information provided by Sefton Council)	It is understood that an FRA is being prepared by the developer and negotiations with the Environment Agency are on-going.		
From preliminary review - does current data match FRA? (Y/N)	Site area	Fluvial/tidal flood risk (based on EA flood outlines)	Surface water flood risk (based on EA flood outlines)
	-	-	-
Preliminary comments on available FRA	<ul style="list-style-type: none"> It is understood that an FRA is being prepared by the developer and negotiations with the Environment Agency are on-going. 		
Council's comment	It is understood that an FRA is being prepared by the developer and negotiations with the Environment Agency are on-going.		

Site	MN2.49 - Land south of Formby Industrial Estate
Area	18.04 ha
Proposed Use	Employment

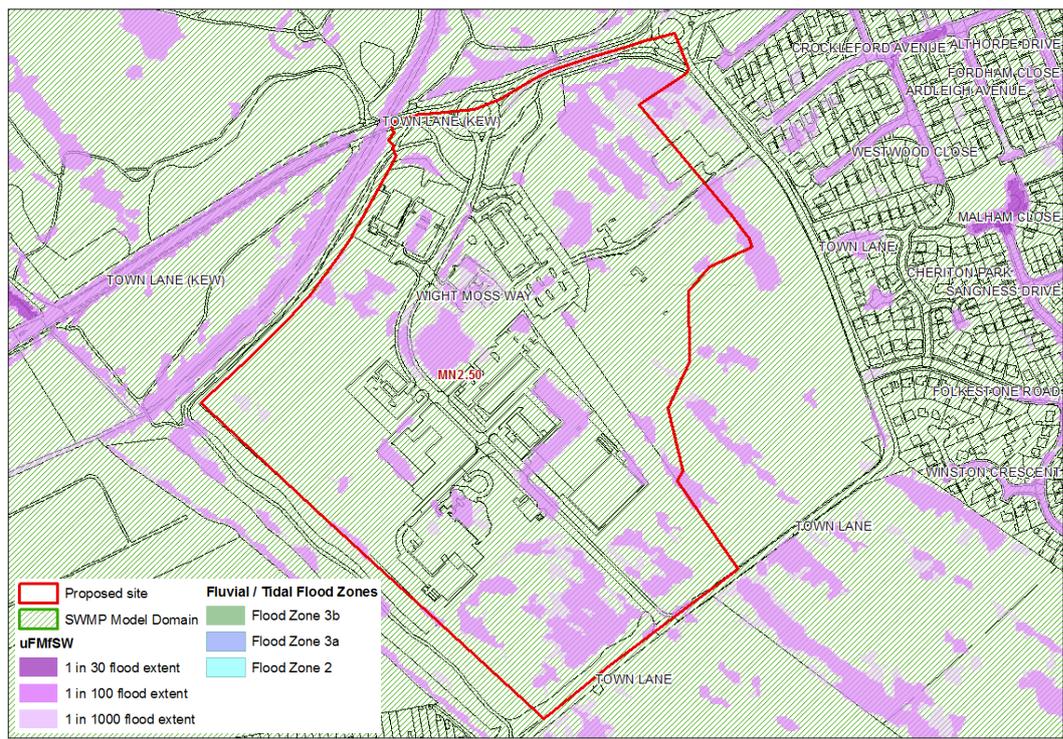


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	41%	9%	8%	42%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	22%		6%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	1.27 m		1.29 m
SWMP Average Depth	0 m	0.07 m		0.09 m
SWMP Max Hazard	None	Extreme		Extreme
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Moderate			
Groundwater	Susceptibility to groundwater emergence >=75%			
Historical Incidents	None on site			
Defended	A raised man-made embankment exists on Downholland Brook though judging from the Risk of Flooding from Rivers and the Sea map, this defence does not benefit the site.			
SuDS Requirements	This site has high suitability in the approximate north western half of the site and moderate suitability in the approximate south eastern half.			
FRA & Mitigation Options	Site FRA required. The Main River Downholland Brook runs along the eastern boundary and Boundary Brook runs through the centre of the site. There is considerable fluvial risk from Downholland Brook with Boundary Brook possibly submerged at the north end by the flooding from Downholland Brook. A large part of this fluvial risk is from Flood Zone 3b which is designated as functional floodplain. A FRA should investigate resistance and resilience measures where any development to take place within flood zones 3a or 2, whilst ensuring the risk is dealt with on site. The majority of the surface water risk is within the fluvial flood zones and along Boundary Brook where an 8 m easement buffer of the Main River			

