

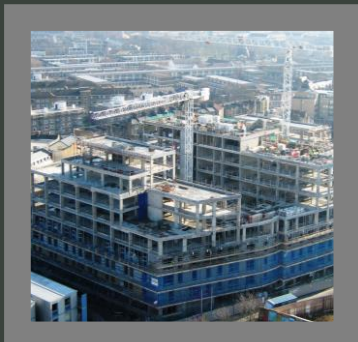


Project Ref: 7476

Ockham Road, East Horsley

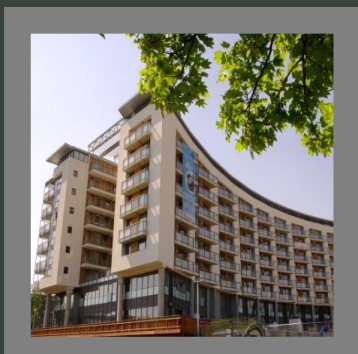


**Drainage and SuDS
Maintenance
Report**



**For
Taylor Wimpey South
Thames**

Dated: Sept 2022



Consulting Structural and Civil Engineers

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Reviewed by: Lee Wilson (Director)

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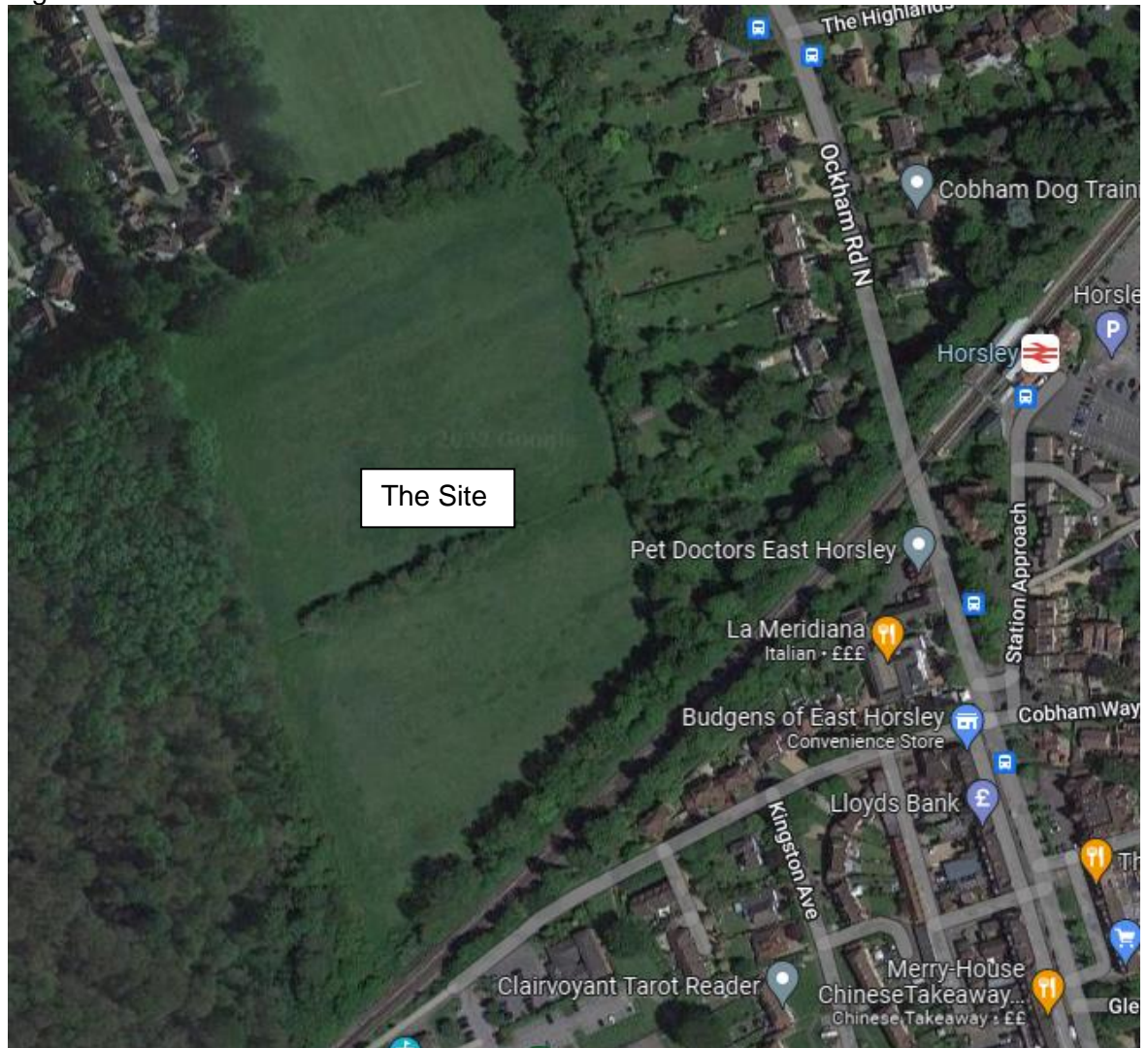
Appendix 2 – Exceedance Plan

