

BGNB RESIDENTS' ASSOCIATION 2013

SUMMARY OF FLOOD RISK ASSESSMENT

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Flood risk assessment report

Para	Summary	Comments
2.2	Site size approx 51Ha	
3.1	Sources: fluvial, ground water, overload of existing drainage	
3.2	No fluvial or tidal flooding. Paper based search.	No mention of R.Crouch tributary and associated local flooding
3.3	States ground water not significant. No risk to proposal from ground water heading. Secondary aquifers shown on map.	2° aquifers defined by enviro agency as minor & non aquifer
3.4	States site copes adequately with surface water. Does not anticipate that more water than greenfield runoff from the proposals will drain off site than at present.	How does report define adequate? What is the Greenfield runoff from the proposals? Will they be more or less than current greenfield runoff? What about non greenfield??
3.5		
4.1	N and E direction for surface runoff. SPRHOST 50.2%	Std % runoff
4.2	*IoH 124 states to use QBAR for greenfield areas below 50 Ha	*Institute of Hydrology report 124. QBAR: mean annual flood flow rate They did calcs on area A and B only. Did not include 'public open space'.
4.3	QBAR value derived from software system. SAAR value from catchment descriptors from CD Rom data (FEH*) Soil value WRAP** data from flood studies report 1975 . Soil value given as 0.45 (impermeable) cross checked with software system.	QBAR: mean annual flood flow rate SAAR is the standard average annual rainfall for the period 1941 to 1970 in mm. Not current. *Flood Estimation Handbook **Winter Rain Acceptance Potential
4.4	Development divided into area A & B	How are impermeable values derived?
4.5	Run off rates approx 24% lower with Micro Drainage software.	24 % higher with Wallingford on-line tool. (see appendix A & B of this doc).
4.6	Advises to mitigate to protect ground water from contamination from surface water carrying oil, soap etc	Doesn't say how.
4.7	Surface water sewerage system stops just N of Osbourne Rd and discharges to ditch in E of Pound Lane.	
4.8	States NPPF recommends use of SuDS* to limit amount of surface water runoff entering drainage systems and return water to ground to follow its natural path**	*Sustainable drainage systems. **Presumable to continue to flood Pound Lane.

4.9	Poor results for infiltration testing	Water didn't go anywhere (email appdx C)
4.10	Infiltration rate of 2.7×10^{-8} m/s	Assumptions based on map data (1997) and guidelines (SuDS manual) 0.0972mm/hr How is actual figure derived? Are rates for dry summers or wet winters? What about snowmelt? Site already subject to ponding and water logging.
4.11	Notes other SuDS features that could be used at site	
4.12	Swales and caution. 80-90% heavy metals can be removed by them	Where do they go? ongoing maintenance and cost?
5.2	Where not possible to have infiltration device to dispose of surface water (Anglian water) they will allow attenuated flow to the 1 in 30 yr storm event (4.7L/s). Pound lane water sewers are 825m & 975mm	*4.7L/s in any storm event up to the 1 in 30 per developed impermeable area (area A= 46.8 L/s, B= 144.9 L/s) Appx A p 19- Meridian's calcs.
5.3	States that will use discharge rate of 4.7L/s as is the rate that Anglian has allowed into drainage system.	Anglian's decision is based on Meridian's data?
5.4	2 discharge points to drain site. Area A to sewer on Pound Lane Area B outfall to cross private land. Anglian to requisite or private negotiation. Compensation only for disruption on 3 rd party and during work.	Can't cope now. An assumption based on contour info, not evidence based. Have they approached anyone yet?
5.5	Anglian states discharge limited to 4.7L/s Estimates storage needs. Allows 30% increase for climate change	? Based on Meridan's data. Estimated storage needs. Not accurate.
5.6	area A storage 2898 m ³ area B storage 9193m ³	Uses an average.
5.7	Drawing 43072-C-015 shows lagoons in area A & B States A&B correspond to open space areas A & H on masterplan map 1480-100 Suggests that attenuation lagoons be adopted by Local Authority	Adjacent to residences in Katherine Rd & Osborne Rd respectively. Additionally, close to proposed development residences. Query pose H&S risk to young children. Incorrect. Area A relates to area F on masterplan, not to H as stated. Misdirection. Additional cost burden for Local Authority
6.3	No ready provision for SuDS- proposes lagoons, swales & sewer. States site not at risk of fluvial flooding	No mention of pluvial flooding which site suffers from. GEMCO (appdx C) email states that water

		doesn't go anywhere (trial pit & borehole soakage tests).
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Appendix A

Area A 6.25 Ha, impermeable value of 2.45 Ha Existing peak greenfield runoff rates in L/s			
	Meridian's calc	Wallingford calc	
	At 100% (site discharge)		% difference between estimates
1 in 1 year storm event	17.6 L/s	21.9 L/s	+24.4%
1 in 30	46.8 L/s	58.45 L/s	+24.8%
1 in 100	65.9 L/s	81.07 L/s	+23%

Area B 19.34 Ha, impermeable value of 7.2 Ha Existing peak greenfield runoff rates in L/s			
	Meridian's calc	Wallingford calc	
	100% (site discharge)		
1 in 1 year storm event	54.3 L/s	66.84 L/s	+23%
1 in 30	144.9 L/s	180.87 L/s	+24.8%
1 in 100	204.0 L/s	250.86 L/s	+22.97%

Appendix B

Greenfield Runoff Estimation for Sites

Site name: LCH Fm **AREA A**

Site location: bgnb

Site coordinates

Latitude: 51.57318 deg N

Longitude: 0.52770 deg E

Reference:

Date:

This is an estimation of the greenfield runoff rate limits that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments" (2005), W5-074/A/TR1/1 rev. D and the CIRIA SUDS Manual (2007). It is not to be used for detailed design of drainage systems. It is recommended that detailed design of any drainage scheme uses hydraulic modelling software to finalise runoff requirements before construction takes place.

