



Willow Cottage, Herne Lane, Rustington, West Sussex BN16 3EE

New Residential Development

1-4 Holm Oaks

Burndell Road, Yapton

Arundel West Sussex BN18 0GB

Surface Water Management and Maintenance Plan

On behalf of

Jeremy Naphthine

August 2017
1646-M1

1 – 4 HOLM OAKS
BURNDILL ROAD, YAPTON
ARUNDEL WEST SUSSEX BN18 0GB

NEW RESEDENTIAL DEVELOPMENT

Surface Water Management and Maintenance Plan

1. Introduction

- 1.1 This report has been prepared by Robert Clark Associates Ltd on behalf of Jeremy Naphine in order to satisfy Condition 3 of Planning Consent F/15/16/PL for a development of 4No. dwellings on land at Northwood House, Burndell Road, Yapton, which now has the postal address of 1 – 4 Holm Oaks.
- 1.2 A surface water drainage scheme for the site has been designed and installed that provides for run-off from impermeable areas on the site to drain to ground via formal concrete block permeable paving and concrete ring and geocellular soakaways. These structures will allow all run-off from rainfall up to and including the 1 in 100-year return period event plus an allowance for climate change to be stored and to discharge gradually into the subsoil. A Drainage Layout Plan, drawing No. 1647/DS1.1 is included with this report.
- 1.3 This report provides details of the maintenance and management of the surface water drainage system required to satisfy the planning condition and to ensure that the system operates efficiently.

2. Surface Water Maintenance Plan

- 2.1 On completion of construction, all below ground drainage will be cleansed by high pressure water jetting to remove any building debris. A CCTV survey will then be carried out to check pipework for correct line, level and integrity any defects remedied.

- 2.2 It is recommended that the following inspection and maintenance work is carried out:

Permeable Paving:	inspect annually, de-weed, suction sweep and fill joints with grit as required
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Silt trap manholes:	inspect annually and de-silt as required
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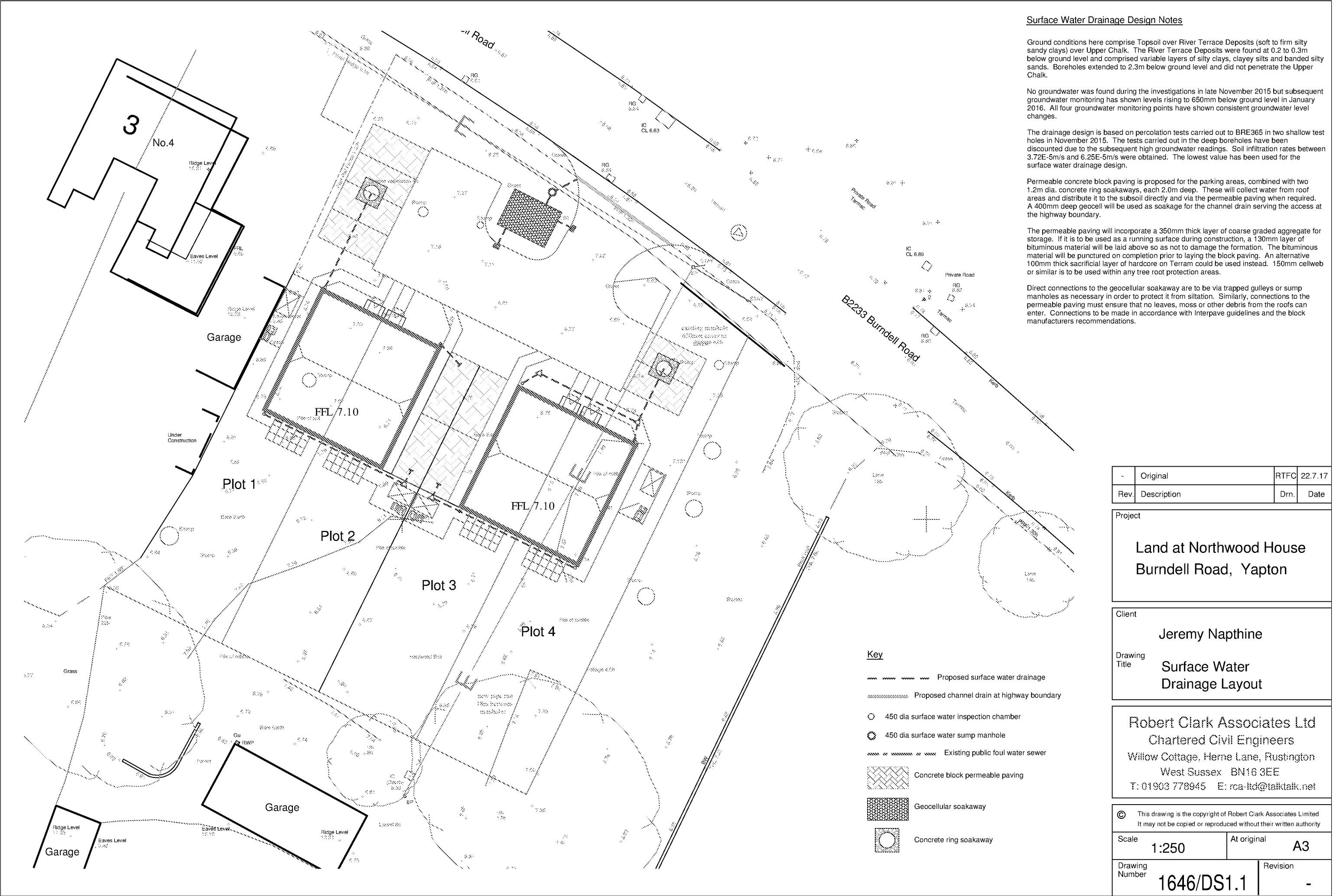
Concrete ring soakaways:	inspect annually, and de-silt as required
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Geocellular soakaways:	no maintenance is possible nor should be required if upstream silt traps and gutter leaf traps are maintained.
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Road gullies:	inspect annually and de-silt as required
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- 2.3 After an initial period of 12 months, during which the developer, Salt Earth Ltd, will be responsible for maintaining the system and remedying any defects, the shared drainage system will be managed and maintained jointly by the residents at their expense.
- 2.4 Individual property owners will be responsible for the maintenance of those parts of the private drainage system that serves only their own property up to the connection with the shared surface water drainage network.
- 2.5 It is likely that the permeable paving and the soakaways will become less efficient with time due to fine silt entering the system and eventually get to a stage when major remedial works are required. When excessive or prolonged ponding of surface water is occurring, the various parts of the system should be examined in order to identify the problems. The soakage structures are wrapped in geotextile to protect them from silt entering the system and remedial works would comprise excavation and removal of the structure and the geotextile, replacement with new geotextile and rebuilding of the structure with new or refurbished materials.

