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 Stantec

# Land off Misery Lane Maintenance Schedule

*For Foreman Homes*

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# Document control sheet

|                |                                                                                                                   |                                                                                      |
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# 1. Introduction

This report has been produced by Hydrock, now Stantec on behalf of Foreman Homes to educate minimum maintenance requirements and responsibilities for the development site referred to as the Land off Misery Lane.

This Drainage Maintenance Schedule has been prepared address the required maintenance for the on-site and off-site drainage and associated Sustainable Drainage Systems (SuDS) as specified within the Land off Misery Lane drawing series:

- » Drainage Layouts (21627-HYD-XX-XX-DR-C-0600 to 0603)
- » External Works Layouts (21627-HYD-XX-XX-DR-C-0700 to 0703)

This technical document is to cover the maintenance of the drainage systems during post construction only. Any requirements during the construction period are to be covered by the contractor.

It is envisaged that Foreman Homes, as the developer, that all drainage systems (indicated on drawings previously listed) on site remain private.

will ensure the adherence to this maintenance schedule until such time that the drainage systems are conveyed to another party (i.e. management company, resident), who's reasonability will be to establish their own regime, as per the declaration at the end of this document.

Standards and procedures within this document are believed to be equivalent to those of the local sewerage undertaker with direct reference to documents issued by CIRIA and Water UK.

It is the developer's responsibilities, until such time the asset is conveyed, to ensure a competent supervisor is appointed for any works and / or inspections. It is the responsibility of the allocated supervisor to ensure any workforce have the necessary training and follow adequate health and safety procedures, including but not limited to; confined space training and notification / permissions from third parties.

## 2. Maintenance Regime

### 2.1 General

All inspections are to be conducted in-line with best practice guidance and relevant legislation. Additional inspection may be required following works by third-parties or the installation of third-party equipment.

Any identified defects should be remediated / made safe within a reasonable time period based on priority, as outlined in the table below.

Engineer / Manufacturer to be consulted about any defects / damage or otherwise abnormalities identified that are not specified within this report.

Table 1: Defect Priority Rating

| Priority  |                                                         |
|-----------|---------------------------------------------------------|
| <b>P1</b> | Repair or provide signage and guarding within 24 hours. |
| <b>P2</b> | Repair within 2 weeks.                                  |
| <b>P3</b> | Repair within 1 month.                                  |
| <b>P4</b> | Repair within 3 months.                                 |
| <b>P5</b> | Record and monitor defect every 3 months.               |

Two specific drainage / SuDS elements have been omitted from this schedule:

- » Hydro Downstream Defender
- » Gabion basket basin retaining wall

These items have been viewed as specialist elements to which maintenance regimes are provided by the relevant manufacturer. This does not absolve Foreman Homes of their responsibilities as previously outlined within this document, and the supplied maintenance regimes of these elements should be strictly adhered to by Foreman homes until such time that the asset and responsibility has been formally transferred to another party.

Furthermore, drainage outfalls and ordinary courses have been covered under the following two documents which are available in the Appendix.

- » OWC Maintenance Schedule (21627-HYD-XX-XX-TN-C-0003)
- » OWC 2 Maintenance Schedule (21627-HYD-XX-XX-TN-C-0004)

## 2.2 Gravity Sewers

### 2.2.1 Schedule

Table 2: Gravity Sewer Maintenance Schedule

| Maintenance Schedule                | Action Required                                                                                                                       | Typical Frequency                                            |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>Safety Inspection</b>            | Driven inspection of all drainage access and inspection points. Areas to be traversed on foot where vehicular access is not possible. | Yearly or on report of defect / issue of flooding            |
| <b>Cleaning</b>                     | Cleaning and removal of all silt and debris within catchpits and manholes.                                                            | Every 5 years or following incident of spill or as required. |
| <b>Drainage Jetting</b>             | Cleaning and removal of all silt and debris within catchpits and manholes.                                                            | As required                                                  |
| <b>Surveying</b>                    | CCTV surveying of drainage ad connections to establish blockages and / or defects.                                                    | As required                                                  |
| <b>Remediation / Reconstitution</b> | Remediation of drainage and reconstitution where not possible.                                                                        | As required.                                                 |

