

**Cambria Automobiles**  
**Plot 4100, Hatfield Business Park**  
**Proposed Drainage Strategy**

This document is to be read in conjunction with Eastwood & Partners Flood Risk Assessment.

The proposed development is the construction of two car dealership buildings and a valet building with associated display, customer and storage parking. A copy of the proposed site layout, SRA Architects Drg. No. 3280/030F is appended.

**Surface Water Drainage**

The site is part of a larger development which has an existing site wide drainage strategy by Baynham Meikle Partnership for surface water disposal. This involves the use of large diameter collector/storage pipes running beneath the site roads, conveying run-off to a pumping station to the south east where it is raised into an attenuation pond, before final discharge to an existing watercourse. Each plot within the development has a restricted discharge into this drainage system. A copy of the schematic storm drainage layout, The Baynham Meikle Partnership Drg. No. 6763/102G is appended.

The area of the current development is partly within Plots 4000A and 4500 on this drawing. The remainder of the area bounded by Hatfield Avenue, Gypsy Moth Avenue and Mosquito Way has been developed for Arla Foods. The total permitted discharge for Plots 4000A, 4000B, 4500 and 4600 is shown as 570 litres/second (6 outfalls at 95 litres/second each). Record drawings for the Arla Foods development show that the discharge from the site has been restricted to 455 litres/second, (allocated by splitting the total permitted discharge rate of 570 litres/second proportionately between the two sites). This gives a permitted discharge rate of 115 litres/second for the current proposed car dealership development.

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Two 375 dia. connections from the main collector drains have been constructed into the development site, one from Mosquito Way and one from Gypsy Moth Avenue, as shown on the appended sheet 41753/SW1. It is therefore proposed that surface water from the development will discharge to these two points with flow restrictions of 55 litres/second and 60 litres/second respectively. The restriction will be provided by the use of Hydrobrake flow control devices.

The appended sheet 41753/SW2 shows the contributing areas to each of the discharge points. Area A discharges to the connection from Mosquito Way and Area B discharges to the connection from Gypsy Moth Avenue.

Attenuated surface water volumes will be stored in proprietary below ground voided units sized to prevent off-site flooding for all rainfall events up to and including 1 in 100 year return period plus an allowance of 30% for climate change. Some above ground storage in the form of shallow surface ponding may be provided subject to detail level design and approval from the business operators. The appended calculation sheets 41753/SW3 & SW4 show that the calculated storage volumes required for the two systems are 147 m<sup>3</sup> and 227 m<sup>3</sup> respectively.

Notwithstanding the above, percolation testing has been undertaken by RSK Environmental Ltd. as part of a Geotechnical and Geoenvironmental Site Assessment. Testing was carried out in five locations, but due to the length of time taken for the pits to drain, this testing was limited. As a result, only one test was carried out in four of the locations and two tests carried out in the remaining location. An extract from the report is appended, showing the infiltration rates obtained, the lowest being  $4.78 \times 10^{-6}$ . This is not considered to be a figure where soakaways would be the preferred option.

The report also records that the underlying site ground conditions consists of made ground up to depths of 1.5m, over natural ground of sands, gravels and clays (Lowerstoft Formation), over chalk sub-strata. Again, soakaways are not considered appropriate for use with these ground conditions, due to the referenced potential risks of dissolution features.

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In accordance with good practice, SuDS methods have been considered for the disposal and retention of surface water run-off from the development. These methods are split in to four basic types and their suitability for this development is discussed below:-

#### Source control methods

Green roofs are not practical due to the large span lightweight roof construction necessary for this type of development.

Rainwater harvesting is not practical as the volume of water that would be re-used would only be a very small percentage of the run-off generated from such a large site.

Permeable paving is not practical due to the poor infiltration rate obtained by the percolation testing and the associated unacceptable potential risk of dissolution of the underlying strata. Furthermore, the use of permeable block paving within car dealership developments is not practical, primarily due the logistics of moving the large number of vehicles which are permanently parked within the site in order to undertake the regular maintenance necessary.

#### Infiltration methods

Soakaways, filter drains and infiltration basins are not suitable due to the poor infiltration rate obtained by the percolation testing.

#### Conveyance methods

Swales are not suitable due to the poor infiltration rate obtained by the percolation testing and the site development density.

#### Detention methods

Sub-surface storage is to be provided in proprietary below ground voided storage units. Detention basins, ponds and wetland features are not practical due to the site development density.

It should be noted that the overall wider development drainage system ultimately discharges to a detention basin (sized accordingly for the overall development) and subsequently into a watercourse, thus following SuDS principles.

All surface water run-off will be passed through a Class 1 by-pass interceptor with alarm before being discharged from the site.

