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**LAND AT STAKERS FARM YAPTON –
DRAINAGE AND SUDS MAINTENANCE AND
MANAGEMENT PLAN**

LAND AT STAKERS FARM, YAPTON

**DRAINAGE AND SUDS MAINTENANCE AND MANAGEMENT PLAN
ON BEHALF OF DANDARA LIMITED (SOUTHERN)**

Prepared by

Odyssey

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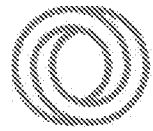
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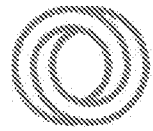
March 2021

**DOCUMENT CONTROL SHEET**

Project Name Land at Stakers Farm, Yapton

Project No. 19-156

Rev	Issue Purpose	Author	Checked	Reviewed	Approved	Date
-	First Issue	CJL	AK	SW	SW	29.07.20
A	Infiltration basin omitted from the design and maintenance plan	AK	SW	SW	SW	09.02.21
B	Further changes to address Arun DC comments	AK	SW	SW	SW	16.03.21
C	Drainage channel further description added	AK	SW	SW	SW	25.03.21

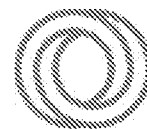


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DRAWINGS

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YAP-130-085	Drainage Layout Sheet 5 of 6
YAP-130-086	Drainage Layout Sheet 6 of 6



1.0 INTRODUCTION

1.1 *Background*

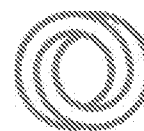
1.1.1 Odyssey has been appointed by Dandara Limited (Southern) to provide a Drainage and SUDS Maintenance and Management Plan, to assist with the items required to discharge Conditions of the planning applications associated with their proposed development at Land at Stakers Farm, Yapton

1.1.2 There are two planning applications relating to this one overall site. Planning reference Y/88/18/OUT which is for the 38 units located to the Northern end of the site and Planning reference Y/44/17/OUT which is for the 70 units located to the Southern end of the site.

1.1.3 Both applications are being brought forward together by Dandara Limited (Southern) and are subject to outline conditions which prevent occupation prior to completion of the approved drainage

1.1.4 This report has been prepared based on the site-specific drainage design by Odyssey.

1.1.5 All roads throughout the development will remain private.



2.0 DRAINAGE OVERVIEW

2.1 Surface Water

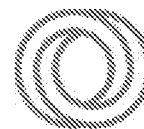
2.1.1 On the Northern end of the overall site (Y/88/18/OUT), there are numerous surface water systems proposed. Main network is serving majority of the roofs and draining to ground via a large infiltration blanket. Some networks serve individual roofs via separate infiltration blankets whilst other networks cater for hard standing areas, roads, footways, parking areas and adjacent roofs via a porous paving network. All roads, parking courts and driveways are being constructed of a permeable block paved construction to allow infiltration to ground across the site. All the drainage serving the Northern application site are contained fully with the application boundary. Refer to drawings YAP-130-081 to 082 for details of the drainage system.

2.1.2 On the southern end of the overall site (Y/44/17/OUT), there are two surface water networks proposed. One serving the roofs only and discharging to a large infiltration blanket. This blanket is located at the edge of the application boundary with part of it oversailing into the northern application site. It should be noted that although the Southern application site is reliant on this basin located partly within a separate application, that the applications are being brought forward by Dandara Limited (Southern) who are therefore in control of both applications. This method has also been approved by the Planners. The other network serves all hard standing areas, roads, footways, parking areas via an interconnected porous paving network, with all roads, parking courts and driveways being constructed of a permeable block paved construction to allow infiltration to ground across the site. It should be noted that there is an area to the south-west of the site where infiltration was poor and so an allowance for this has been made within the neighbouring connected porous paved areas, where infiltration is good. Flows that are unable to infiltrate to ground in the poor infiltration areas will flow via the connected sub-base material or the connection pipework to the porous paved sub-base in areas of good infiltration. Refer to drawings YAP-130-083 to 086 for details of the drainage system.

2.1.3 The surface water networks including the infiltration blankets and permeable road systems are designed to cater for a 1 in 100-year return storm (1% annual probability) plus a climate change allowance of 40%. 10% Urban creep has been allowed for roofs within the design catchments.

2.1.4 Drainage features serving single dwelling only will be the responsibility of an individual householder. Drainage features of any shared Surface Water Drainage System will be the responsibility of and be maintained long term by the appointed Management Company in accordance with the drainage suppliers' requirements/recommendations.