### 2.2.2 Defects

Table 3: Gravity Sewer Defects Schedule

| Defect                           | Description                                                                                                                                                                                        | Priority |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Cover, Frames and Grating</b> | Significant part of the inset missing or damaged and liable to render ironwork unsafe.                                                                                                             | P1       |
|                                  | Cracked or broken covers, frames or boxes liable to render ironwork unsafe.                                                                                                                        | P1       |
|                                  | Any ironwork with a level difference above carriageway surface greater than 40mm.                                                                                                                  | P1       |
|                                  | Any ironwork with a level difference bellow the carriageway greater than 75mm.                                                                                                                     | P1       |
| <b>Sewer</b>                     | Cracking (limited to surface) and / or pipe deformation <5% of the diameter.                                                                                                                       | P5       |
|                                  | Circumferential / longitudinal cracking, joint displacement up to 1.5 times the pipe thickness or deformation 5% and 10%.                                                                          | P5       |
|                                  | Multiple or spiral cracking, circumferential / longitudinal fracture, joint displacement greater than 1.5 times pipe thickness, wall puncture or deformation of 5% (rigid), 10% to <20% (plastic). | P4       |

|                                                                                                                                                                       |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Root mass, scale deposits or debris resulting in a loss of cross-sectional area <20%.                                                                                 | P5 |
| Multiple Root mass, scale deposits or debris resulting in a loss of cross-sectional area <20% within a single run or between 20% and <50% at any given instance.      | P3 |
| Multiple Root mass, scale deposits or debris resulting in a loss of cross-sectional area greater of 20% within a single run or greater than 50% in a single instance. | P2 |
| Collapse or 100% loss of cross-sectional area.                                                                                                                        | P1 |

### 2.2.3 Access

Main sewers have been located within the associated highways and as such have free access. Private drainage (drainage within a plots curtilage) will remain the responsibility for Foreman Homes until such time the plot is conveyed or responsibility is formally given, in writing to a third-party. To this effect, Foreman Homes will maintain the rights to access properties for maintenance activities on any areas of the drainage network not formally conveyed.

Part of the main surface water drainage and foul water drainage, as shown in the figure below is not accessible by highway. However, routing as shown in the figure has been provided to allow the maintenance of sewers within these areas.

