

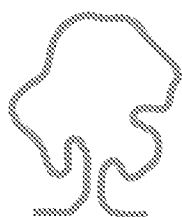
SPRINGFIELD GOSPEL TRUST



GOSPEL HALL CAR PARK EXTENSION, NYTON ROAD, ALDINGBOURNE

Drainage Design Update

November 2018

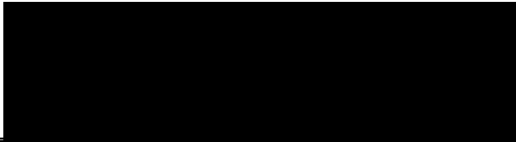


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Environmental Assessment Services Ltd

London Road, Hickstead, Haywards Heath, West Sussex RH17 5LZ UK

REPORT DATA SHEET

Requirement	Data
Report Reference	SGT/Aldingbourne/DU
Date	November 2018
Client	Springfield Gospel Trust
Report type	Drainage Design Update
Purpose	Planning Condition
Revisions	
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1 THE SITE & PROPOSED DEVELOPMENT

- 1.1 The proposed area to be paved and drained to extend the car parking comprises an overflow car park area, presently laid to grass with plastic grid reinforcement, located to the north of the existing car park, and an area presently laid to grass, located to the west of the existing car park. The Ordnance Survey (OS) map reference for the site is SU 9241 0619. The site elevation is approximately +11 m OD. The additional area of car park to be drained is 1600 m².
- 1.2 The existing car park area drains to soakaway. Whilst this has worked successfully for over ten years, it is unlikely to have adequate capacity to allow the extended car parking to be drained into it.

2. PROPOSED DRAINAGE

- 2.1 A number of drainage options have been considered for the site. Drainage to soakaway is the preferred option.
- 2.2 Drainage to soakaway has already been successful at the site. The site lies on a considerable depth (probably around 8 m) of Pleistocene Valley Gravel, which exhibits practicable (if variable) infiltration rates.
- 2.3 There was a concern that groundwater levels at the site may be close to the surface during the winter months. In the absence of long term monitoring data, it was decided that the soakaway should be as shallow as practicable.
- 2.4 A suitable form of shallow soakaway would be a drainage blanket laid directly beneath a permeable paved car park formation. The total depth of the construction would be around 0.5 m.
- 2.5 Additional percolation testing was carried out at a depth of 0.5 m across the site. This gave infiltration rates in the range of 5.56×10^{-6} and 9.26×10^{-6} m/s. The lower value was used in the design.
- 2.6 An interceptor may not be necessary where sustainable drainage systems (SuDS) are adopted. Drainage to soakaway is a SuDS system. The nature and use of the car park would suggest that pollution risks are low.

- 2.7 Using the Infiltration Systems Design software, based on the infiltration rate of 5.56×10^{-6} m/s, and including a factor of safety of 5 (to allow for the percolation testing to have been carried out during the summer months), the design was tested for the 1 in 100 year return period event plus 40% climate change allowance. See Appendix A for the output from the Infiltration Systems Design model.
- 2.8 The proposed drainage blanket soakaway is to be made of no-fines 20 – 70 mm stone or recycled crushed concrete, wrapped in permeable geotextile. The construction would be (from top to bottom): permeable paving, permeable paving bedding, permeable geotextile, 280 mm thick drainage blanket permeable geotextile, natural ground. Kerbs and gullies may be used at points where required, with gullies arranged to drain into the drainage blanket soakaway. The drainage blanket will have to be laid under 1400 m² of the 1600 m² additional car park.
- 2.9 **Extreme event**
- 2.9.1 If an extreme storm event overwhelmed the surface water drainage system at the site, and/or if the drainage system were to fail, ground levels would indicate that surface water would run off site to the SSW, as per the present situation.
- 2.10 **Maintenance**
- 2.10.1 The drainage blanket soakaway should require minimal maintenance. In the long term, the performance of the drainage blanket may be restored by excavation of the drainage media, re-screening to remove any silt and replacing in-situ with new permeable geotextile. Any gullies or other similar surface drainage features may be maintained by removal of silt annually, preferably in the winter after most leaf-fall has occurred.

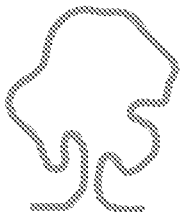
3. CONCLUSIONS

- 3.1 It is proposed to provide additional car parking area at the site by hard paving the existing reinforced grass overflow area on the north side and paving the grassed area on the west side. The proposed additional car park area will require sustainable drainage.
- 3.2 The existing car park, access roads and Gospel Hall roof, are drained to a soakaway located in the southwest corner of the site. This soakaway works satisfactorily and it is proposed to drain the new paved section of the car park to soakaway.
- 3.3 There was a concern that groundwater levels at the site may be close to the surface during the winter months. It was decided that the soakaway should be as shallow as practicable. A suitable form of shallow soakaway will be a no-fines stone drainage blanket laid directly beneath a permeable paved car park formation. The total depth of the construction would be around 0.5 m.

- 3.4 The proposed drainage blanket soakaway is to be made of no-fines 20 – 70 mm stone or recycled crushed concrete, wrapped in permeable geotextile. The depth of the blanket will be not less than 280 mm and it will be laid directly under the permeable paving surfacing and paving bedding.



APPENDIX A:
Output from the Infiltration Systems Design model.



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