2.1.5 The surface water drainage networks will remain private and be maintained by the Management Company.

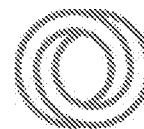


2.2 Foul Water

2.2.1 On the Northern end of the overall site (Y/88/18/OUT), the proposed foul water network is a traditional gravity fed pipe and manhole system, which drains to the west of the site and discharges into the public foul water network in North End Lane. Refer to drawings YAP-130-081 to 082 for details of the drainage system.

2.2.2 On the southern end of the overall site (Y/44/17/OUT), the proposed foul water network is a traditional gravity fed pipe and manhole system draining to a new adoptable foul water pump station in the middle of this site. From the pump station all flows will be pumped along a new rising main to the Northern site, where it will connect into the proposed gravity foul water network before discharging into the public foul sewer network in North End Lane. Refer to drawings YAP-130-083 to 086 for details of the drainage system.

2.2.3 All new foul drainage system will be constructed in accordance with Building Regulations Approved Document H and where possible offered for adoption to Southern Water who will maintain the adoptable system. Any drainage not adopted will be the responsibility of the management company.



3.0 MAINTENANCE AND MANAGEMENT PLAN

3.1 Overview

3.1.1 Outlined below are the inspection and maintenance specifications for the surface water drainage.

3.1.2 The long term Management Company will be: **Trinity Estates**, Vantage Point, 23 Mark Road, Hemel Hempstead, Hertfordshire, HP2 7DN; Tel: 0345 345 1584 Email: info@trinityestates.com Web: www.trinityestates.com.

3.1.3 The following text has been divided into sub-sections which correspond to each relevant SuDS type detailing:

- An explanation of the SuDS component and how it is used;
- The requirements and regularity of SuDS maintenance;
- The requirements and regularity of SuDS inspections;

3.1.4 The actions outlined below are common to all types of surface water drainage, and are the minimum standard of maintenance and inspection; indeed, the Management Company and individual householders (where appropriate) may find it beneficial to vary the maintenance regularity, and to include extra tasks such as

- To record the measurements of sediment levels;
- To make a photographic record of problem areas;
- To identify and clear areas where refuse is a problem;

3.2 *Piped Systems and Manholes*

3.2.1 Drainage systems comprising of pipe runs and manholes are a more conventional method of draining surface water runoff from hard standing areas

3.2.2 Surface water falling on impermeable areas, such as roofs, drain via rain water pipes which convey the water below ground to the main drainage network. Manholes are also provided on the main drainage system at regular intervals, changes in sewer direction, gradient or pipe diameter. This type of drainage system can be accessed from the manholes for routine inspection and maintenance.

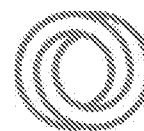
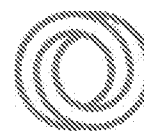


Table 3.1: Pipework, Inspection Chambers, Silt traps, Drainage Channels and Infiltration Blankets Maintenance Activities Frequency

Maintenance Category	Maintenance Activity	Comments	Frequency
Routine Maintenance	Litter and debris removal	Debris removal which may cause risks to performance.	Monthly
	Checking of blockages, cleaning of gutters, drainage channels and silt traps	Silt traps found to be non-functioning/blocked on annual inspection will be noted and cleared at 6 monthly intervals. Recurring blockages should be investigated.	Annually (or as required)
		Cleaning of gutters and drainage channels	Annually (or as required based on inspections)
	Correct Operation	Check for blockages, inspect and identify any areas that are not operating correctly. If required, take corrective action and maintenance.	Monthly for 3 months after installation and then 6 monthly
Infrequent Maintenance	Clear blockages	Cleaning/jetting	As required
	Desilting of silt traps	Remove sediment and debris from silt traps	As required
Corrective Maintenance	Repair	Repair/rehabilitation of system components	As required
Monitoring	Initial Inspection	Initial Inspection	Monthly for 3 months after installation
	Operation Inspection	Inspect for evidence of poor operation. Check silt traps for prolonged surcharge. If required, take corrective action and maintenance.	3-monthly and 48 hours after large storms for silt traps checks
	Clogging Inspection	Inspect silt accumulation rates and establish appropriate cleaning frequencies.	Monthly in the first year and then as required
	Inspection Chambers, Silt traps	Monitor inspection chambers and silt traps.	Annually or as required

3.3 Permeable Paving

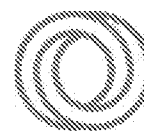
3.3.1 Permeable paving has been proposed on this site to drain the surface water falling on the roads and driveways. The blocks on the surface of the road are of a type which allows surface water to infiltrate through the small gaps and into the sub-base below. This avoids the need for gullies. The thickness of the sub-base has been sized to attenuate the surface water run off for a 1 in 100 year



plus 40% event. The system will be lined with a permeable geotextile, this will allow the surface water to infiltrate into the ground below.