Site		MN2.49 - Land south of Formby Industrial Estate	
	applies where development is prohibited.		
Recommendations & Further Work	A detailed FRA should be undertaken to confirm any revised development plans.		
Existing FRA available for site? (Information provided by Sefton Council)	It is understood that an FRA is being prepared by the developer and negotiations with the Environment Agency are on-going.		
From preliminary review - does current data match FRA? (Y/N)	Site area	Fluvial/tidal flood risk (based on EA flood outlines)	Surface water flood risk (based on EA flood outlines)
	-	-	-
Preliminary comments on available FRA	<ul style="list-style-type: none"> It is understood that an FRA is being prepared by the developer and negotiations with the Environment Agency are on-going. 		
Council's comment	It is understood that an FRA is being prepared by the developer and negotiations with the Environment Agency are on-going.		

Site	MN2.50 - Southport Business Park
Area	19.18 ha
Proposed Use	Employment

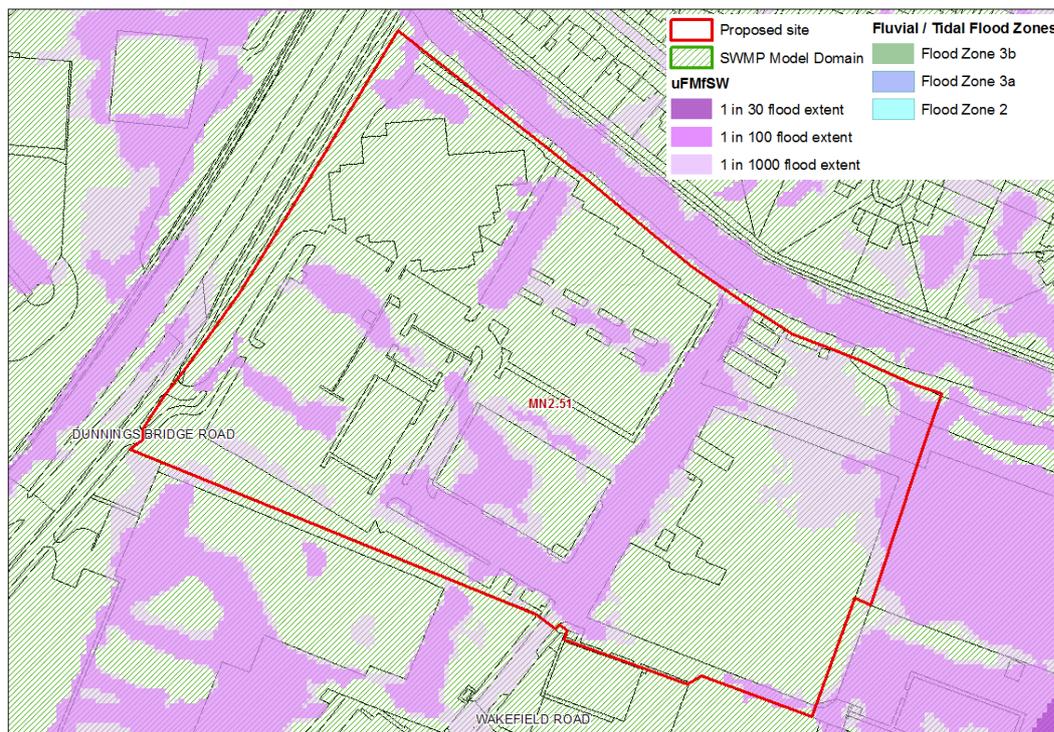


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	15%		7%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.62 m		0.69 m
SWMP Average Depth	0 m	0.06 m		0.07 m
SWMP Max Hazard	None	Significant		Significant
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Very low			
Groundwater	Susceptibility to groundwater emergence >=75% in northern half and <25% in the southern half			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of very low suitability for infiltration SuDS. Therefore detention basins or amenity ponds may be required			
FRA & Mitigation Options	<p>Site FRA required as site is over 1 ha. It is assumed that this site is part of an expansion of the existing business park and the Greenfield areas are to be developed. As the infiltration capacity is considered poor across this site, permeable paving for car parks may be unsuitable. Detention basins and amenity ponds, connected by vegetated swales, could be used to store surface water and groundwater. Ponds will also help offset the fact development is taking place on Greenfields. Green roofs could be installed on all buildings, including existing buildings.</p> <p>The Town Lane Country Park Open Space is located adjacent to the northern boundary of the site. The LPA should consider whether this land could be used to store surface water directed from Site MN2.50.</p>			

