





GROUNDWORKS & CIVILS

Getting Started	86
Role of the Principal Contractor	87
Off Site Works	88
Mandatory Meetings	89
Soil Management Strategy	90
Environmental Considerations	91
Pre-Installation Checks	92
Manholes	93
Road Construction	94
Other Services	95
Typical Footpath Services Layout	96
Mains Services Installation	97
Kerb Protection	98
Phased Handovers	99



GETTING STARTED

- 1 Pre-construction reference documents should be referred to and are listed in Section 1: Introduction. The SiteM should familiarise themselves with these documents during the SMPP.
- 2 The Site Investigation (SI) report should be carried out and recorded before work commences. A factual and interpretative report should be made available and the design should be based on this. The SiteM should familiarise themselves with the SI report. Following the SI report, the foundation plan should be generated typically by the engineering consultant, which provides information on estimated bearing levels for foundations.
- 3 The foundation design and plan should be issued to the SiteM as part of the construction information.
- 4 The locations of known existing services must be recorded and provided to the Groundworker, displayed clearly within the site sign in area and filed in CDM Folder 1 – Existing Service Information Register.
- 5 Existing services drawings should be available as part of the construction information and should be less than six months old or this information will need to be renewed.
- 6 The SiteM should have a copy of the Site Execution Plan which, will contain the earthworks strategy and should be referred to throughout.
- 7 Ground remediation should be complete before excavation work commences. In some cases, ground remediation may be localised (or phased) and excavation work can take place in areas not affected.
- 8 The SiteM and Groundworker should complete the authority to proceed (ATP) document before any excavation work commences, this is kept in CDM Folder 2. Work can only proceed once all documentation has been completed. See HSE Manual.
- 9 The waste management plan must be adhered to when disposing of soil as specified in the Folder 3: Site Reference: CDM F3.09: Waste Management Matrix (plus other environmental documentation). Flowcharts are available on inHouse on the Production page and should be shared with subcontractors via Dochosting.
- 10 SiteM must record and protect the Permanent and Temporary Survey Stations where specified by the Engineer and shown on the drawings.
- 11 The outfall levels for existing drainage and overall site proposed drainage levels should be checked by the Groundworker before drainage commences to ensure it matches the design. Any inconsistencies should be raised with the SiteM.
- 12 All coordinates should be taken from a consistent source (local or global GPS) and should be as per design.

ROLE OF THE PRINCIPAL CONTRACTOR



Prior to the commencement of plot works or plot foundations (not including piling) TW must be in the role of PC. For more information, see Production Memo 7. Any change must strictly follow our CDM procedure notifying a change in PC, i.e. external PC to TW PC.

NEW

PC duties:

- a** Plan, manage, monitor and coordinate the entire construction phase.
- b** Take account of the Health and Safety risks to everyone affected by the work (including members of the public), in planning and managing the measures needed to control them.
- c** Liaise with the client and principal designer for the duration of the project to ensure that all risks are effectively managed.
- d** Prepare a written construction phase plan before the construction phase begins, implement, and then regularly review and revise it to make sure it remains fit for purpose.
- e** Have ongoing arrangements in place for managing health and safety throughout the construction phase.
- f** Consult and engage with workers about their Health, Safety and welfare.
- g** Ensure suitable welfare facilities are provided from the start and maintained throughout the construction phase.
- h** Check that anyone they appoint has the skills, knowledge, experience and, where relevant, the organisational capability to carry out their work safely and without risk to health.
- i** Ensure all workers have site specific inductions, and any further information and training they need.
- j** Take steps to prevent unauthorised access to the site.
- k** Liaise with the principal designer to share any information relevant to the planning, management, monitoring and coordination of the pre-construction phase.
- l** Complete the relevant sections of the BQC. Request NHBC inspection where required.

NEW

This will provide the following benefits:

- 1** Impose TW Cultural and Health and Safety principles at an earlier stage.
- 2** Establish an early relationship with the warranty provider and allow TW to be present for all key stage inspections.
- 3** Deliver to our customers the assurance that we have supervised a robust QA process on every plot at all stages within the construction process of their home.
- 4** Prevent potential non-compliance with use of TW approved materials.
- 5** Reduce the risk of significant remedial costs and negative media.
- 6** Prevent potential detailing not in accordance with TW UK Construction Specification or TW Technical information.



ROLE OF THE PRINCIPAL CONTRACTOR

EXCEPTIONS

Due to specialist or complex nature of works (e.g. high rise / concrete frame / basements) the BU may request dispensation from the relevant DC with proposed works detailed in the Site Start Authorisation pack. NEW

As the client, TW should appoint one of the following to conduct periodic checks on the effectiveness of the external PC's QA and HSE processes:

1 SiteM appointed to the development (who is completing the SMPP) as detailed in the Production Manual.

2 The Production Manager.

3 By another SiteM or Assistant SiteM deemed suitable by the BUPD.

The QM should attend site with any of the above to advise on compliance with agreed QA process as part of their role.