Table 3.2: Permeable Paving Maintenance Activities Frequency

Maintenance Category	Maintenance Activity	Comments	Frequency
Routine Maintenance	Sweeping	Regular removal of silt and other sediments to maintain infiltration capacity.	Minimum of 3 surface sweepings per year 1. End of winter (April) - to collect winter debris 2. Mid-summer (July/August) - to collect dust, flower and grass-type deposits. 3. After autumn leaf fall (November) Or as required based on site specific observations of clogging or manufacturer's recommendations
	Brushing and Vacuuming	Brush and suction cleaner (either lorry-mounted or small precinct sweeper) Care should be taken to adjust vacuum equipment to ensure jointing material is not removed. Any lost material should be replaced.	
Infrequent Maintenance	Landscaping trimming	Stabilise and mow adjacent areas.	As required
	Weeding	Removal of weeds from permeable pavement structure.	As required
Corrective Maintenance	Landscape Remediation	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
	Rutting and Damage Remediation	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users.	As required
	Structural Remediation	Rehabilitation of surface and upper sub-structure	Every 10 to 15 years or as required (if infiltration performance is reduced because of significant clogging)
Monitoring	Initial Inspection	Initial Inspection	Monthly for 3 months after installation
	Operation Inspection	Inspect for evidence of poor operation and/or weed growth. If required, take remedial action.	3-monthly and 48 hours after large storms
	Clogging Inspection	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually



3.4 Drainage Channels

3.4.1 There are drainage channels used across the site.

3.4.2 These are used to receive rainwater downpipes as well as to capture surface water run-off where appropriate.

3.4.3 Rainwater downpipes can be connected into the drainage channel system via a proprietary downpipe adapter or terminate just above drainage channel grating with water falling freely onto the channel grating.

3.4.4 It is imperative that any drainage channels are properly maintained to ensure that rainwater flow within them is not impeded.

3.4.5 When and where necessary drainage channel maintenance activities will be undertaken in accordance with Table 3.1

3.4.6 The design of drainage channels is based on a full-bore condition however no flooding is allowed. Should rainwater start to escape from the channel via the top grating it will be necessary to investigate the issue and necessary corrective maintenance will be undertaken accordingly.

3.4.7 Access into drainage channel is easily facilitated by lifting channel grating thus allowing internal inspection and maintenance action as necessary.

3.5 Infiltration Blankets

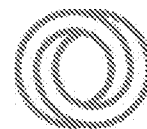
3.5.1 Infiltration blankets are proposed on this site to drain surface water falling directly onto the roofs.

3.5.2 Surface water flow to the blankets will be via linear drains, a piped network and silt trap inspection chambers. All manholes immediately upstream of the blankets will incorporate a silt trap / sump. The above system will offer treatment of surface water prior to entering the blanket.

3.5.3 All pipework up to the inlet into the blanket will be maintained in accordance with Table 3.1.

3.5.4 Main infiltration blankets located underneath public open spaces will incorporate inspection tunnels allowing for an internal survey. These tunnels will be accessed via dedicated inspection chambers and will allow inspection and de-silting (via jetting) should it be necessary.

3.5.5 The inspection frequency will be the same like in table 3.1 for 'Routine Maintenance' category and 'Checking for blockages' activity.



4.0 FINANCIAL MANAGEMENT OF DRAINAGE

4.1 *Management Company*

4.1.1 All drainage not adopted by the Southern Water will be maintained by a long-term Management Company.

4.1.2 Each respective plot purchaser will be responsible for drainage within their private curtilage, with remaining areas being the responsibility of Southern Water and/or Management Company.

4.2 *Financial Management and Maintenance costs*

4.2.1 The Management Company will collect funds through estate charges (monthly, annually or as appropriate) from all residents to cover costs for the ongoing maintenance.

4.2.2 Within the estates charges a contingency pot/sinking fund will accumulate monies which will cover costs for unforeseen maintenance/repairs and the future replacement of any major components at the end of the manufacturers recommended design life.

4.2.3 In the event that the Management Company (or any subsequent Management Company) is no longer able to fulfil its duties, then the responsibility will remain with the residents to form and/or appoint a new Management Company.

DRAWINGS