• **Site Characteristics:**

Total site area	6.25	ha
Significant public open space		ha
Area positively drained	6.25	ha

• **Methodology:**

Greenfield runoff method IH 124

• **Hydrological Characteristics:**

	Automatic values	Editable values	
HOST	25	25	
SPRHOST	0.496	0.496	
SAAR	547	549	mm
M5-60 Rainfall Depth	20	20	mm
'r' Ratio M5-60/M5-2 day	0.4	0.4	
FEH/FSR conversion factor	0.78	0.78	
Hydrological region	6	6	
Growth curve factor: 1 year	0.85	0.85	
Growth curve factor: 30 year	2.3	2.3	
Growth curve factor: 100 year	3.19	3.19	

• **Greenfield Runoff Rates:**

Qbar	25.41	25.52	l/s
1 in 1 year	21.6	21.69	l/s
1 in 30 years	58.45	58.7	l/s
1 in 100 years	81.07	81.41	l/s

Please note that a minimum flow of 5 l/s applies to any site

HR Wallingford Ltd, the Environment Agency and any local authority are not liable for the performance of a drainage scheme which is based upon the output of this report.

Greenfield Runoff Estimation for Sites

Site name: LCH Fm
Site location: bgnb **AREA B**
Site coordinates
Latitude: 51.57318 deg N
Longitude: 0.52770 deg E

Reference:

Date:

This is an estimation of the greenfield runoff rate limits that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments" (2005), W5-074/A/TR1/1 rev. D and the CIRIA SUDS Manual (2007). It is not to be used for detailed design of drainage systems. It is recommended that detailed design of any drainage scheme uses hydraulic modelling software to finalise runoff requirements before construction takes place.

• **Site Characteristics:**

Total site area	19.34	ha
Significant public open space		ha
Area positively drained	19.34	ha

• **Methodology:**

Greenfield runoff method IH 124

• **Hydrological Characteristics:**

	Automatic values	Editable values	
HOST	25	25	
SPRHOST	0.496	0.496	
SAAR	547	549	mm
M5-60 Rainfall Depth	20	20	mm
'r' Ratio M5-60/M5-2 day	0.4	0.4	
FEH/FSR conversion factor	0.78	0.78	
Hydrological region	6	6	
Growth curve factor: 1 year	0.85	0.85	
Growth curve factor: 30 year	2.3	2.3	
Growth curve factor: 100 year	3.19	3.19	

• **Greenfield Runoff Rates:**

Qbar	78.64	78.97	l/s
1 in 1 year	66.84	67.13	l/s
1 in 30 years	180.87	181.64	l/s
1 in 100 years	250.86	251.93	l/s

Please note that a minimum flow of 5 l/s applies to any site

[HR Wallingford Ltd](#), the Environment Agency and any local authority are not liable for the performance of a drainage scheme which is based upon the output of this report.

Appendix C

Summary Points

1. No discussion of pluvial (rain) flooding, and no recognition of the tributary to the R.Crouch which is under Pound Lane.
2. Considers ground water to be insignificant and that the site copes adequately with surface water. Adequate is not defined.
3. SAAR (Standard average annual rainfall)? The values used are for up to 1970. Is this the latest data the industry has to offer? Old data does not reflect current trends.
4. Quoted run off rates using Micro Drainage software are 24% lower than those using Wallingford on line tool. This is an unacceptably large variation in interpretation using essentially the same data.
5. The report advised to mitigate to protect ground water from contamination, but does not say how. Mentions caution in the use of swales and states that 80-90% of heavy metals can be removed by them. Gives no mention of the life expectancy and ongoing costs of cleaning/maintenance.
6. No mention of pumping stations and whether they will cope with additional rainwater. Nor of the North Benfleet Brook and whether or not this will be affected. In 1958 flooding from the brook caused flooding in 54 houses in Bowers Gifford and surrounding area.
7. States that Anglian Water will allow discharges up to 4.7 L/s but it is not clear where this figure comes from. Is Anglian's decision based on Meridian's data?
8. Rainwater sewer routes based on contour information, so assumes it's alright. Need to cross private land.
9. Rainwater storage is an estimate based on averages. Hardly scientific.
10. Lagoons are shown close to residences in Osborne Rd and Katherine Rd. What if these overflowed? With no water circulation could they become stagnant? They are also close to proposed development residences. A probable risk to children. Suggests that attenuation lagoons be adopted by Local Authority therefore an additional cost burden for Local Authority. Error in document where states Area A relates to area F on the masterplan, and **not to H** as stated in the report.
11. Report seems to rely on national data, map data (document searches) making assumptions and estimates rather than use of actual empirical data from the site. In doing so it is vague and lacks substance, fails to really answer the question of whether current runoff will be the same (not currently acceptable as local roads and properties are subject to pluvial flooding). It does not indicate where runoff for the undeveloped areas (public open spaces AA, CC, BB, DD and H of masterplan doc 1480 100) currently goes and, after the development of areas A and B, will go once the developed ground becomes impermeable.