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Mr. K. Williams - Technical Director
Macbryde Homes Limited
Macbryde House
28 St Asaph Business Park
St Asaph
Denbighshire
LL17 0LJ

Our Ref: 30118/SRG

27th January 2015

Dear Kevin,

GATEACRE GARDEN CENTRE
ACREFIELD ROAD, LIVERPOOL
DRAINAGE STRATEGY & FLOOD RISK

I refer to our recent discussion regarding the above and now have pleasure in detailing the proposed drainage strategy and assessment of flood risk for the proposed site.

Existing Drainage Arrangement

At the present time, the site is occupied by a Garden Centre consisting of a range of buildings, surfaced car park and surfaced plant display area. The site falls in an easterly direction from the access at Acrefield Road to the eastern boundary at Glenville Close. The site has a total fall of approximately 8m from 48.26m at the access to 40.21m at the eastern boundary; there is a retaining wall, approximately 1m in height on the boundary to the rear of footpath on Glenville Close where the level is 39.10m.

The only foul drainage on the site at present is a single toilet block located in the north east corner of the site and it is understood there is a private foul connection into the drainage of the adjacent property in Glenville Close, number 21. This connection could not be verified on site due to lack of access but this drain is not considered suitable for the scale of development proposed on the site.

As described above, the site is virtually all hard surfaced and all falls to the eastern boundary. Running along the eastern boundary within the garden centre is a channel that falls to a gully outlet connected to the existing public surface water sewer in Glenville Close at manhole 5501. The flow has been observed during a rainfall event and found to increase quickly into manhole 5501; suggesting a small, steeply sloping catchment contributing to the upstream drainage. The connection from the site is presently a 150mm dia. pipe but from manhole 5501 downstream the public sewer is 225mm dia.

The present impermeable are of the site has been assessed as approximately 0.515ha and produces flows of 48.4, 118.7 and 127.6l/s in the 1, 30 and 100 year events.

Proposed Drainage Arrangement

It is proposed the drainage for the site will be offered for adoption as public sewers under a S104 Agreement with United Utilities.

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Constructionline Register No: 45848

As detailed above, there is no existing foul drain serving the site that will be suitable for the proposed sewers. Examination of the Sewer Records (copy attached) also indicates there is no public foul or combined sewer in Glenville Close adjacent to the site.

Cont.
The nearest foul sewer available for a gravity connection from the site is at manhole 6502, located in Glenville Close adjacent to number 18. A topographical survey has been undertaken that indicates it is possible to make a gravity connection from the site to manhole 6502. There is a short section of Glenville Close that is quite low and it will be necessary for the proposed foul sewer to have reduced cover and concrete protection; this is preferable to the need for a pumping station.

It is proposed to connect the site surface water sewers to manhole 5501 in Glenville Close via a 225mm dia surface water sewer. The impermeable area on the proposed development is **REDUCED** from 0.515ha to approximately 0.310ha and the flows have been calculated as 35.6, 106.5 and 169.3l/s in the 1, 30 and 100 year +30% return period events. The overall impermeable areas have therefore been reduced by approximately 40%; it is usual for flows from existing brownfield sites to be reduced by 30% and this will be considered in the final drainage design.

Flood Risk Assessment

The site is less than 1ha in area and a full Flood Risk Assessment is not required for the development but the forms of flooding have been considered and the risk to the site is considered LOW.

Streams and Rivers, Coastal or Estuarine
Reference to the Environment Agency flood risk map indicates the site is located in Flood Zone 1 with a low annual probability of flooding from rivers or the sea (0.1% or 1 in 1000). There are no watercourses in the vicinity of the site.

Groundwater
As described above, there is a total fall of over 8m on the site from west to east and it is proposed that properties will be located generally above existing ground levels; it is unlikely, therefore, that groundwater could rise to a level that would pose a risk to the development.

Sewers and Highway Drains
There is a 375mm dia combined sewer in Acrefield Road that is the only sewer posing a possible risk to the site from surcharge. The development layout provides a central road through the site with a clear easement left to connect the site sewers to the sewers in Glenville Close. Floor levels of the properties are all above the road level and there is therefore a natural overland flow route should there be any surcharge of the Acrefield Road sewer.

Surface Water
As described above, the proposed road for the development is available as an overland flood route but the risk of surface water flooding is considered small as Acrefield Road has a highway drainage system that will cut off flows from any higher ground to the west.

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Cont.
Infrastructure Failure
There are no artificial sources of flooding situated above the level of the site.

I trust the above is satisfactory for your present needs.

Yours sincerely,

Simon R. Gough
Director

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4604
46.0m
4608
4602
300
4504
The Brae
4508
4503
4501
4505
Hillside
Atalaya
The Brae
Garden Centre
21
5502
5501
225
27
28
5
6
11
225
ACREFIELD ROAD
Garden Centre
4507
48.8m
Newhome
Little Acres
375 VC
Cherryvale
fordsburn
4407
Sandfield
4404
Treeside
5503
HUNTS CROSS AVENUE
225
LIVERPOOL
5504
150
5505
5401
150
225
GLENVILLE CLOSE
6501
6502
150
225
150
225
6505
6506
9
4
2
14
12
GLENVILLE