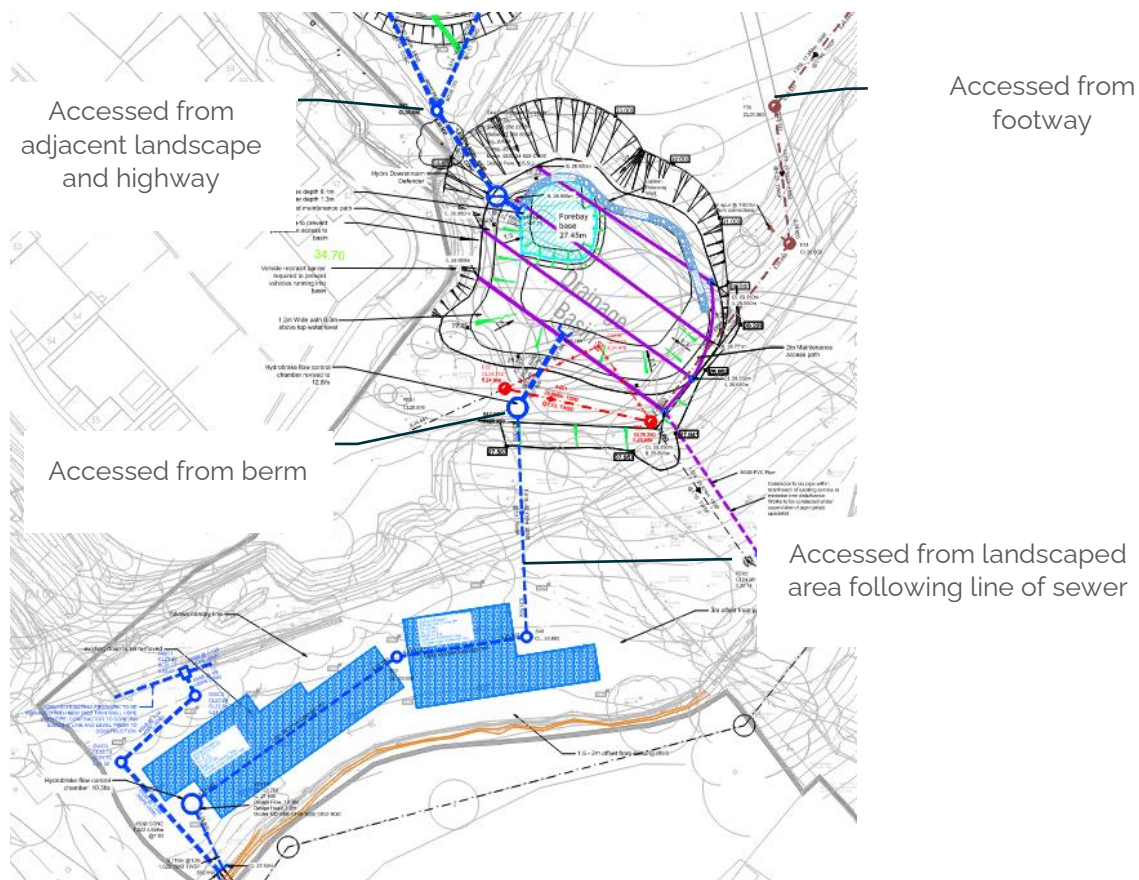


Figure 1: Sewer Maintenance Access

## 2.3 Permeable Pavements

### 2.3.1 Schedule

Table 4: Permeable Pavement Maintenance Schedule

| Maintenance Schedule        | Action Required                                                                                                                                                                        | Typical Frequency                                          |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>Safety Inspection</b>    | Visual inspection of the paving, looking for pools of water and visible debris in the gaps.                                                                                            | Once a year                                                |
| <b>Remedial Maintenance</b> | Remediate any landscape which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the pavement.                                               | As required                                                |
|                             | Remedial works to any depressions, rutting and cracking / 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.                                                                                                                 | As required                                                |
| <b>Power Washing</b>        | Spray a high-pressured stream of water onto the blocks to get rid of dirt that is stuck on top and in between gaps. Replace lost jointing material.                                    | As required                                                |
| <b>Weed Control</b>         | 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 areas. |
| <b>Monitoring</b>           | Inspection for evidence of poor operation and / or weed growth.                                                                                                                        | Every 3 months                                             |
|                             | Inspect silt accumulation rates and establish appropriate brushing frequencies.                                                                                                        | Annually                                                   |

### 2.3.2 Defects

Table 5: Permeable Pavement Defect Schedule

| Defect            | Description                                                                                             | Priority |
|-------------------|---------------------------------------------------------------------------------------------------------|----------|
| Debris            | General Debris stuck inside the gaps of the blocks, slowing down the discharge rate into the subbase.   | P3       |
|                   | General Debris stuck inside the gaps of the blocks, stopping the discharge into the subbase completely. | P1       |
| Structural Damage | Between 10% and 30% of the blocks have cracks in.                                                       | P3       |
|                   | Between 31% and 50% of the blocks have cracks in.                                                       | P2       |
|                   | Greater than 51% of the blocks have cracks in.                                                          | P1       |
|                   | Blocks are missing from paving.                                                                         | P1       |
|                   | Blocks are displaced from constant loading from vehicles.                                               | P5       |

### 2.3.3 Access

All areas of permeable pavement can be accessed directly from the main carriageway. As such, no specific access arrangements are required. Foreman Homes will withhold the write to access these areas until such time it is formally, in writing transferred.

