

Mr R Swift  
Sefton Local Plan  
Melling Lane, Maghull  
Flood Risk and Surface Water  
Drainage

---

**Evidence: Flood Risk and Drainage (Foul and Surface Water): M S Elliott**

---



# Document Control

Document:

Project: Melling Lane, Maghull  
Client: Mr R Swift  
Job Number: A095382  
File Origin:

Revision: - **First**

Date: 3<sup>rd</sup> Dec 2015

Prepared by  
**Matthew Elliott**

Checked by

Approved By  
**Matthew Elliott**

Description of Revision

Revision:

Date:

Prepared by

Checked by

Approved By

Description of Revision

Final

Revision:

Date:

Prepared by

Checked by

Approved By

Description of Revision

# Contents

1	Introduction.....	5
2	Site Assessment.....	6
3	Sequential Test.....	8
4	Conclusions .....	10

# 1 INTRODUCTION

1.1 Site Ref S131 at Melling Lane, Maghull is identified by the Sefton Council as a 'Reserve Site' at the preferred Options Stage.

1.2 The evidence I provide is in relation to Flood Risk and the application of the Sequential Test.

1.3 I am a Fellow of the Institution of Civil Engineers (FICE), a Fellow of the Chartered Institute of Water and Environmental Managers (FCIWEM), a Fellow of the Institute of Arbitrators (FCI Arb), a Chartered Engineer (C Eng), a Chartered Environmentalist (C Env) and a Chartered Water and Environmental Manager (CWEM).

1.4 I have a master's degree (M Sc) in Construction Law and Arbitration and an honours bachelor's degree (B Sc (Hons)) in Civil Engineering.

1.5 I am employed as a (Technical) Director with WYG Engineering Limited based in Headingley, Leeds. I have day to day responsibility for a team of engineers working on water and drainage projects; I have a wider role within the company nationally in respect of water sector activities and I have responsibilities for the overall management of the wider engineering function in the Leeds Office. I have many years of experience in dealing with civil engineering including urban drainage both in private consultancy and within local authorities.

1.6 I have overseen the production of a Flood Risk Assessment (FRA) to support Site Ref S131 at Melling Lane and also the FRA submitted to support the nearby site ref SR4.27.

1.7 I understand that the sole reason for non allocation of Site Ref S131 is due to the fact that 40% of the site area is shown on the EA flood map for planning as being in Flood Zone (FZ) 2.

1.12 I have structured this written statement as follows: in Section 2 I provide a very brief overview of the site's location considering the hydrological characteristics of the area and also the evolving form of the urban environment and its associated watercourses and drainage infrastructure. Section 3 discusses the proposed measures to manage surface water flows (including the use of SUDS) and in Section 4 I deal with the matter of foul drainage infrastructure (both conveyance and treatment). I briefly set out my conclusions in Section 5.

## 2 SITE ASSESSMENT

2.1 The site is located on land that is bounded to the south-west by the Leeds-Liverpool Canal, to the south-east by the M58, to the north-east by Melling Lane and to the north-west by existing development. The land slopes down from Melling Lane to the canal; within this overall profile there is a shallow valley in the north-west corner of the site.

2.2 A small 'ordinary' watercourse runs through the shallow valley described above, and passes under the canal in a 450mm diameter pipe. Within the site, the 'ordinary' watercourse is culverted. Melling Brook (which is designated as a 'main' river) passes under the M58 in culverts which just cut through the extreme southern corner of the site.

2.3 Approximately 40% of the site is designated on the current Environment Agency (EA) flood map as Flood Zone (FZ) 2. This designation of flood risk is due to fluvial flood risk identified through modelling; it is not on account of credible observed flooding, which can be a reason for designation of land as FZ 2. The modelling predicts that flood water arising from Whinny Brook (within site ref SR4.27) could according to the model be routed along the railway and then accumulate within site ref S131 alongside the canal as a flood pool (and elsewhere). This flood routing passes through existing properties, roads and gardens and the resultant flood pool, as well as resulting in the designation of 40% of the site as FZ 2, also indicates flooding of adjacent property, gardens and highways.

2.4 If the flood route along the railway were to be curtailed by relatively modest measures within site reference SR4.27 the flooding of the railway, the resultant flooding of properties in the adjacent area and the designation of part of site ref 131 as FZ 2 could all be addressed.

2.5 Notwithstanding point 2.4 above, modelling work is currently ongoing to test the consequences of opening up the 450mm diameter culvert within the Melling Lane site. The likely capacity of this culvert is of the order of 0.3 cumecs (cubic metres per second) or 300 litres per second (l/s). In my opinion, opening of the culvert will be demonstrated by modelling to substantially shrink the area of FZ 2 designation within the site. To the extent that there is an identified flood risk to neighbouring properties, this also would be reduced. It will be necessary to ensure that any downward conveyance of floodwater does not have an adverse downstream impact, which is why it is almost always advantageous to control flood risk as close to source as possible.

2.6 I conclude that the site has a low risk of fluvial flooding (in the range 1 in 100 year to 1 in 1000 year return periods) and that the parts of the site exposed to this level of flood risk could either be eliminated by modest upstream measures (that would bring wider benefits in reduced flood risk to the area and critical infrastructure) or by opening up the culvert to substantially shrink the flood zone 2 area within the site (that would bring wider benefits in reduced flood risk to the area). The downstream impact of the latter is being investigated by ongoing modelling.

2.7 The EA have been consulted in respect of the above and the modelling approach to be adopted and are in agreement with the approach proposed to bring this site forwards as set out in their letter dated 1<sup>st</sup> October 2015.

