

Construction Management Plan for Sustainable Drainage Systems

Proposed Residential Development, Windermere Road and Fell View Avenue, Whitehaven

Thomas Armstrong and Home Group

Ref: K39225.CMP/003

Version	Date	Prepared By	Checked By	Approved By
Original	12/08/2022	T. Melhuish	O. Sugden	O. Sugden

1 INDEMNITIES

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4 INTRODUCTION

4.1 TERMS OF REFERENCE

R. G. Parkins & Partners Ltd (RGP) has been appointed by Thomas Armstrong on behalf of Home Group to provide a Construction Management Plan for the Sustainable Drainage Systems (SuDS) for the housing development at Windermere Road and Fell View Avenue, Woodhouse, Whitehaven.

The following plan gives an overview of the SuDS construction methodology proposed. Reference should be made to the following publication, which provides the framework to the following document.

- CIRIA C768 – Guidance on the Construction of SuDS, 2017

Methodology is subject to change during construction and following contractor involvement. SuDS construction by a competent and experienced contractor shall mitigate risk associated with silt mobilisation and unacceptable compaction of ground at SuDS locations. The following report is provided to demonstrate a feasible construction methodology which shall ensure the functionality of SuDS components following construction.

This document has been prepared in support of the Planning Application as per the requirements of the LLFA. It has been undertaken prior to construction. Thomas Armstrong and their appointed groundworks subcontractor will directly undertake the construction of all earthworks, SuDS and below ground drainage. Reference should be made to the Construction Traffic Management Plan produced by Thomas Armstrong when reviewing the enclosed information.

Reference should be made to the following RGP drawings when reviewing this plan:

- K39225-105 Proposed Drainage Plan 1 of 4
- K39225-106 Proposed Drainage Plan 2 of 4
- K39225-107 Proposed Drainage Plan 3 of 4
- K39225-108 Proposed Drainage Plan 4 of 4
- K39225-109-Proposed Sewer Diversions & Abandonment Plan 1 of 4
- K39225-110-Proposed Sewer Diversions & Abandonment Plan 2 of 4
- K39225-111-Proposed Sewer Diversions & Abandonment Plan 3 of 4
- K39225-112-Proposed Sewer Diversions & Abandonment Plan 4 of 4

5 GENERAL CONSTRUCTION

The driveways to the dwellings are to be constructed as Type C (no infiltration) permeable block paving. The management of soils / silt and construction materials must be undertaken with due consideration of the potential for contamination or adverse impacts to drainage locations which could result in a reduction in performance. The following measures shall therefore be implemented throughout all phases of construction:

- Soil Strip – A minimum turf and topsoil strip shall be undertaken at all times, sufficient to allow the programmed activity, with grass and soils to be retained wherever possible. Reinstatement of grassed areas shall be undertaken at the earliest opportunity.
- Stockpiles – All material stockpiles are to be capped when not in use and when adverse weather is forecast.
- Compaction of soil – Compaction of attenuation areas by construction plant is to be avoided as far as is practical. Construction management to limit plant size / movements over such areas is required. Attenuation structures to be excavated to formation level immediately prior to geocellular crate attenuation tank installation.
- Cement – Cement dust has the potential to alter the soil matrix and could run-off into the UU sewer network adjacent to the site. Wherever possible pre-cast components are specified. It will be necessary to provide concrete surrounds to manholes and cement would also be required for mortar. Larger quantities of cement are to be provided to site ready mixed. Where required, smaller batches are to be mixed in a designated area underlain by an impermeable surface. Dust suppression should be considered as appropriate.
- Dewatering – Dewatering operations should not be required. In the extremely unlikely event that perched groundwater is encountered on the site the Engineer is to be notified as this may necessitate re-design. Any dewatering operation must be discharged to a grassed area a minimum distance of 10m from all excavations / exposed soils.
- Wheel washing – to be employed as and when require to minimise transportation of silt from the site onto the surrounding highways network.

6 STAGE 1 - SITE SETUP

6.1 PRE-START SURVEY

A pre-start survey of the development site, including accesses, third party right of way, routes of existing services and all trees and boundaries shall be undertaken by the contractor prior to commencement. The survey shall be documented with photographic evidence and stored within the site office.

No other potential significant hazards have been identified.

6.2 CONTRACTOR'S COMPOUND AND SITE ACCOMMODATION

The main site offices, welfare and contractors' compound will be identified in the Construction Traffic Management Plan prepared by Thomas Armstrong. The offices shall be provided with a metered mains power supply, mains water supply and electric heating and will comply with CDM regulations (2015). Proprietary storage tanks will be initially required to serve the foul drainage, which will be inspected and emptied as required. Mobile toilet blocks are envisaged. Following foul drainage construction and connection to the public sewer site welfare shall be connected.

An allocated car parking area shall also be formed within the site compound. All temporary paving shall be permeable and all roof runoff from cabins shall be directed to the permeable subbase underlying the units to ensure runoff is distributed over an equal surface area.