## 2.4 Attenuation Basin

### 2.4.1 Schedule

Table 6: Attenuation Basin Maintenance Schedule

| Maintenance Schedule                   | Action Required                                                                                                                                                                               | Typical Frequency                                  |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| <b>Safety Inspection</b>               | Walked inspection of perimeter with visual inspection of basins including inlets.                                                                                                             | 6, Monthly, on report of defect/issue or flooding. |
| <b>Emergency Obstruction or Hazard</b> | Removal of obstruction / hazard and basin / reconstituted as required.                                                                                                                        | As required                                        |
| <b>Vegetation Management</b>           | Grass cut to appropriate length.<br>Shrubbery trimmed to appropriate length.<br>Any weeds or invasive vegetation removed accordingly.<br>Replace vegetation where eroded / missing / damaged. | Twice a year and after autumn leaf fall.           |
| <b>Debris Management</b>               | Removal of litter, debris and silt.                                                                                                                                                           | 6, Monthly, on report of defect/issue or flooding. |

## 2.4.2 Defects

Table 7: Attenuation Basin Defect Schedule

| Defect                         | Description                                                                                                                                                                      | Priority |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Litter, Debris and Silt</b> | General litter, debris or silt not deemed harmful to wildlife or people and in quantities that pose no risk of blockage to the drainage network or loss of attenuation capacity. | P5       |
|                                | Litter or debris that pose a minimal risk to wildlife.                                                                                                                           | P4       |
|                                | Litter or debris that pose a minimal risk to people.                                                                                                                             | P3       |
|                                | Litter or debris that pose a moderate risk to wildlife and / or people.                                                                                                          | P1       |
|                                | Pollutants that may be hazardous to the environment (i.e oil) in visible quantities.                                                                                             | P1       |
| <b>Structural Damage</b>       | Divot or erosion of topsoil no greater than 100mm in depth and / or exceeding 1m in any direction.                                                                               | P5       |
|                                | Divot or erosion of topsoil no greater than 100mm in depth and / or exceeding 1m in any direction.                                                                               | P3       |
|                                | Divot or erosion of topsoil greater than 201mm in depth.                                                                                                                         | P2       |
|                                | Exposure or tearing of basin membrane.                                                                                                                                           | P1       |
|                                | Slippage or movement of slope (urgent initial assessment to dictate future timescales and works)                                                                                 | P1       |
| <b>Headwall</b>                | Silt, damage or debris reducing outfall pipe area by less than 5%.                                                                                                               | P5       |
|                                | Silt, damage or debris reducing outfall pipe area by 5%-10%.                                                                                                                     | P4       |
|                                | Silt, damage or debris reducing outfall pipe area by 11%-25%.                                                                                                                    | P3       |
|                                | Silt, damage or debris reducing outfall pipe area by 26%-50%.                                                                                                                    | P2       |
|                                | Silt, damage or debris reducing outfall pipe area by 51% or greater.                                                                                                             | P1       |
|                                | Damage to headwall structure (non-structural).                                                                                                                                   | P4       |
|                                | Damage to headwall structure which may lead to deterioration and failure.                                                                                                        | P3       |
|                                | Damage to headwall structure which may lead to immediate failure or pose a risk to the public.                                                                                   | P1       |

### 2.4.3 Access

General access arrangement for the basin is as those as described in Section 2.2.3. The basin Variable slopes with access from the south-west at 1 in 5 as shown in the following figure. A pathway has been provided around the top of the basin to allow for maintenance and access on all sides.