Site	MN2.50 - Southport Business Park
	A FRA should assess different SuDS options including more detailed investigations into infiltration capacities. Infiltration SuDS provide a more cost effective option and deal with flooding at source therefore investigations into local ground permeability should be the first task of the FRA.
Recommendations & Further Work	FRA required to investigate infiltration capacities and subsequent SuDS options. Also to investigate use of Town Lane Country Park Open Space for surface water flood storage.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site.

Site	MN2.51 - Switch Car Site, Wakefield Road, Netherton
Area	4.69 ha
Proposed Use	Employment

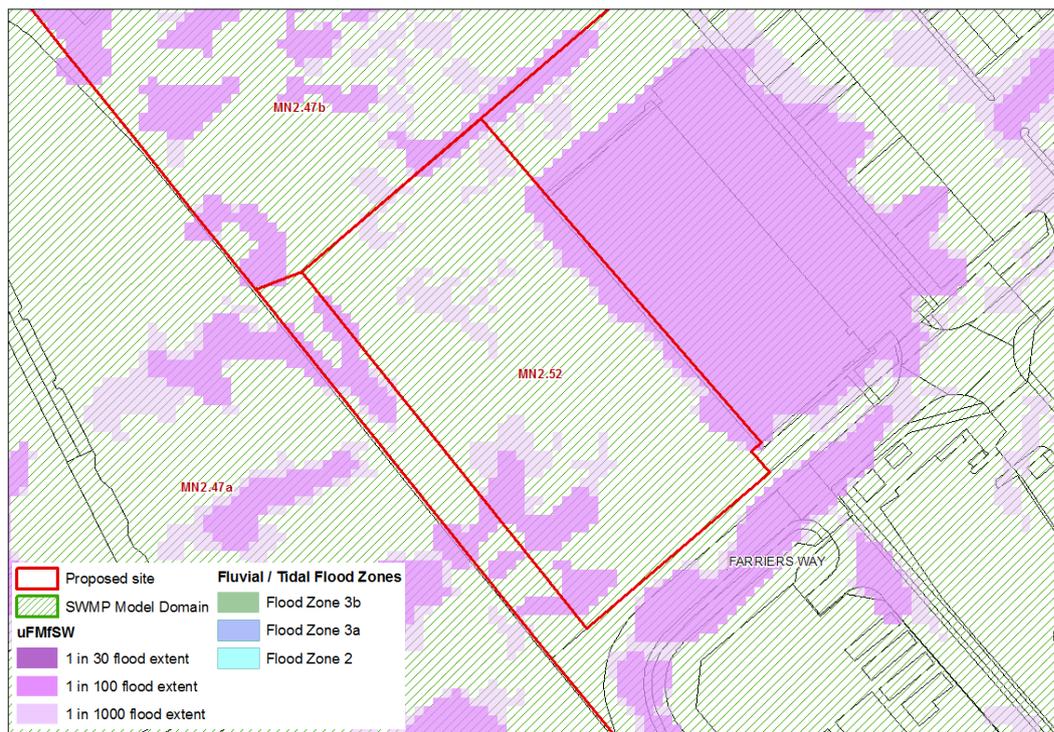


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	20%		14%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.36 m		0.41 m
SWMP Average Depth	0 m	0.06 m		0.08 m
SWMP Max Hazard	None	Significant		Significant
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	Susceptibility to groundwater emergence >= 50% <75%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS. Permeable paving, filter strips and filter drains should be used on this site. Green roofs should also be used on all buildings			
FRA & Mitigation Options	Site FRA required as site is over 1 ha. The risk on this site occurs on current hard standing areas used for car parking and a roadway. Green roofs could be installed on the existing buildings, if remaining, and all new buildings. Any roadways should have filter strips / drains installed alongside them. A FRA should assess these SuDS options and should be carried out alongside the layout design to ensure appropriate SuDS are incorporated into the design.			
Recommendations & Further Work	FRA required to assess proposed SuDS options.			
Existing FRA	No			

Site	MN2.51 - Switch Car Site, Wakefield Road, Netherton
available for site? (Information provided by Sefton Council)	
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site.