All chemicals and fuels will be stored in an appropriately sized bunded area and a designated re-fuelling area is to be provided. Spill kits will be available.

All necessary works will be subject to detailed design and installation prior to commencement of the project construction phase.

6.3 BUNDING

The site is located in Flood Zone 1 and is not predicted to be at risk of fluvial flooding. The site is also not at risk of surface water flooding and ground investigations have confirmed that the site is at a low risk of groundwater flooding. Following the initial site strip and during construction, it is recognised that run-off containing silt and other construction-related contaminants will migrate towards the lowest levels located along the eastern boundaries potentially causing siltation and flooding in this area. Silty run-off could also be directed towards existing downstream gardens and properties.

To mitigate this risk, it is proposed that temporary bunds are formed along the eastern boundaries as part of the site strip. The location of the bunds is shown below in Figure 6.1 and 6.2. The temporary bunds will be formed with site-won, clay-rich material and will be min. 0.3m high. Turf and topsoil shall be set aside during the site strip and re-laid on the bunds, with any gaps filled with topsoil and seeded. The bunds shall be periodically inspected during construction following rainfall events to ensure they remain free of debris / silt accumulation. De-silting operations may be required if deemed necessary. The bunds will be removed at the end of construction following the completion of the landscaping works in the rear gardens.



Figure 6.1 Location of temporary bunds along eastern boundary of Windermere Road



Figure 6.2 Location of temporary bunds along eastern boundary of Fell View Avenue

6.4 LAYDOWN AREA

A designated laydown area will be identified in the Construction Traffic Management Plan. Site-won material shall be stored in this area for future use, all material is to be capped to protect stockpiles from the weather when not in use or if adverse weather is forecast.

All excess material shall be removed from site as required to a licensed tip or taken to an exemption site subject to the relevant testing. Some of the materials may be processed on site for re-use.

6.5 SIGNAGE / SITE DELINEATION

Prior to construction, vulnerable areas shall be marked to exclude construction traffic. Sensitive areas include geocellular tank locations as indicated on the drainage layout plan.

7 STAGE 2 - MAIN DRAINAGE & SEWER DIVERSION CONSTRUCTION

7.1 SEWER DIVERSIONS

A large number of sewer diversions and sewer abandonments are required to facilitate the development works. These will all be subject to technical approval by United Utilities under a Section 185 Application prior to the works being undertaken. Sewer construction will then be subject to site inspection by United Utilities during the works.

7.2 MAIN DRAINAGE

The proposed foul and surface water sewers shall be constructed through the site to form a connection with the existing/diverted public combined and surface water sewers

Highways drainage will be via a series of conventional gullies, discharging into a 225mm dia. carrier

The proposed foul water gravity sewers will be conventional piped systems constructed and backfilled using established materials and jointing methodology to adoptable standards and the specification for DCG.

7.3 GEOCELLULAR ATTENUATION TANKS

The private geocellular attenuation tank systems will comprise 3no. 0.8m deep tanks. The attenuation tanks will be wrapped in an impermeable geomembrane to provide a watertight tank. Silt trap manholes will be located directly upstream of the tanks and will help to intercept silt that may be conveyed by the upstream pipe network into the tanks. The formation of the tanks is to be undisturbed natural ground and all hard/soft spots are to be excavated and backfilled with well compacted DfT Type 1 sub-base. The formation will be protected during inclement weather to ensure a consistent, firm foundation to the tanks.

7.4 GROUND PROFILING

Site strip is to be limited to the area under construction only. Selected site won material is to be used wherever possible. Any imported material shall be of high permeability.

8 STAGE 3 - PLOT CONSTRUCTION

8.1 FOUNDATION CONSTRUCTION

Plot construction shall commence in a phased manner and topsoil strip shall be minimised. Foundations will comprise conventional concrete strip and trench footings.

8.2 PLOT DRAINAGE

Plot drainage works will commence after the main sewer diversions have been constructed and connections made as required. Private plot drainage will be constructed in accordance with Part H of the Building Regulations and will be subject to inspection by Building Control.

Plot construction shall be undertaken in a timely manner. Once groundworks and external works are complete the area shall be seeded / landscaped as appropriate and the plot connected to the drainage system as required. Silt traps and inspection chambers shall be monitored and maintained throughout construction. Pipework will be jetted and cleaned at the end of the works as required.

8.3 DRIVEWAY CONSTRUCTION

Bulk earthworks for the driveways shall be undertaken during the early stages of construction. Site strip is to be limited to the area under construction and associated dwellings. It is recommended that final driveways construction and installation of block paving is undertaken towards the end of the construction phase to avoid silty run-off entering the joints of the block paving and filling the voids in the porous aggregate.

9 STAGE 4 - CONCLUSION OF MAIN WORKS

Following the completion of all significant groundworks and plots, the areas of external construction and landscaping shall be completed.

Following completion of all external works and plot construction silt traps and drainage is to be inspected, cleaned and defects identified and rectified.

10 REFERENCES

- [1] CIRIA, *The SUDS Manual*, Report C753, 2015.