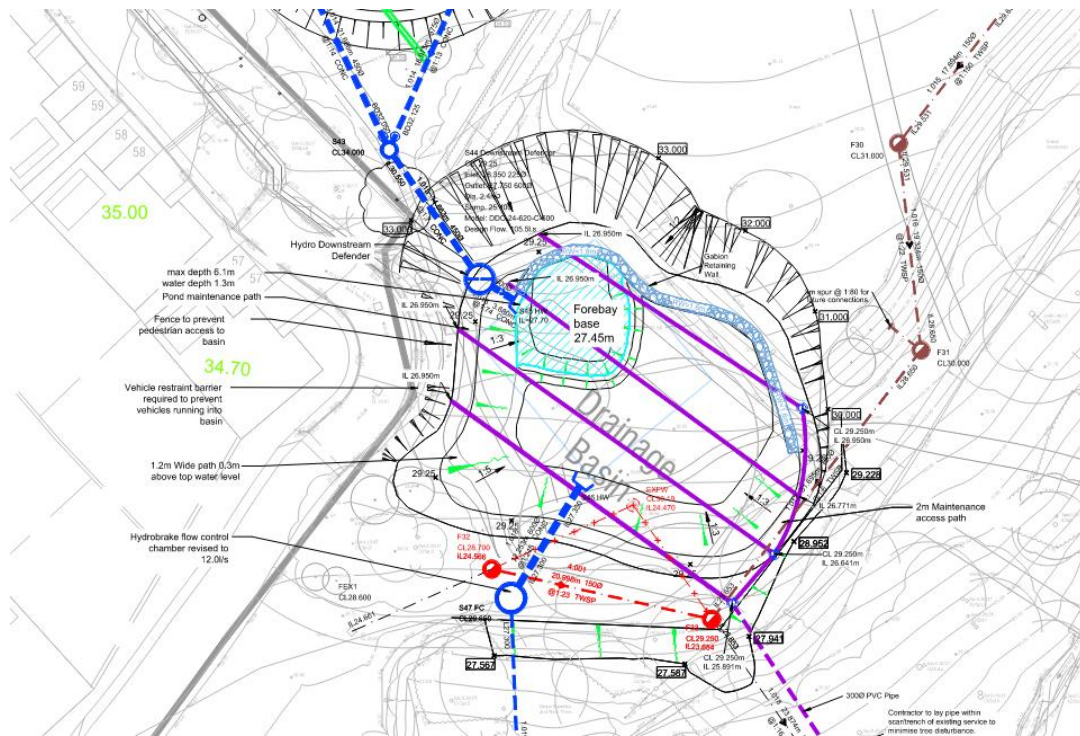


Figure 2: Basin Access Arrangements

## 2.5 Cellular Storage Tanks

### 2.5.1 Schedule

Table 8: Cellular Storage Tanks Maintenance Schedule

| Maintenance Schedule                | Action Required                                                                                     | Typical Frequency                            |
|-------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------|
| <b>Safety Inspection</b>            | Inspect and identify any areas that are not operating correctly. If required, take remedial action. | Yearly                                       |
| <b>Remediation / Reconstitution</b> | Remediation of inlets, outlets, overflows and vents or reconstitution where not possible.           | As required                                  |
| <b>Monitoring</b>                   | Surveying upstream catchpits for sediment build up and remove if necessary.                         | Every 2 years                                |
| <b>Cleaning</b>                     | Remove any sediment from pre-treatment structures and / or internal forebays.                       | Every 2 years or less subject to monitoring. |

## 2.5.2 Defects

Table 9: Cellular Storage Tanks Defect Schedule

| Defect                                 | Description                                                                         | Priority |
|----------------------------------------|-------------------------------------------------------------------------------------|----------|
| <b>Structural Damage / Deformation</b> | A single interior crate is damaged.                                                 | P4       |
|                                        | Between 2 and 5 interior crates are damaged.                                        | P2       |
|                                        | More than 5 interior crates are damaged.                                            | P1       |
|                                        | A single exterior crate is damaged, resulting in minimal bending of the tank.       | P3       |
|                                        | Between 2 and 5 exterior crates are damaged, resulting in some bending of the tank. | P2       |
|                                        | More than 5 exterior crates are damaged, resulting in bending of the tank.          | P1       |
| <b>Blockage</b>                        | Less than 20% of the cross-sectional area of the central pipe is blocked.           | P3       |
|                                        | Between 20% and 50% of the cross-sectional area of the central pipe is blocked.     | P2       |
|                                        | More than 50% of the cross-sectional area of the central pipe is blocked.           | P1       |

## 2.5.3 Access

General access arrangement for the basin is as those as described in Section 2.2.3. As shown in the following figure the area is clear of vegetation and relatively low gradient allowing for working space.