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1.0 Introduction and General Comments

- 1.1 Walker Associates Consulting Limited has been commissioned by Taylor Wimpey South Thames to prepare a SuDS maintenance report for their proposed development, located at land to the west of Ockham Road, East Horsley.
- 1.2 The development site received outline planning on 03/12/2019 Ref 19/P/01541 for the demolition of two dwellings and alteration to access to allow for outline consent with all matters reserved (except for means of access from Ockham Road North not to include internal roads) for up to 110 dwellings and up to 99sqm of office floor space (Use Class B1a), open space, sustainable urban drainage system and associated landscaping, infrastructure and earthwork's at Lollesworth Fields, Ockham Road North, East Horsley(Resubmission of 19/P/00634). With a subsequent reserved matters approval on the 9/9/2022 Ref21/P/02394.

Fig 1 Site location



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1.3 This report relates to the clearance of Condition 8 (Part d and e) of the outline planning approval which reads as follows:-

8. The development hereby permitted shall not commence until details of the design surface water drainage scheme have been submitted to and approved in writing by the planning authority, those details should be in accordance with Flood Risk Assessment & Surface Water Management Strategy – Revision 1, pba part of Stantec, March 2019, Project reference: 34211, Document reference: 4003/FRA. The design must satisfy the SuDS Hierarchy and be compliant with the national Non-Statutory Technical Standards for SuDS, NPPF and Ministerial Statement on SuDS. The required drainage details shall include:.

- a) The results of infiltration testing completed in accordance with BRE Digest: 365 and confirmation of groundwater levels.
- b) Evidence that the proposed final solution will effectively manage the 1 in 30 & 1 in 100 (+40% allowance for climate change) storm events and 10% allowance for urban creep, during all stages of the development (Pre, Post and during), associated discharge rates and storage volumes shall be provided using a maximum discharge rate of 4.2 l/s/ha applied to the positively drained areas of the site only.
- c) Detailed drainage design drawings and calculations to include: a finalised drainage layout detailing the location of drainage elements, pipe diameters, levels, and long and cross sections of each element including details of any flow restrictions and maintenance/risk reducing features (silt traps, inspection chambers etc.).
- d) A plan showing exceedance flows (i.e. during rainfall greater than design events or during blockage) and how property on and off site will be protected.
- e) Details of drainage management responsibilities and maintenance regimes for the drainage system.
- f) Details of how the drainage system will be protected during construction and how runoff (including any pollutants) from the development site will be managed before the drainage system is operational.

Reason: To ensure the design meets the national Non-Statutory Technical Standards for SuDS and the final drainage design does not increase flood risk on or off site. This pre commencement condition goes to the heart of the planning permission.

Part a of the condition relates to infiltration, however as a result of ground water issues encountered on site this has been discounted within the design, with all SuDs features such as ponds and permeable paving to incorporate a waterproof liner.

1.4 This report provides details of the requirements for future maintenance of the onsite drainage and SuDS features, together with outlining which organisation will be responsible for each element of the drainage system.

1.5 All SuDS features on the site will be adopted and maintained by a management company. The management company for this site will set up by Taylor Wimpey South Thames and transferred to the residents on completion of the development.

1.6 All main drainage infrastructure on the site will be offered for adoption to Thames Water. Adoption plans can be found in **Appendix 1** of this report.

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- 1.7 The storage features on the site have been designed to not flood for all storms up to and including the 1 in 100 year event with further allowances for climate change and urban creep. For storms above this event above ground flooding will occur and will ultimately follow the contours of the site towards the existing brook along the eastern edge of the main site. Flood water will be channelled along roadways towards the ponds which do have additional some additional freeboard capacity. An exceedance routing plan can be found in **Appendix 2** of this report. Properties on the site are to be set 150mm above ground levels and will therefore not be at significant risk from any potential flood flows.

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2. SuDS Maintenance Schedules and Adoptions.

- 2.1 General maintenance inspections should be carried out on a yearly basis unless noted otherwise in this report.

During any routine inspection, the condition of manhole covers, gully gratings, channel drains etc. should be checked for damage, deformation and settlement. Settlement of paved surfaces may be an indication of a collapsed sewer / drain, check the position of the fault against known drainage runs i.e. between manholes.