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Surface Water Drainage Design Notes

Ground conditions here comprise Topsoil over River Terrace Deposits (soft to firm silty sandy clays) over Upper Chalk. The River Terrace Deposits were found at 0.2 to 0.3m below ground level and comprised variable layers of silty clays, clayey silts and banded silty sands. Boreholes extended to 2.3m below ground level and did not penetrate the Upper Chalk.

No groundwater was found during the investigations in late November 2015 but subsequent groundwater monitoring has shown levels rising to 650mm below ground level in January 2016. All four groundwater monitoring points have shown consistent groundwater level changes.

The drainage design is based on percolation tests carried out to BRE365 in two shallow test holes in November 2015. The tests carried out in the deep boreholes have been discounted due to the subsequent high groundwater readings. Soil infiltration rates between 3.72E-5m/s and 6.25E-5m/s were obtained. The lowest value has been used for the surface water drainage design.

Permeable concrete block paving is proposed for the parking areas, combined with two 1.2m dia. concrete ring soakaways, each 2.0m deep. These will collect water from roof areas and distribute it to the subsoil directly and via the permeable paving when required. A 400mm deep geocell will be used as soakage for the channel drain serving the access at the highway boundary.

The permeable paving will incorporate a 350mm thick layer of coarse graded aggregate for storage. If it is to be used as a running surface during construction, a 130mm layer of bituminous material will be laid above so as not to damage the formation. The bituminous material will be punctured on completion prior to laying the block paving. An alternative 100mm thick sacrificial layer of hardcore on Terram could be used instead. 150mm cellweb or similar is to be used within any tree root protection areas.

Direct connections to the geocellular soakaway are to be via trapped gulleys or sump manholes as necessary in order to protect it from siltation. Similarly, connections to the permeable paving must ensure that no leaves, moss or other debris from the roofs can enter. Connections to be made in accordance with Interpave guidelines and the block manufacturers recommendations.

-	Original	RTFC	22.7.17
Rev.	Description	Drn.	Date

Project

**Land at Northwood House
Burdell Road, Yapton**

Client

Jeremy Napthine

Drawing Title

**Surface Water
Drainage Layout**

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Scale	1:250
At original	A3
Drawing Number	1646/DS1.1
Revision	-