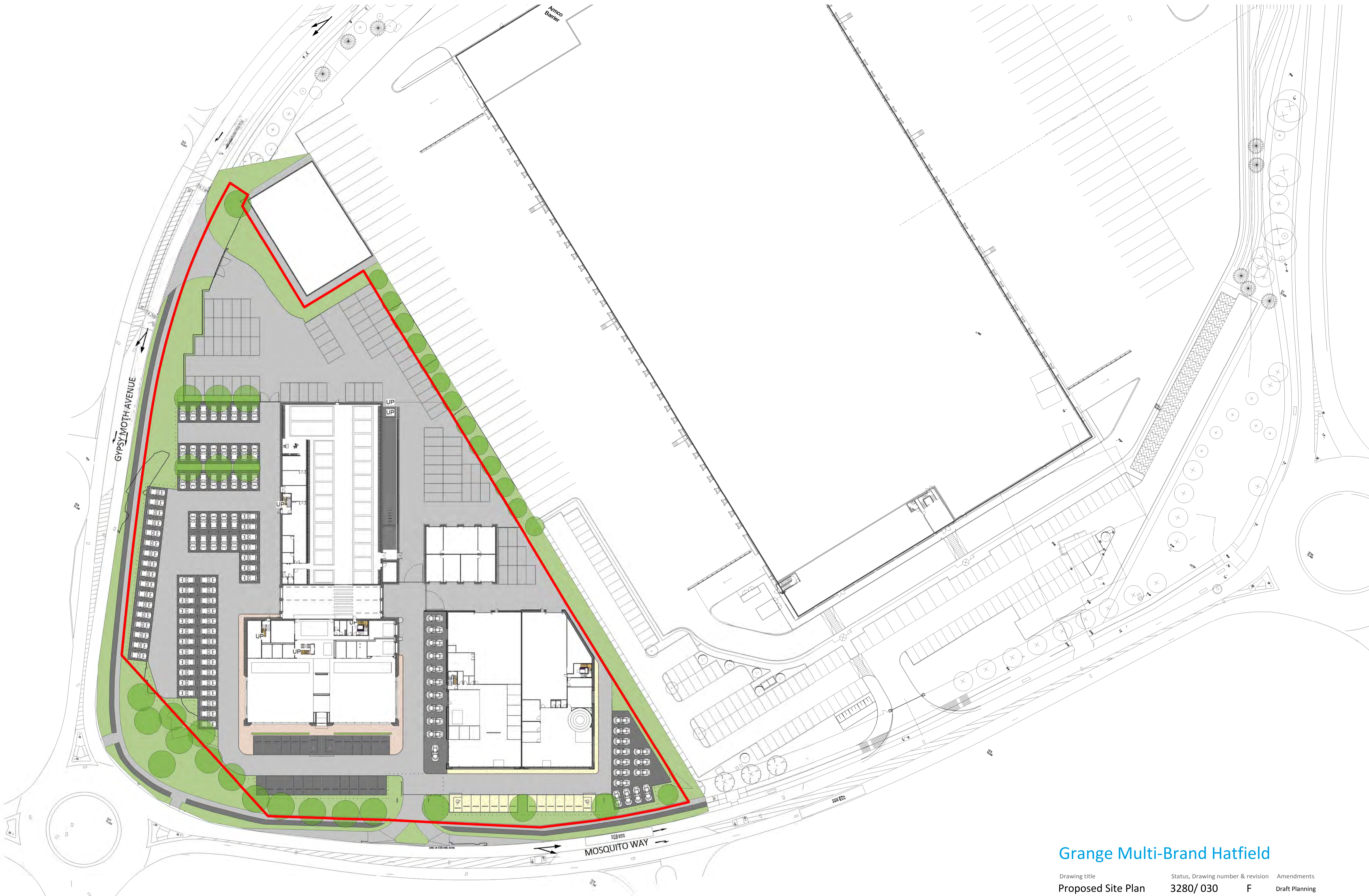
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## **Foul Drainage**

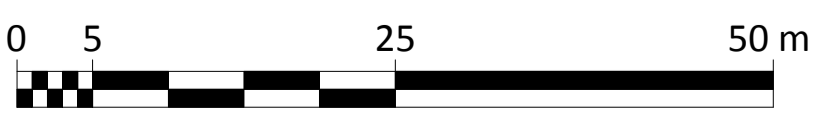
The site is part of a wider development which has an existing site wide drainage strategy for foul drainage. This involves the use of collector pipes with the site access roads which convey foul discharges to a pumping station off Gypsy Moth Avenue.

Two connections from the collector drains have been constructed into the development site, one from Gypsy Moth Avenue and one from Mosquito Way. It is therefore proposed that foul drainage from the development will discharge to these two points.

The external drainage layout Drg. No. 41753/151A is appended showing the proposed foul and surface water drainage proposals in accordance with this strategy.



**1 Proposed Site Plan**  
1 : 500



## Grange Multi-Brand Hatfield

Drawing title	Status, Drawing number & revision	Amendments			
<b>Proposed Site Plan</b>	<b>3280/ 030 F</b>	<b>Draft Planning</b>			
Drawn by	Checked by	A1 Scale	A3 Scale	Date	Status
EM	JA	1 : 500		01/09/2017 17:11:19	Draft Planning

**SRA | ARCHITECTS**

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