### 3 SEQUENTIAL TEST

3.1 The procedure for undertaking the Sequential Test is set out in a flow diagram (Diagram 2) in Planning Practice Guidance (PPG) (Flood Risk and Coastal Change) in Paragraph 6 (Applying the Sequential Test (ST) in the Preparation of A Local Plan). It is stated ahead of the diagram that 'the ST should be applied to the whole planning authority area to increase the possibilities of accommodating development which is not exposed to flood risk'

3.2 The required process is clearly set out in Diagram 2. The first stage is to attempt to locate development in Flood Zone 1 (bearing in mind that other sources of flood risk should also be considered). Failure to allocate appropriate development in the Flood Zone 1 sites, allows consideration of Flood Zone 2 sites. Site Ref S131, Melling Lane, falls into this category.

3.3 However, in my opinion, it appears that Ref S131, Melling Lane, has been incorrectly discarded at this stage in favour of sites with a greater flood risk exposure. The sites which have been incorrectly sequentially preferred are AS01, SR4.03 and AS06. A quickly prepared comparison of the competing sites is provided below.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1					EA Flood Map for Planning				Level 2 SFRA								
2	Policy Ref	Site Ref	Name	Area	FZ 1	FZ 2	FZ 3 (F)	FZ 3 (D)	Defende	FZ1	FZ2	FZ3(F)	FZ3(C)	Defer	EA	SW F	Comments
3	MN2.1	SR4.01	Bartons Close	Southport	90%	10%	0%	0%	N/A	100%	0%	0%	0%	N/A	Obj	0%	Island' within area defended from tidal/fluvial
4	MN2.2	SR4.02	Bankfield Lane	Southport	20%	10%	70%	70%	Yes	95%	5%	0%	0%	Yes	Obj	10%	within 'flood risk management system boundary';
5	MN2.2	AS01	Bankfield Lane Ext	Southport	0%	0%	100%	100%	90% Yes	30%	10%	60%	0%	Yes	Obj	15%	within 'flood risk management system boundary'; SAF Appears Incorrect
6	MN2.3	AS28	Phillips's Site	Southport	0%	0%	100%	100%	Yes	100%	0%	0%	0%	Yes		10%	within 'flood risk management system boundary';
7	MN2.4	SR4.03	Moss Lane	Southport	40%	10%	50%	50%	Yes	80%	20%	0%	0%	Yes	Obj	20%	within 'flood risk management system boundary'; SAF appears Incorrect
8	MN2.12	AS06	Brackenway	Formby	40%	35%	25%		No	40%	35%	25%	0%	No	Obj	70%	FCERM Scheme identified at SE Corner; Allocation appears incorrect
9	MN2.12	SR4.11	Brackenway (west)	Formby	90%	10%	0%		No	90%	10%	0%	0%	No		30%	Western sub -set of above
10	MN2.17	SR4.15	Altcar Lane	Formby	70%	5%	20%	20%	Yes	100%	0%	0%	0%	Yes		20%	Sequential Approach would work;
11	MN2.46	SR4.27	East of Maghull	Sefton East	70%	10%	20%		No	70%	10%	20%	0%	No	Obj	30%	Sequential Approach would work;
12																	
13			Melling Lane	Sefton East	50%	50%	0%	0%		50%	50%	0%	0%				Flooding is due to overland flood route from SR4.27
14																	
15																	

3.4 In respect of site references AS01 and SR4.03 it is incorrectly stated in submissions that because these sites are defended (by coastal defences and a pumping station) that these sites do not contain substantial elements of Flood Zone 3. This is incorrect. The sites are in Flood Zone 3 but provided with a relatively high standard of defence. However, a defended Flood Zone 3 site (which will rely on ongoing improvements to coastal defences to deal with established and predicted sea level rises and increased pumping station



capacity to deal with predicted increases in precipitation rates) is generally Sequentially less preferable to a FZ 2 site.

3.5 Furthermore, it is generally established that coastal flood typically risk presents a greater threat than that which arises from overland flood routes and surface water flooding.

3.6 In respect of AS06, this too has a substantial are of FZ 3 (as well as substantial FZ 2 areas) which would in my opinion make site ref S131, Melling Lane sequentially preferable. In addition, it should be noted that the Flood Zoning of the site, is not based on modelled risk alone, the risk has been realised as the site is known to flood. Whilst it is argued that development of AS06 can resolve local flooding issues, the same is the case in relation to site ref 131.

3.7 In view of the above, I conclude that the ST has been incorrectly applied and that site ref 131 has been prematurely and without robust justification excluded from the allocation process.

## 4 CONCLUSIONS

4.1 Site Ref 131, Melling Lane is at low risk of flooding and this potential flood risk has only been identified through a modelling process rather than via extensive experience of the model flood predictions.

4.2 Until further modelling work is completed, the potential risk that results in the FZ 2 designation is not denied; however, it is noted that this is a low risk and it is due to overland flood routing of flows from Whinney Brook.

4.3 There are both potential upstream solutions to reduce the above risk and solutions within the site itself. Both sets of solutions will reduce flood risk in the locality, although the on-site solution needs testing by modelling to ensure that it does not exacerbate downstream flood risk.

4.4 As Site Ref 131 is entirely within either FZ 1 or FZ 2, it is sequentially preferable to sites AS01, SR4.03 and AS06 which contain substantial elements of FZ 3.



Matthew Elliott

M Sc, C eng, FICE, CWEM, FCIWEEM, FCI Arb, C Env

3<sup>rd</sup> December 2015