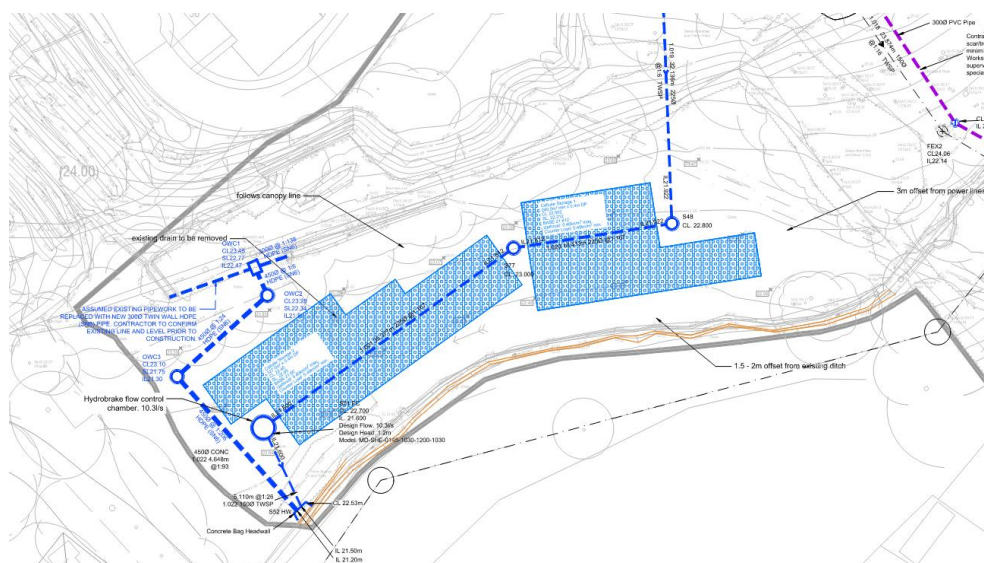


Figure 3: Cellular Storage Tank Access Arrangement

### 3. Declaration of Intent

#### Defined Terms

Foreman Homes - Foreman Homes Limited

Element - Any drainage feature as reported within this document (21627-HYD-XX-XX-TN-C-0003) or shown within Appendix A.1 Drainage Strategy Drawing (21627-HYD-XX-XX-DR-C-0611)

Third Party - Any interested party, or interested party on behalf of others, excluding Foreman Homes Limited.

It is hereby declared of Foreman Homes's intention to adhere to the responsibilities outlined within this document (21627-HYD-XX-XX-TN-C-0003) and carry out all maintenance and activities outlined there within.

Foreman Homes intend to continue these actions for the life of the development for all elements outlined within this document, or until such time that the responsibility for or ownership of a respective element is transferred, in writing and agreed upon by a third-party. Foreman Homes shall update this document at agreement to exclude that element and provide an updated version clearly outlining the responsibilities required thereof the third-party.

Foreman Homes are required to maintain and update this document covering all elements outlined within and provide a copy to any third-party which may have a vested interest in any element outlined within. Foreman Homes shall highlight this responsibility to any third-party who may take on the respective maintenance responsibility and ascertain agreement to this effect, in writing from the third-party.

As named below, by signing this document I state that I am of adequate representation for Foreman Homes as per my position to commit Foreman Homes to the responsibilities outlined within this document and Declaration of Intent.

Name \_\_\_\_\_

Signed \_\_\_\_\_

Position \_\_\_\_\_

Date \_\_\_\_\_

# Appendix A Drainage Drawings

## Appendix B OWC Maintenance Schedules