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CHARTERED CONSULTING ENGINEERS

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BARRATT DAVID WILSON YORKSHIRE WEST

DRAINAGE MAINTENANCE AND MANAGEMENT PLAN
FOR
DEVELOPMENT AT PITT STREET, DARFIELD

Introduction

It is essential that drainage systems, including any Sustainable Drainage Systems (SuDS) and proprietary components, are subject to periodic inspection and maintenance over their lifetime, so that they continue to function to the intended design standard.

This document sets out the responsibilities for management and maintenance of the proposed drainage systems at the above site, and outlines a recommended maintenance regime to be implemented by the responsible parties.

This document has been prepared for agreement with the Lead Local Flood Authority and Local Planning Authority. The document should be finalised upon completion of construction, including all listed drainage drawing references which should be revised to 'as-built' status.

The maintenance plan should be reviewed periodically to confirm it is meeting the objective of ensuring effective drainage is maintained. The maintenance plan should be revised if necessary to keep systems working effectively.

This report has been initially prepared for the use and reliance of the Client only. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Associates. For the avoidance of any doubt, where ARP Associates enters into a letter of reliance for the benefit of a third party, that third party will be permitted to rely on the report. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party without ARP Associates consent.

Design Drawings

The following drawings are relevant to the drainage systems for this development, and should be referred to when considering maintenance requirements:

- 1048.141.02.01 Section 38 Highway Adoption Layout
- 1048.141.03.02 Section 104 Adoptable Drainage Layout (Sheet 2 of 2)
- 1048.141.05.01 Private Drainage Layout (Sheet 1 of 3)
- 1048.141.05.02 Private Drainage Layout (Sheet 2 of 3)
- 1048.141.05.03 Private Drainage Layout (Sheet 3 of 3)
- 1048.141.07.01 Typical Drainage Details (Sheet 1 of 2)
- 1048.141.07.02 Typical Drainage Details (Sheet 2 of 2)
- 1048.141.09.01 Impermeable Area Plan
- 1048.141.09.02 Gully Catchment Area
- 1048.141.10 Flood Routing Layout
- 1048.141.11.01 Manhole Schedule
- 1048.141.11.02 Surface Water Demarcation Schedule
- 1048.141.11.03 Foul Water Demarcation Schedule
- 1048.141.12 Flow Control Manhole S19
- 1048.141.13.01 Attenuation Basin Detail
- 1048.141.13.02 Attenuation Basin Tanker Access Tracking
- 1048.141.16.01 Headwall S14
- 1048.141.16.02 Headwall S17

Any persons undertaking maintenance should ensure they refer to the most recent revision of the drainage drawings for the site, including 'as-built' drawings when available.

Overview of Drainage Systems

The development is served by separate systems of foul and surface water drainage.

Surface water runoff (from roofs, roads, and other hardstanding areas) is drained, via a network of pipes, to an attenuation basin located in the south-west of the site. Water is released from the basin at a maximum rate of 5l/s, with the flow rate being controlled by a vortex flow control device located in a manhole downstream of the basin. The attenuation basin is provided so that flows which are restricted by the flow control device are stored on site, up to the '1 in 100 year' rainfall event, including an allowance for the projected impacts of climate change. Note that the basin is not designed to be full of water at all times – it would only be expected to start filling during rainfall events, before slowly draining down as water is released at a controlled rate. Downstream of the flow control device, surface water is discharged from site via a new sewer which crosses beneath Pitt Street, flows through the open land to the south of Pitt Street, and discharges to an existing public sewer in Hall Croft (to the south-east of the site).

Domestic foul wastewater is conveyed, via a network of pipes, to an existing public sewer in Pitt Street (to the south of the site).

Maintenance and Management Responsibility

A Significant proportion of the surface water and foul drainage systems on this development have been designed to adoptable standards and therefore, once the adoption process is complete, will become the responsibility of Yorkshire Water as the local sewerage undertaker. Those systems to be adopted are shown in the following ARP drawings:

- 1048.141.03.01 Section 104 Adoptable Drainage Layout (Sheet 1 of 2)
- 1048.141.03.02 Section 104 Adoptable Drainage Layout (Sheet 2 of 2)
- 1048.141.11.01 Manhole Schedule
- 1048.141.11.02 Surface Water Demarcation Schedule
- 1048.141.11.03 Foul Water Demarcation Schedule
- 1048.141.12 Flow Control Manhole S19
- 1048.141.13.01 Attenuation Basin Detail
- 1048.141.13.02 Attenuation Basin Tanker Access Tracking
- 1048.141.16.01 Headwall S14
- 1048.141.16.02 Headwall S17

At the time of writing, the formal Section 104 Sewer Adoption agreement with Yorkshire Water has not been completed. It is envisaged that formal Adoption of sewers by Yorkshire Water will be sought as soon as 51% of the properties are occupied.

The main access roads into the development are designed to adoptable standards and therefore, once the adoption process is complete, the highway gullies serving these roads will become the responsibility of the local Highway Authority. The roads and gullies to be adopted are shown in the following ARP drawing:

- 1048.141.02.01 Section 38 Highway Adoption Layout

At the time of writing, the formal Section 38 Highway Adoption agreement with the Highway Authority has not been completed. It is envisaged that formal Adoption of roads by the Highway Authority will be sought following adoption of the sewers by Yorkshire Water and completion of other relevant works.