Site	MN2.52 - Land at Farriers Way, Netherton
Area	0.53 ha
Proposed Use	Employment

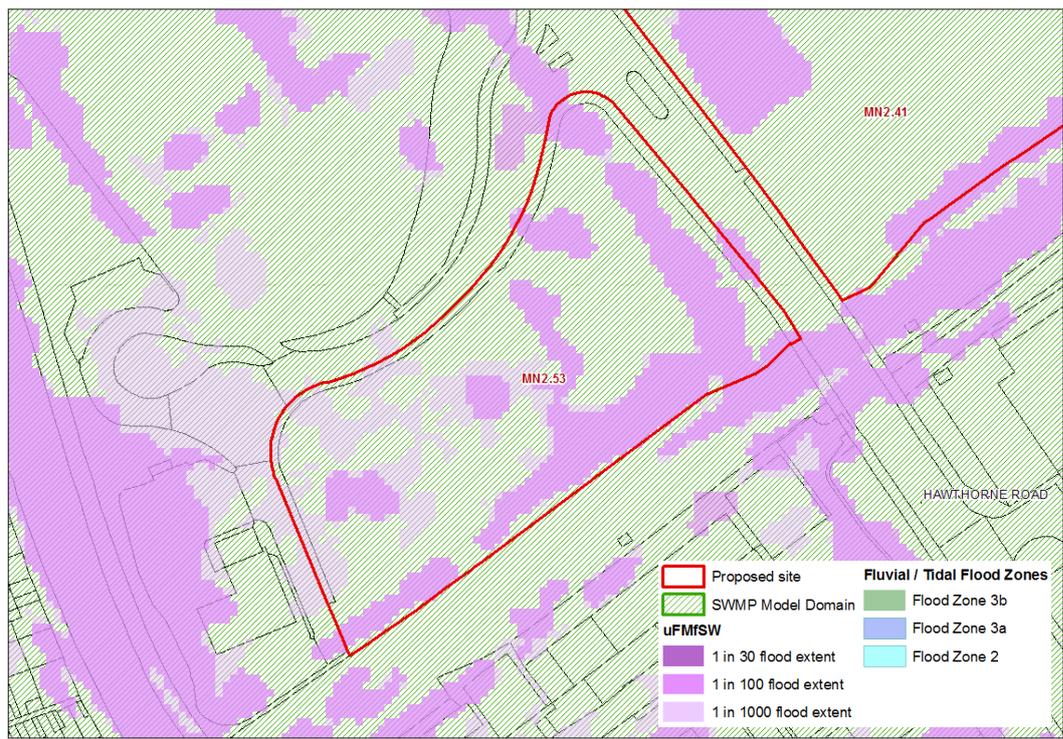


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	15%		11%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0 m	0.39 m		0.39 m
SWMP Average Depth	0 m	0.05 m		0.05 m
SWMP Max Hazard	None	Significant		Significant
SWMP Average Hazard	None	Moderate		Moderate
SWMP Climate Change	There is no impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	No risk			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS. Permeable paving, filter strips and filter drains should be used on this site. Green roofs should also be used on all buildings			
FRA & Mitigation Options	This site is currently Greenfield land that is considered highly suitable for infiltration SuDS. It should be possible to mitigate surface water risk through permeable paving for car parks and walkways. Soakaways may also be required, linked by swales. The SuDS options used here depends on the layout design therefore such options should be considered at the site design stage. Green roofs could be installed on new buildings and also, if possible on the adjacent building to the north east. Any FRA should investigate each SuDS option recommended along with safety of access and egress as Farriers Way is at risk from the 1 in 100 year event and appears to be the only available site access point.			
Recommendations &	FRA required to assess proposed SuDS options including safe access			

Site	MN2.52 - Land at Farriers Way, Netherton
Further Work	and egress to Farriers Way during a flood event.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	A Site FRA will be required for this site at application stage under policy EQ8 as it is within a Critical Drainage Area. It is anticipated that any mitigation measures can be contained within the site.

