

Construction Management Plan for Sustainable Drainage Systems Trumpet Road, Cleator Moor

Mr & Mrs A. Casson

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1 INTRODUCTION

1.1 TERMS OF REFERENCE

R. G. Parkins & Partners Ltd (RGP) has been appointed by Mr & Mrs A. Casson to provide a Construction Management Plan for the Sustainable Drainage Systems (SuDS) for the housing development at Trumpet Road in Cleator Moor.

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 to discharge the relevant Planning Condition. It has been undertaken prior to construction. The appointed Principal Contractor and/or groundworks subcontractor will directly undertake the construction of all earthworks, SuDS and below ground drainage. As such, the following document may be subject to change once a Principal Contractor has been appointed.

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

- K39288-10 Foul & Surface Water Drainage Plan – On-site Layout
- K39288-11 Foul & Surface Water Drainage Plan – Off-site Layout
- K39288-12 Surface Water Drainage Longitudinal Sections and Manhole Schedules
- K39479-13 General Drainage Construction Details
- K39479-14 Geocellular Attenuation Tank Construction Details

2 GENERAL CONSTRUCTION

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 infiltration or 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 or soakaway structures to be excavated to formation level immediately prior to installation.
- Cement – Cement dust has the potential to alter the soil matrix and could run-off into the UU sewer network or SuDS areas. 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.

3 STAGE 1 - SITE SETUP

3.1 PRE-START SURVEY

A pre-start survey of the development site including routes of existing services and all trees and boundaries shall be undertaken by the Principal Contractor prior to commencement. The survey shall be documented with photographic evidence and stored within the site office.

3.2 CONTRACTOR'S COMPOUND AND SITE ACCOMMODATION

The main site offices, welfare and contractors' compound will be identified in a separate Construction Traffic Management Plan to be prepared by the Principal Contractor. 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 hardstanding 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.

3.3 PERMANENT BUNDS

The site is located in Flood Zone 1 and is not predicted to be at risk of fluvial flooding. The Surface Water Flood Risk Map predicts that part of the site is at 'Low-High' risk of surface water flooding associated with a localised depression near to the boundary with Trumpet Road. The site topography is such that upland flows from the land to the rear of the dwellings currently falls towards this depression.

Following the initial site strip and during construction, it is recognised that run-off containing silt and other construction-related contaminants may migrate towards the lowest levels located along boundary with Trumpet Road causing siltation and flooding in this area. Silty run-off could be directed towards the existing highway drainage gullies in Trumpet Road resulting in blockage and flooding.

To mitigate this risk, it is proposed that permanent bunds are installed along the rear boundaries of the new dwelling gardens as part of the initial earthworks. The location of these bunds is shown on RGP drawing K39228-10. The bunds will be formed with well compacted site-won, clay-rich material and will be 0.3m high. Turf and topsoil shall be set aside during construction and re-laid on the bunds, with any gaps filled with topsoil and seeded.

The bund shall be periodically inspected during construction following rainfall events to ensure it remains free of debris / silt accumulation. De-silting operations may be required if deemed necessary.

3.4 LAYDOWN AREA

A designated laydown area will be identified in the Construction Traffic Management Plan to be prepared by the Principal Contractor. 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.

3.5 SIGNAGE / SITE DELINEATION

Prior to construction vulnerable areas shall be marked to exclude construction traffic. Sensitive areas include the location of the Upper basin and swale as indicated on the drainage layout plans.

4 STAGE 2 - MAIN DRAINAGE & ACCESS ROAD CONSTRUCTION

4.1 ACCESS ROAD CONSTRUCTION

Bulk earthworks for the main access roads 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 envisaged that the roads will be constructed to base/binder asphalt course and used as temporary running surface during construction. Final asphalt surfacing or block paving will be installed at the end of the construction phase.

In order to manage and minimise silty run-off onto Trumpet Road during the construction phase it is proposed that a temporary filter drain and berm is installed at the site entrance. Refer to Figure 4.1 and 4.2 for details. This offers a practical solution that can be easily maintained to protect the downstream drainage network and properties from siltation and exceedance events. The performance of this solution will be monitored during the initial construction phase and after periods of wet weather and remedial action taken as required. At the end of the construction period the temporary filter drain will be removed and the access road reinstated and surfaced.