- 2.2 Manholes - The most common problems are settlement of levelling brickwork and break up of mortar bedding / benching to the frame. Block paving is a particular problem around the manhole frame where there are often small 'cuts' of paving with insufficient bedding, resulting in the rapid displacement of the pieces. Remedial action is to re-bed the segments in mortar and dust with dry paving sand. Other problems may not be apparent unless the manhole cover is lifted to expose the chamber, benching and channels. With correctly constructed manholes there should be no need to visually inspect for at least five years. On inspection, the following should be checked:
- Infiltration, ground water entering the chamber through construction joints, seepage or squirting / gushing (proprietary sealants are available but excavation and partial reconstruction may be required).
 - Damaged benching, should not really occur unless by high pressure infiltration or poor construction. Check for deposition of detritus which may cause blockages of the sewer / drain. Can normally be jetted or hosed clear, larger items will need to be removed.
- 2.3 Deep chambers, over 1.5m in depth must not be entered unless two fully trained persons are present and only if gas monitoring equipment is available. Note, also that it may take two persons to lift the cover, using only the correct keys.
- 2.4 Pipelines are designed to be self-cleansing so should not require regular maintenance. Maintenance will therefore be restricted to resolving problems as they occur such as blockage or collapse.
- 2.5 Gully pots or chambers should be inspected and cleared out annually by suitable plant.
- 2.6 Channel drains, particularly gratings are susceptible to damage in heavily trafficked areas. The channels are designed to be self-cleansing but should be checked for signs of blockage and jetted as necessary.
- 2.7 Remedial actions are to be carried out following identification of the problem(s). The works must only be undertaken by a reputable civil engineering contractor, carrying appropriate public liability insurance.

Permeable paving maintenance shall be as per the **Table 2.1** below

| Table 2.1: Permeable Pavements: Operation & Maintenance Requirements | | |
|--|--|--|
| Maintenance Schedule | Required Action | Frequency |
| Regular Maintenance | Brushing & Vacuuming (Standard cosmetic sweep over whole surface) | Three times/year at end of winter, mid-summer, after autumn leaf fall, or as required based on site specific observations of clogging or manufacturers' recommendations. |
| Occasional Maintenance | Stabilise and mow contributing and adjacent areas | As required |
| | Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying | As required - once per year on less frequently used pavements |
| Remedial Actions | Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving. | As required |
| | Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material | As required |
| | Rehabilitation of surface and upper substructure by remedial sweeping | Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging) |
| Monitoring | Initial inspection. | Monthly for 3 months after installation. |
| | Inspect for evidence of poor operation and/or weed growth. If required take remedial action. | 3-monthly, 48hrs after large storms in first six months |
| | Inspect silt accumulation rates and establish appropriate brushing frequencies | Annually. |
| | Monitor inspection chambers | Annually. |
| Source: CIRIA C753, Table 20.15 | | |

Landscape feature maintenance shall be as per the **Table 2.2** below

| Table 2.2 – Swales, basins and bio retention areas: Operation & Maintenance Requirements | | |
|--|---|--------------------------------------|
| Maintenance Schedule | Required Action | Frequency |
| Regular Maintenance | Remove litter and debris | Monthly (or as required) |
| | Cut the grass - public areas | Monthly (during growing season) |
| | Inspect marginal and bankside vegetation and remove nuisance plants (for first three years) | Monthly (at start, then as required) |
| | Inspect Inlets, outlets and overflows for blockages and clear if required | Monthly |
| | Inspect bank sides, structures, pipework etc. for evidence of physical damage | Monthly |
| | Inspect water body for signs of poor water quality | Monthly (May - October) |
| | Tidy all dead growth (scrub clearance) before the start of growing season (Note: tree maintenance is usually part of overall landscape management contract) | Annually |
| | Repair erosion or other damage | As required |
| | Repair / rehabilitate inlets, outlets and overflows | As required |
| | Repair / rehabilitate inlets, outlets and overflows | As required |
| | Repair / rehabilitate inlets, outlets and overflows | As required |
| Occasional maintenance | Repair / rehabilitate inlets, outlets and overflows | As required |
| Remedial Actions | Repair / rehabilitate inlets, outlets and overflows | As required |

2.8 Adoptions

2.8.1. The adoption/maintenance responsibilities of the proposed SuDS features will be as follows: -

Management Company

- Storage basins and associated soft landscaping areas.
- 3 no Flow control devices
- 2no Headwall connection to main river
- Shared permeable private roads

Statutory Water Company

- Main Surface water drainage system up to ponds/basin headwalls
- Main foul water drainage system and pumping station

Private residents

- On plot permeable block paved driveways
- On plot drainage systems

2.8.2 Management Company Funding

A residents' management company will be set up by Taylor Wimpey South Thames. Following completion of the development, control of that management company will be handed over to the resident. Within the plot transfer there will be obligations upon the management company to maintain the managed areas as defined within the plot transfer. There will be also a positive obligation upon a plot purchaser to pay to the management company a reasonable contribution towards the cost of the management company undertaking their obligations which are set out in the transfer. Further, upon the plot purchaser disposing of its interest in the plot any new purchaser will be required to enter into a Deed of Covenant with the management company confirming that they will comply and continue to make payment to the management company.

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Appendix 1

Drainage Plans

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Appendix 2

Exceedance Plan

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