Site	MN2.53 - Former Lanstar Site, Hawthorne Road, Bootle
Area	0.97 ha
Proposed Use	Employment

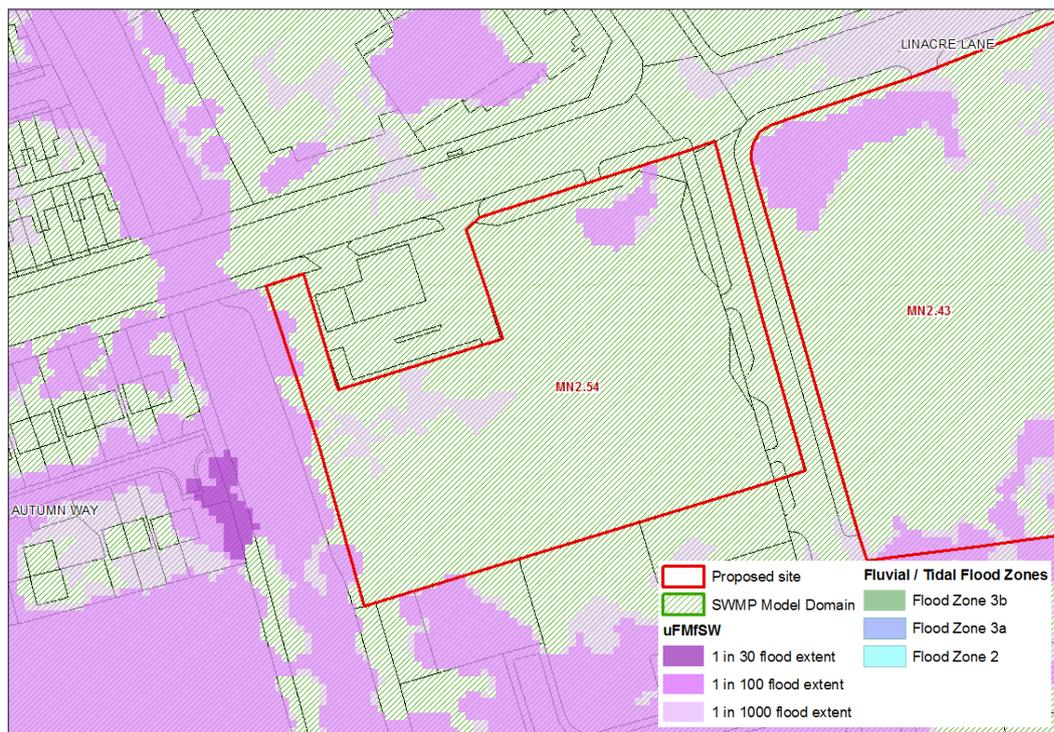


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	32%	15%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	1.08 m	1.08 m	
SWMP Average Depth	0 m	0.11 m	0.12 m	
SWMP Max Hazard	None	Extreme	Extreme	
SWMP Average Hazard	None	Significant	Significant	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Low			
Groundwater	Susceptibility to groundwater emergence <25% on approximate western half of the site with no risk on approximate eastern half			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of low suitability for infiltration SuDS therefore detention basins or ponds may be most suitable. Green roofs could also be used on all buildings			
FRA & Mitigation Options	<p>It may be difficult to mitigate all the risk on this site as it is widely spread around the site. Green roofs could help to an extent however this may be difficult as maximum flood depths are >1 m for the 1 in 100 year event. The FRA should investigate the possibility of situating a flood storage basin / detention pond in one part of the site i.e. somewhere along the southern boundary where risk appears greatest. A network of swales could channel water to the basin.</p> <p>An infiltration study should be carried out to ascertain the actual infiltration capacity of the ground before ruling out an infiltration SuDS options. This study could be carried out as part of a FRA</p>			

Site	MN2.53 - Former Lanstar Site, Hawthorne Road, Bootle
Recommendations & Further Work	FRA required to assess infiltration capacity of the ground followed by surface water modelling to include scenarios based on SuDS options.
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	A Site FRA will be required for this site at application stage under policy EQ8 as it is within a Critical Drainage Area. It is anticipated that any mitigation measures can be contained within the site.

