Our Ref: 16179

10 August 2025

<u>Church Lane Carpark, Bearsted</u>

Project Summary

This project summary has been prepared for Bearsted Parish Council to outline the proposed drainage works to the existing Church Lane carpark to alleviate flooding downstream.

The car park has a tarmac and chipping surface and falls from west to east. There is a relatively even crossfall, which results in the surface water being directed towards the kerbs along the lower (eastern) end of the car park. Some of these kerbs have been removed in a hit and miss pattern, which allows surface runoff to make its way to the grassed verges. The car park is served by a channel drain across the entrance, but this has been found to be poorly maintained and with no sump unit for silt collection. There is anecdotal mention of there being a rubble soakaway adjacent the channel drain, but no evidence is visible on site in the way of access covers for maintenance.

There was a previous scheme for more extensive drainage to be installed at the time of the surfacing works, but this was not implemented.

Current car park extent of surfacing (Google, 2024)

Continued /

Soil Conditions

Soil testing has been undertaken at three locations at the eastern end of the site, and this has found Made Ground to a depth of between 0.50m and 0.65m, and typically comprising slightly gravelly, locally silty or sandy clay beneath a layer of clayey topsoil. Gravel was of flint, clay tile, brick, limestone and/or shell fragments. Beneath the Made Ground, the expected Folkestone Formation was encountered. This typically comprises a series of firm to stiff, become stiff CLAY layers which in their upper part were typically sandy or silty. The upper part of the Folkestone Formation in WS1 was soft. WS2 encountered orange silty, very clayey SAND between 0.50m and 1.10m. All of the boreholes were terminated a depth of approximately 3.00m. All boreholes remained dry and stable whilst open.

Three infiltration tests were performed. All boreholes demonstrated a fairly slow rate of soakage, with the water level not falling enough in any of the tests for them to be in full compliance with the method set out in BRE365. As a result of this, the soakage rates have been calculated for the fall in water level which actually occurred. The slow soakage also prevented any repeat tests being carried out.

The calculated soakage rates were as follows:
- WS1: 8.5×10^{-8}m/s (based on first 55 minutes of test only)
- WS2: 1.3×10^{-7}m/s
- WS3: 1.5×10^{-7}m/s

These results demonstrate poor soakage rates, which will limit the performance of any new soakaways.

Proposed Drainage Works

As a general rule SuDS techniques should be utilised wherever possible to discharge surface water runoff. A drainage hierarchy is detailed in Ciria 753 The SuDS Manual. Assessing these in turn starting with the most preferred, the soils on site are slightly permeable, so there is an opportunity for using infiltration methods into the subsoils. The design solution is therefore to send surface water into a new below ground soakaway system where it can then infiltrate into the underlying subsoils. Infiltration testing has been undertaken in a series of trial pits which have been described above.
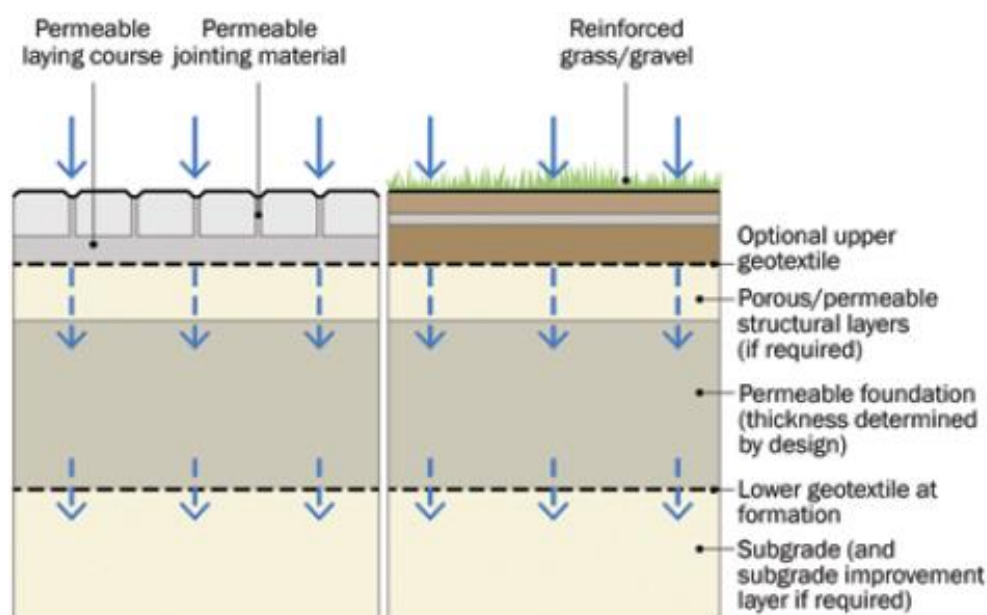
Source: CIRIA 753 SuDS Manual

A solution utilising crates as part of a permeable pavement system has been assessed, as it decreases the volume of excavation significantly over traditional gravel permeable pavements.