Figure 4.1 Location of temporary filter drain at site entrance

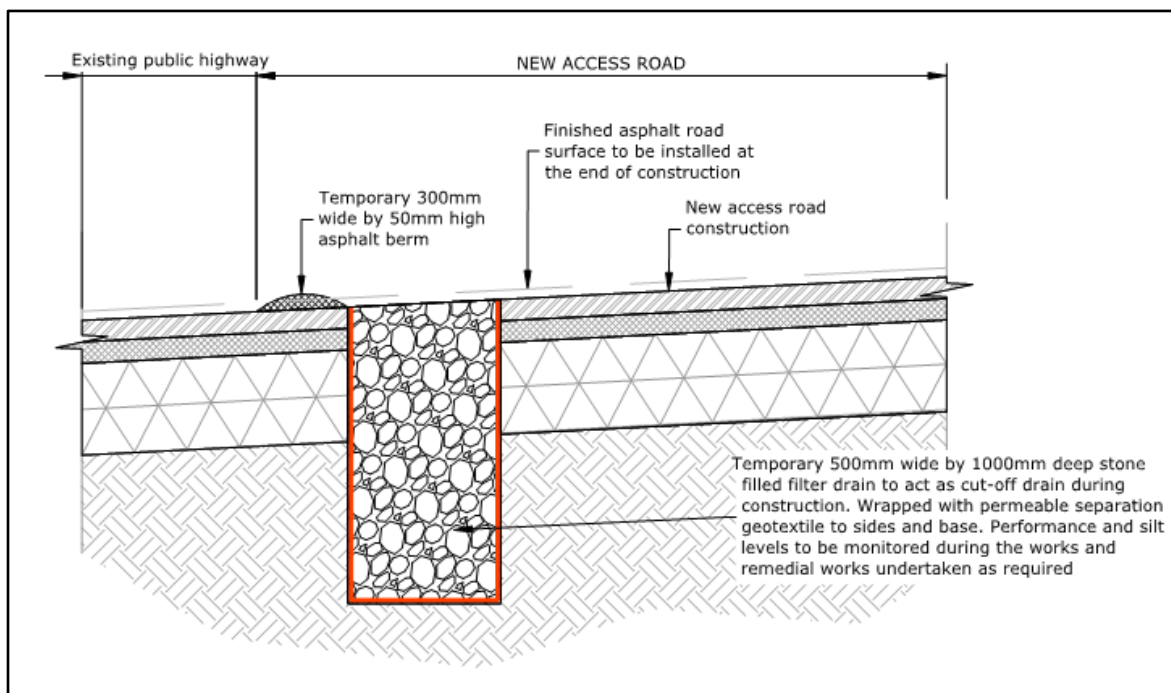


Figure 4.2 Typical construction detail for temporary filter drain & berm at site entrance

4.2 CONVENTIONAL HIGHWAY DRAINAGE

Road gullies and connecting pipework shall be installed during highway construction and shall be monitored and maintained during construction.

4.3 HIGHWAYS DRAINAGE FILTER DRAIN

The proposed filter drain located along the access roads shall be installed as part of the initial access road construction. The filter drain will be wrapped in a geotextile and infilled with clean stone and will act as a temporary silt trap to intercept run-off during construction. Prior to final completion of the highway works, the filter drain stone medium should be removed and cleaned to remove silt and debris. The geotextile should be replaced and then the filter drain and associated perforated pipe should be installed as per the final design.

4.4 GEOCELLULAR ATTENUATION TANK

The private geocellular attenuation tank system will measure 36m x 8m x 0.8m. The attenuation tank will be wrapped in an impermeable geomembrane to provide a watertight tank. A silt trap manhole will be located directly upstream of the tank and will help to intercept silt that may be conveyed by the upstream pipe network into the tank. The formation of the tank 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 tank.

4.5 HYDRODYNAMIC SEPARATOR

The hydrodynamic separator should be installed at the same time as the rest of the mains drainage and in strict accordance with the manufacturer's specification.

4.6 BELOW GROUND DRAINAGE

The proposed foul and surface water drainage will be constructed beneath the access roads in accordance with the specification for Sewers for Adoption. All below ground drainage will be subject to inspection and CCTV survey prior to handover to the site owners.

The off-site surface water pipeline will be constructed in accordance with the construction details to the approval and agreement of the adjoining landowner.

4.7 GROUND PROFILING

Site strip is to be limited to the area under construction only. Selected site-won material is to be used wherever possible.

5 STAGE 3 - PLOT CONSTRUCTION

5.1 FOUNDATION & RETAINING WALL CONSTRUCTION

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

External retaining walls will be constructed as per the construction details in accordance with the Principal Contractor's programme.

5.2 PLOT DRAINAGE

Plot drainage works will commence after the main sewers 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.

5.3 DRIVEWAY FILTER DRAINS

The filter drains to each of the driveways shall be installed as part of the driveway construction. The filter drains will be wrapped in a geotextile and infilled with clean stone to act as a silt trap to intercept run-off from the driveways. The filter drains will be installed near the end of the construction phase so are unlikely to need cleaning and/or replacement prior to handover.

6 STAGE 4 - CONCLUSION OF MAIN WORKS

Following completion of the main works all SuDS systems and associated silt traps, flow control chambers and pipework is to be inspected, surveyed, and cleaned. Defects will be identified and rectified as soon as possible. Thereafter, all SuDS components should be inspected and maintained in accordance with the recommendations listed within the SuDS Operation and Maintenance Plan prepared by RGP.

7 REFERENCES

- [1] CIRIA, Guidance on the Construction of SuDS, Report C768, 2017