Site	MN2.54 - Linacre Bridge, Linacre Lane, Bootle
Area	1.01 ha
Proposed Use	Employment

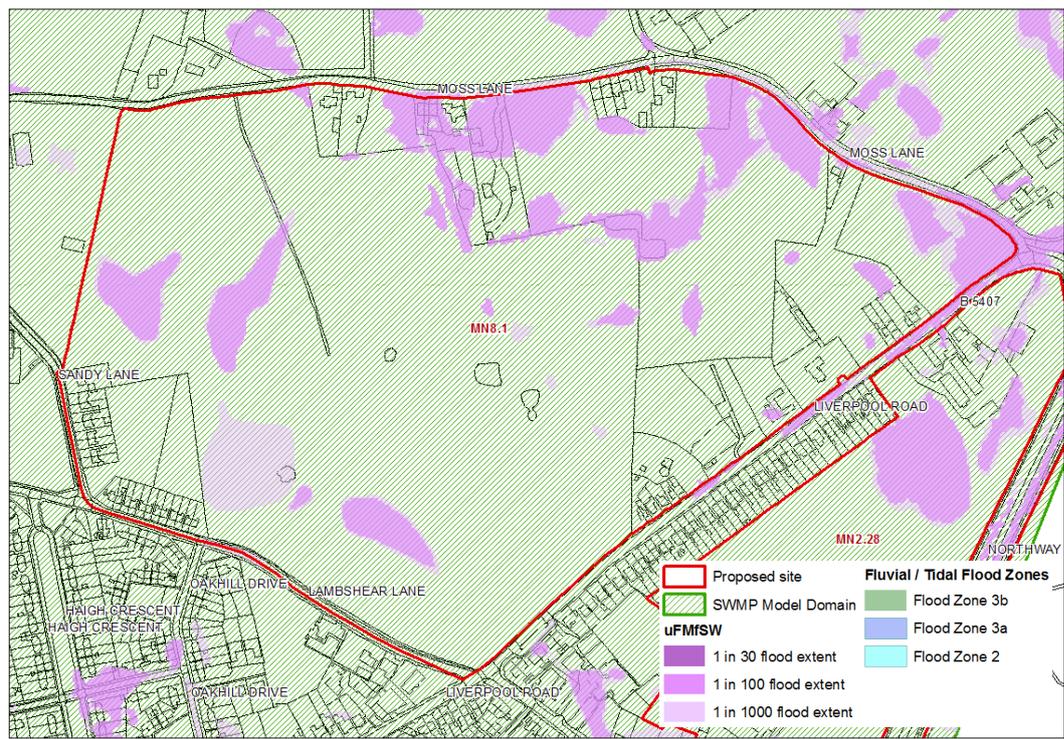


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	3%	5%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	0.43 m	0.43 m	
SWMP Average Depth	0 m	0.04 m	0.04 m	
SWMP Max Hazard	None	Significant	Significant	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Predominantly very high			
Groundwater	Susceptibility to groundwater emergence <25%			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of a very high suitability for infiltration SuDS, with the exception of the western boundary of the site. Permeable paving, filter strips and filter drains should be used on this site. Green roofs should also be used on all buildings			
FRA & Mitigation Options	FRA required as site is over 1 ha. The areas at risk could be used for car parking and walkways made up of permeable paving, taking advantage of the high infiltration capacity on the site. Green roofs could also be installed on all new buildings. Then areas at risk along the western boundary could be dealt with through installation of a shallow ditch along the boundary. The risk from the 1 in 1000 year event could be piped to this ditch if and when required. A FRA should assess these SuDS options.			
Recommendations & Further Work	FRA required to assess proposed SuDS options.			

Site	MN2.54 - Linacre Bridge, Linacre Lane, Bootle
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site.

Site	MN8.1 - Land north of Lamshear Lane, Lydiate
Area	33.98 ha
Proposed Use	Safeguarded Land