Whilst this would provide many benefits, due to the infiltration rates the carpark would require significant rebuilding, which is well in excess of the funding available. Therefore a grassed area over crate soakaways have been adopted as the preferred design as it will help deal with the short duration 'flash' storm events. Replacing and upsizing the existing channel drainage, as well as reprofiling the verges, will also have a significant impact upon the operation of the system.

CRATE SOAKAWAY DETAIL
SCALE 1:20
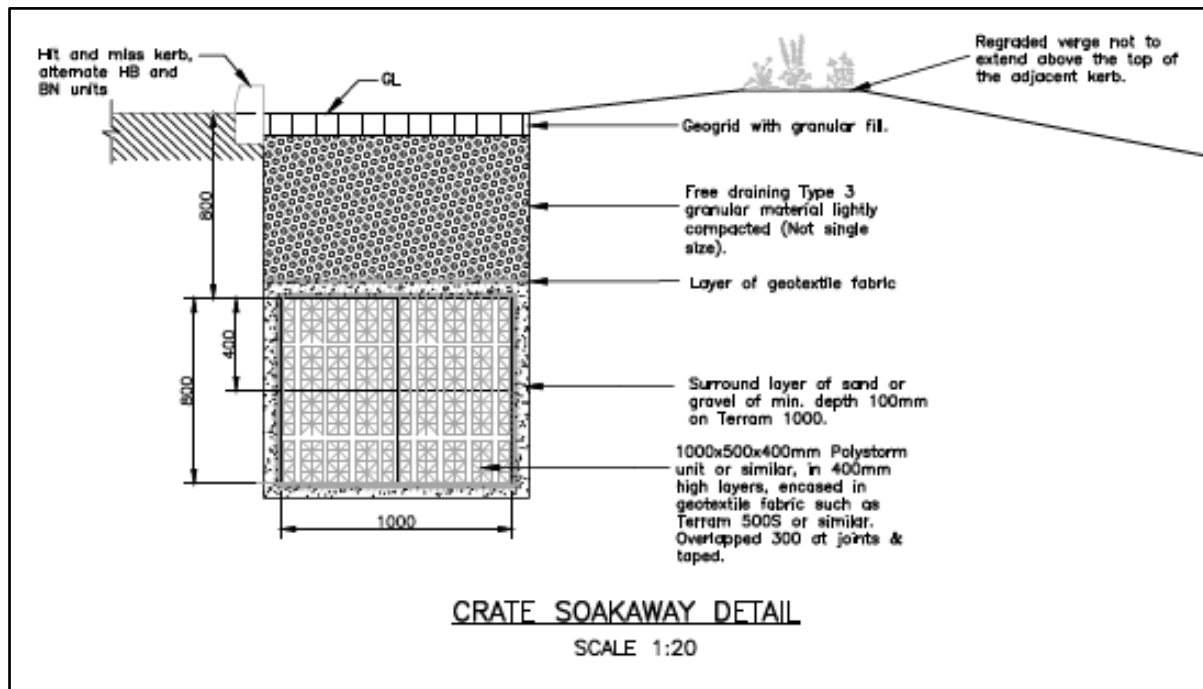
Due to the limited unallocated space within the carpark area and for safety reasons, surface elements such as ponds and swales are not feasible.

It should be noted that due to the low infiltration rates, the surface water system will have limited capacity to deal with larger storm events, particularly if these are long duration or occur back-to-back. It will however provide a significant improvement over the current situation.

As noted above, the existing channel drain will need to be replaced with a wider unit of greater capacity, and is to be installed with a sump to capture silt and allow for easy cleaning/maintenance to prevent blockage.

CHANNEL DRAIN DETAIL
SCALE 1:20

SUMP UNIT
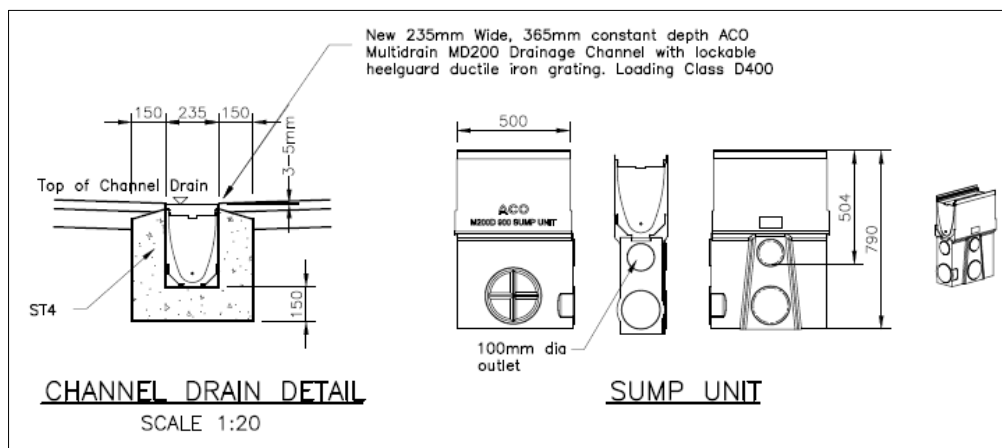
The channel drain will discharge to a new crate soakaway to replace the existing rubble soakaway located adjacent the carpark entrance. Each of the three soakaways will be provided with an access module to allow for inspection and maintenance activities. Should there be an accumulation of silt a gully sucker unit can be used for cleaning.