Prior to formal adoption of the above drainage systems being complete, Barratt David Wilson Yorkshire West (the developer) shall be responsible for maintaining the drainage systems until such time as adoption is achieved. It is anticipated that Barratt David Wilson Yorkshire West will make use of its operatives on site to undertake the required maintenance whilst construction is ongoing. If adoption is still outstanding once Barratt David Wilson Yorkshire West has completed construction and leaves site, it is envisaged that a specialist drainage contractor will be utilised to continue to undertake the required maintenance until such time as formal adoption is achieved.

In the unlikely event that the adoption of the sewers by Yorkshire Water does not proceed, and/or adoption of the highways by the Highway Authority does not proceed, the developer will implement a Management Company to maintain the affected drainage systems in perpetuity. However, this is considered unlikely to be necessary.

The inspection and maintenance of any drainage infrastructure serving a single property, and located within the curtilage of that property, will remain the responsibility of the relevant property owner.

Responsibility for the ongoing inspection and maintenance of the remainder of the drainage systems on this development will be assigned by the developer to an appropriate individual property owner, or an appropriate group of property owners, through specific clauses in individual property deeds. Alternatively, responsibility may be transferred to a Management Company.

All operation, inspection and maintenance should be undertaken by suitably qualified professionals, using appropriate safe systems of work.

Attention is drawn to the requirements of the Construction Design and Management Regulations 2015, and in particular, the duties and obligations of the Client.

Drainage Easements

Legal drainage easements will apply to the Yorkshire Water public sewers on this development site, once adopted. The applicable easements are shown in the following ARP drawings:

- 1048.141.03.01 Section 104 Adoptable Drainage Layout (Sheet 1 of 2)
- 1048.141.03.02 Section 104 Adoptable Drainage Layout (Sheet 2 of 2)

The easements must be kept clear of obstructions, such as new buildings/extensions/ in perpetuity. Advice should be sought from Yorkshire Water in advance if any works are proposed within these easements in the future.

Suggested Maintenance and Management Regime

Yorkshire Water shall be responsible for determining and implementing an appropriate maintenance regime for the adoptable drainage elements, once the sewer adoption has been completed. The Highways Authority shall be responsible for determining and implementing an appropriate maintenance regime for the adopted highway gullies, once the highway adoption has been completed.

Where drainage remains unadopted, as a minimum, it is recommended that inspection and maintenance follow the regime set out below. However, the timescales indicated below are guides, and should be based on inspections and determined by requirement.

Notwithstanding any recommendations set out in this document, all proprietary components should be operated/inspected/maintained in accordance with the manufacturer's requirements/specifications.

Further advice on inspection and maintenance of SuDS components is set out in CIRIA publication C753 The SuDS Manual (2015).

Asset/Item	Inspection and Maintenance Requirement
Overall Maintenance inspections	Inspection at regular intervals with appropriate remedial works instigated should the inspection show a need. After heavy storms or sustained periods of inclement weather, on-site inspection should take place.

Asset/Item	Inspection and Maintenance Requirement
Gullies	Gullies should be cleaned at regular intervals, recommended not more than six months apart. Jet-washing and suction-borne methods are recommended, with the contents disposed of at a licenced waste facility.
Linear Drainage / Channel Drains	Linear Drainage should be cleaned at regular intervals, recommended not more than six months apart. Jet-washing and suction-borne methods are recommended, with the contents disposed of at a licenced waste facility.
Carrier Drains	Drains/sewers should be cleaned at regular intervals, recommended not more than six months apart. Jet-washing and suction-borne methods are recommended, with the contents disposed of at a licenced waste facility.
Manholes/Inspection Chambers	Visual inspection of manholes and inspection chambers, to check for any siltation or obstruction to flow, should be undertaken at regular intervals, recommended not more than six months apart.
Catch Pits	Catch pits should be cleaned at regular intervals, recommended not more than six months apart. Jet-washing and suction-borne methods are recommended, with the contents disposed of at a licenced waste facility. Catch pits should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather.
Guttering/Rainwater Downpipes	These should be cleaned at regular intervals, in recommended not more than six months apart. In inclement months, this frequency is likely to increase.
Ironworks	Cover frames, gully lids etc. should be inspected at regular intervals, in particular to check line and level, and to ensure integrity, security of hinges and to check line/level is within safe and workable tolerance. Recommended not more than six months apart.
Vortex Flow Control	The flow control should be regularly inspected and maintained, as necessary, in accordance with Manufacturers requirements (recommended not more than twelve months apart). The sump of the unit should be emptied periodically (recommended not more than six months apart) using a suction unit and the contents disposed of at a licenced waste facility. The unit should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather.
Lifesaving equipment and signage (adjacent to attenuation basin)	The equipment and associate signage should be regularly inspected (recommended not more than one month apart) and maintained in accordance with the manufacturer's recommendations. If the equipment is missing or damaged it should be replaced immediately. Signage with contact details to be provided with instructions for public to report missing or damaged equipment.

Asset/Item	Inspection and Maintenance Requirement
Attenuation Basin	Visual inspection of the surface water outfall/inlet headwall and any flap valve or grille, to check for any obstruction to flow or debris, should be undertaken at regular intervals, recommended not more than six months apart. The headwalls should be inspected in advance of storm conditions if feasible, and should be re-inspected after heavy storms or sustained periods of inclement weather. Grass on banks to be maintained by mowing, recommended six-monthly, with re-seeding as necessary. Vegetation to be managed monthly or as required - nuisance plants to be removed as necessary. The banks of the basin and any structures should be inspected for any evidence of erosion or instability, recommended monthly, with appropriate remedial actions or further monitoring put in place if issues are noted. Sediment to be removed from forebay, recommended every five years or as required. To be disposed of at a licenced waste facility.