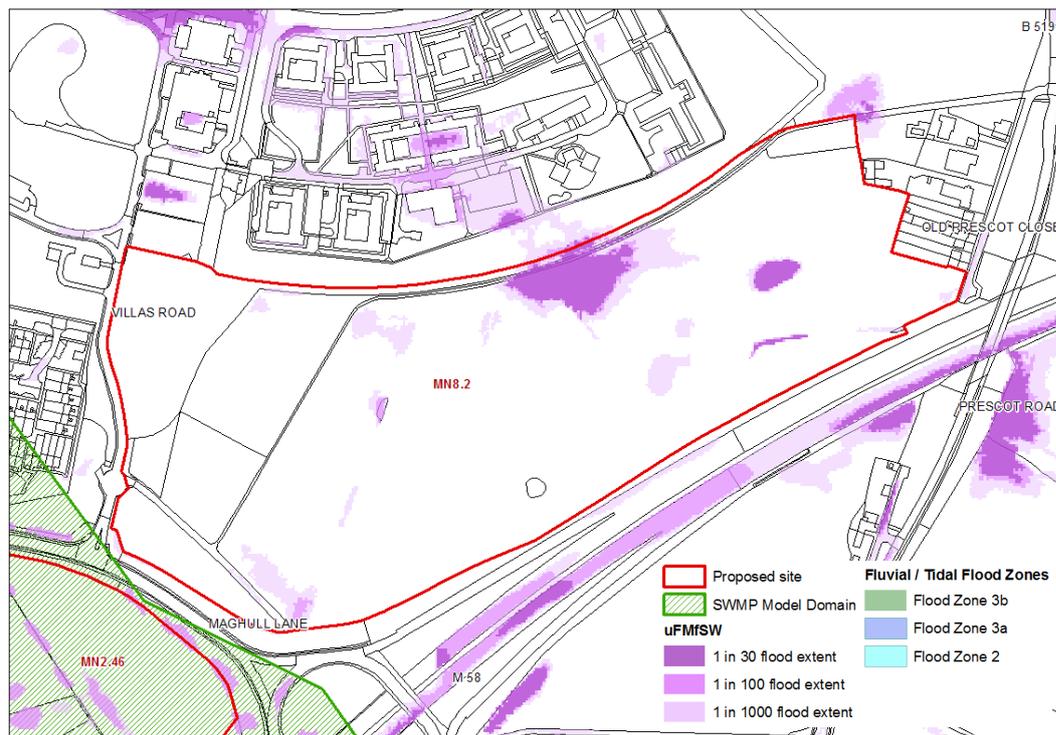


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	12%	5%	
SWMP Max Depth	1 in 30	1 in 100	1 in 100 +CC	
	0 m	1.10 m	1.15 m	
SWMP Average Depth	0 m	0.05 m	0.06 m	
SWMP Max Hazard	None	Significant	Significant	
SWMP Average Hazard	None	Moderate	Moderate	
SWMP Climate Change	There is no significant impact from climate change			
Local CDA	Yes			
Indicative SuDS Suitability (Infiltration)	Very high			
Groundwater	No risk			
Historical Incidents	There have been several incidents on site - in the far western corner near Sandy Lane, the latest of which occurred in 2007, also in the far southern corner and along the south eastern boundary			
Defended	No			
SuDS Requirements	This site is considered of very high suitability for infiltration SuDS.			
FRA & Mitigation Options	This site will be developed in the medium to long term, implicitly for housing, following the adoption of the next Local Plan. The large size of the site allows the mitigation of surface water on site through soakaways, swales and filter drains, owing to the perceived high infiltration capacity.			
Recommendations & Further Work	None in the short term though FRA required at site design stage			
Existing FRA available for site? (Information provided by Sefton)	No			

Site	MN8.1 - Land north of Lambshear Lane, Lydiate
Council)	
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures could be contained within public open space or within the residual area of the site.

Site	MN8.2 - Land adjacent to Ashworth Hospital, Maghull
Area	15.17 ha
Proposed Use	Safeguarded Land