The performance of any infiltration devices will degrade over time. This process can be greatly slowed by the inclusion of features which minimise the silt content of water and enable regular cleaning. Items such as channel drains should undergo regular cleaning and maintenance checking, to ensure their effectiveness over their design life.

CRATE SOAKAWAY TYPICAL SECTION (1200m HEIGHT)

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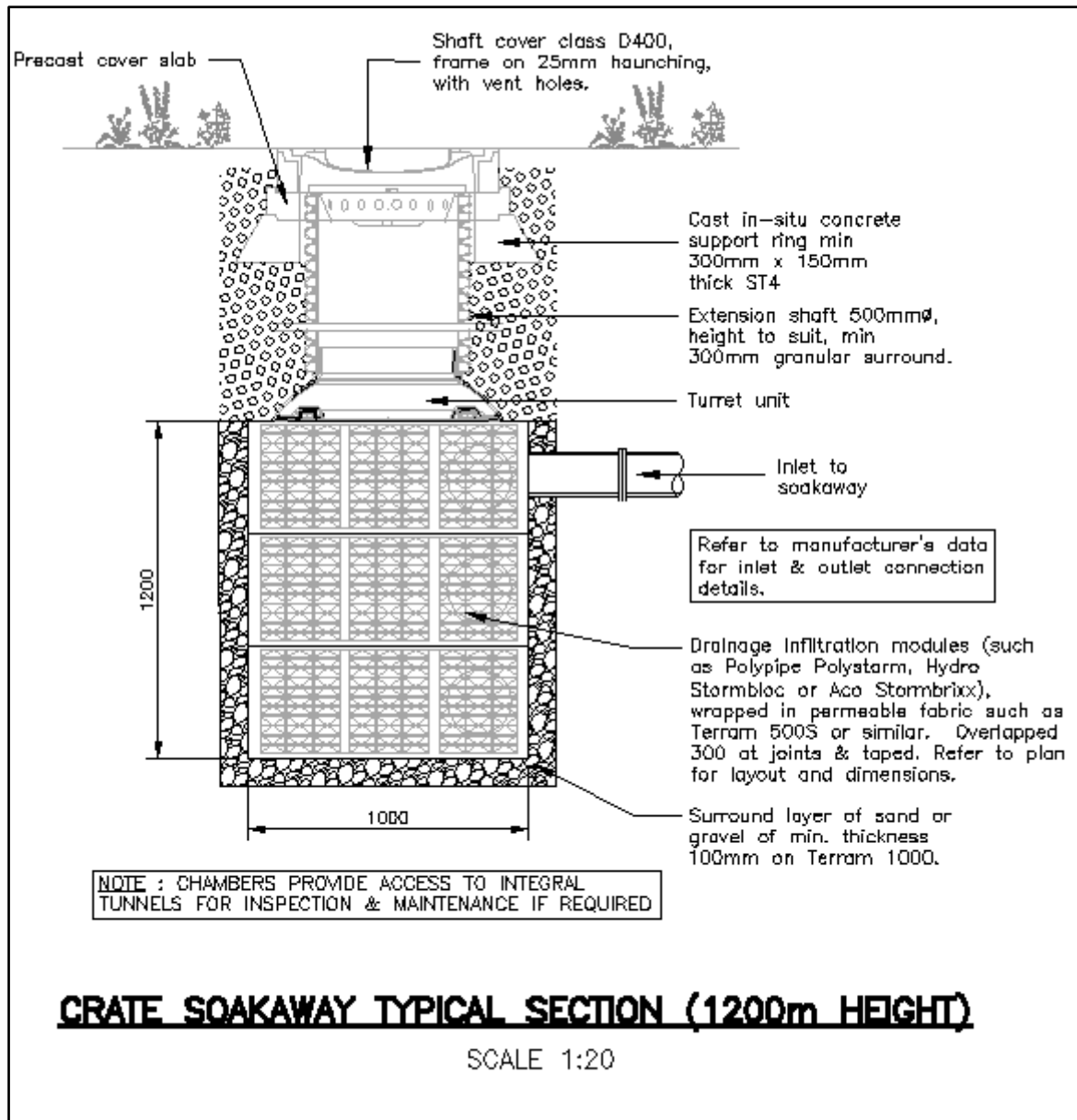
It should be noted that there are cables located within the vicinity of the works, and these will likely require diversion to allow construction of the works.

We trust that the above is clear, but please do not hesitate to contact us if you have any queries.

Yours sincerely

For and on behalf of Evans & Langford