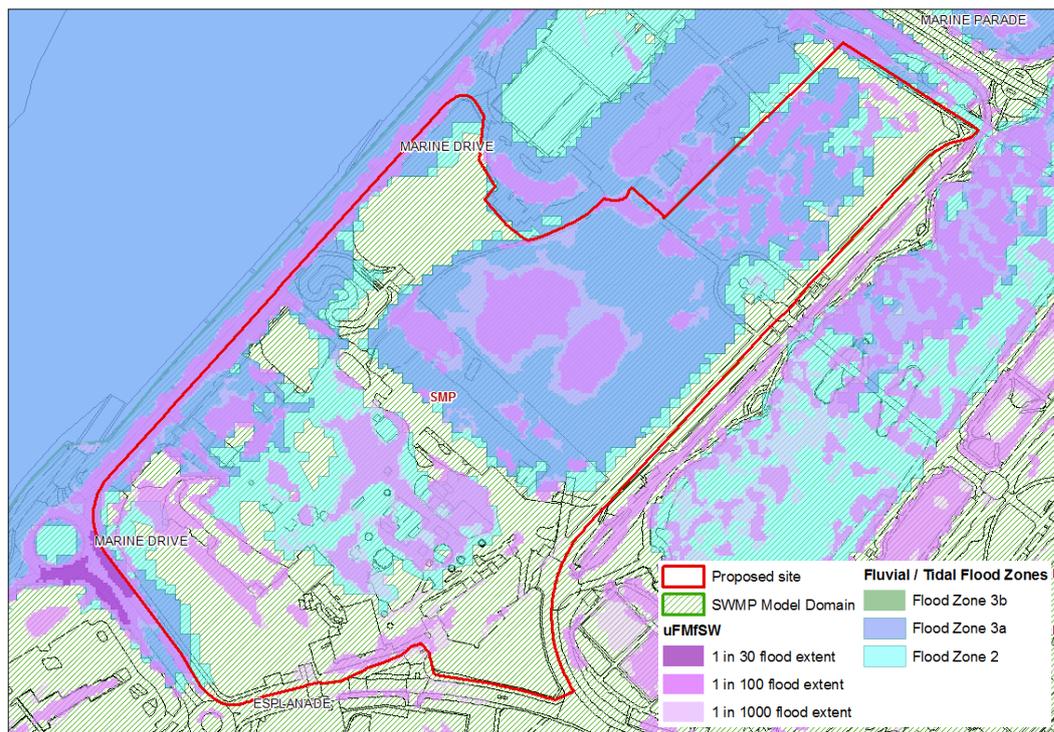


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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	100%	0%	0%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	3%	1%		7%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	N/A	N/A		N/A
SWMP Average Depth	N/A	N/A		N/A
SWMP Max Hazard	N/A	N/A		N/A
SWMP Average Hazard	N/A	N/A		N/A
SWMP Climate Change	N/A			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Predominantly low			
Groundwater	No risk			
Historical Incidents	None on site			
Defended	No			
SuDS Requirements	This site is considered of low suitability for infiltration SuDS.			
FRA & Mitigation Options	This site will be developed in the medium to long term, implicitly for housing, following the adoption of the next Local Plan. The large size of the site allows the mitigation of surface water on site through detention basins, amenity ponds or wetlands.			
Recommendations & Further Work	None in the short term though FRA required at site design stage			
Existing FRA available for site? (Information provided by Sefton Council)	No			
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures could be contained within public open space or within			

Site	MN8.2 - Land adjacent to Ashworth Hospital, Maghull
	the residual area of the site.

Site	SMP - Southport Marine Park
Area	17.45 ha
Proposed Use	Recreation and Leisure



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Flood Zone	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
	39%	20%	42%	0%
Surface Water (uFMfSW)	High Risk	Medium Risk		Low Risk
	0%	22%		8%
SWMP Max Depth	1 in 30	1 in 100		1 in 100 +CC
	0.21 m	0.98 m		0.98 m
SWMP Average Depth	0.03 m	0.07 m		0.08 m
SWMP Max Hazard	Moderate	Extreme		Significant
SWMP Average Hazard	Moderate	Moderate		Moderate
SWMP Climate Change	There is no increase in flood depths yet the max hazard category reduces from extreme to significant. This is likely to be an error in the SWMP source data			
Local CDA	No			
Indicative SuDS Suitability (Infiltration)	Predominantly very low though the far north west and south west facing boundaries are considered of high suitability.			
Groundwater	Susceptibility to groundwater emergence >= 25% <75%			
Historical Incidents	12 on the far southern boundary adjacent the Esplanade the latest of which recorded in 2003. Backed up by the surface water mapping			
Defended	Man-made coastal defence wall which, according to the RoFRS map, provides big benefits to the site			
SuDS Requirements	This site is predominantly considered of very low suitability for infiltration SuDS, where surface water risk exists. Most of the surface water risk is within the tidal flood zones therefore any SuDS system would be inundated during a tidal flood event.			
FRA & Mitigation Options	Due to the level of risk across the site, a detailed FRA will be required and should take place alongside the design phase of the development.			
Recommendations & Further Work	FRA required to assess all risk, should be carried out alongside the site design stage.			

Site	SMP - Southport Marine Park
Existing FRA available for site? (Information provided by Sefton Council)	No
Council's comment	FRA required for this site at application stage. It is anticipated that any mitigation measures can be contained within the site. It is likely that a floor slab level will be specified consistent with the adjacent Ocean Plaza development.

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