Note:

The above will not diminish from any current TW HSE current guidance. It is of critical importance that the nominated TW representative conducting the above duties on site act purely as the client's representative and will abide by the external PCs rules and procedures. The TW representative must not directly influence or detract from the external PCs responsibilities and direct instructions must not be given regarding the carrying out of works, depths of foundations etc. Any issues should be highlighted and communicated in writing to the PC.

OFF SITE WORKS

SiteM should be aware of any planning obligations including working hour restrictions prior to Site-Start. Off site obligations and timescales may be linked to site works and milestones therefore, it is essential that these are identified early as they could affect build routes and programmes. The obligations should be outlined in the below (please note that this list is not exhaustive and this should be confirmed with the BU's Land and Planning department):

1 Section 278 Highway Act; Highway works agreed as part of planning. Section 106 or 75 (Scotland); Planning Obligation which is a condition agreed as part of planning.

2 Section 74; New Roads and Street Works Act 1991 applying charges to over running highway works.

3 Section 21 Roads (Scotland) Act; Consent for new roads built not by a local authority.

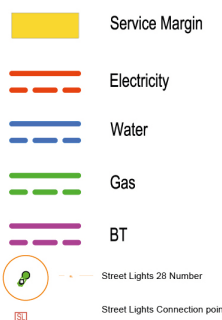
Specialist road and infrastructure work requires advance planning to ensure programmes are met as any works completed outside of the agreed times could face potential prosecution and fines in line with planning approval. Particular regard and advance notice should be given to utilities and road closures / partial road closure notices (road space) should be requested. Any effect on local residents should be clearly communicated through a comms plan.



COMBINED SERVICES PLAN



Please note:
Plot service connections are shown in
dashed lines and service mains are
shown as solid continuous line.



- 1 Service Coordination meetings must take place initially as part of the SMPP. The meeting should involve TW Production, Technical, Commercial, Service Provider, Health and Safety advisor and the Groundworker. Utilities installation, off site connections and road opening notices will be confirmed during this process. Meetings should take place regularly and minutes must be distributed.

For complex service coordination works, reference the HSE Manual for the service review meeting.

A combined service drawing must be clearly visible and maintained to ensure live services are recorded and communicated appropriately. Drawings should be updated regularly throughout the development life cycle to avoid as far as possible service strikes.

Site must hold copies of notices and approvals relating to utility installations and associated road openings.

The guidelines contained within Volume 1 and 2 - 'NJUG Guidelines on the Positioning and Colour Coding of Underground Apparatus' should be followed. Any deviation from these guidelines should only be conducted with the agreement of the asset owner. Any variation to depth of cover must permit access to all utility apparatus. Further guidance on depth of cover and colour coding is detailed within Volume 1.



SOIL MANAGEMENT STRATEGY

- 1 Any topsoil and/or subsoil that is being stripped whether for retention or export should be carefully managed. A Soil management Plan prepared by Production which normally forms part of the Materials Management Plan should be prepared to minimise the risk of losing, damaging or contaminating the soil.

This should show the areas and type of topsoil to be stripped, haul routes, the location of soil stockpiles and the type of soil to be stored within it. Soil types (i.e. top soil) should be separated and identified into temporary stock piles while being stored on site as per the Soil management plan

Soil management plan / soil execution plan should be fully understood to avoid unnecessary movement of soils. Changes to the Soil management Plan, such as changed haul routes or different than intended stockpiling locations, should be clearly marked on plans readily accessible by relevant site personnel, to prevent double handling issues and to ensure adequate access and egress.

- 2 The Site Manager should produce a clear strategy to ensure that materials stored on site avoid water courses and surface water flow paths. Installing silt fencing or constructing ditches could be considered for soil storage to avoid the formation of silt (mix of soil and water).

Alongside this general storage and upkeep of stockpiles should be considered carefully e.g. laying on membrane/terram if there is an issue with contamination or leachability.

- 3 The strategy should consider as early as possible the positioning of acoustic bunds. Acoustic bunds should be designed prior to Site-Start with dimensions included.

- 4 Areas of soil to be protected from construction activities (e.g. retained trees, protected habitats, archaeology, invasive weeds) should be clearly marked out by barrier tape and exclusion signs. Haul routes should be no wider than necessary to accommodate two passing vehicles and should be stripped of soil down to a firm base. Indiscriminate vehicle movements across soil should be avoided.

- 5 Export / Import of Soil
For soil/subsoil export/import adequate time should be allowed and confirmed at the pre start meeting for the site manager to engage with the commercial and technical teams prior to the export of material. Adequate time should be given to consider:

- The possibility of double handling
- Any Testing requirements
- Statutory timescales

With regard to import of soil/subsoil the following should be considered:

- Permissions are in place
- Testing requirements
- Site Inspections of material

Note:

Good practice measures following those recommended in Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites should be considered. Please note this document may not exactly reflect current legislation or controls, however it continues to be used to provide relevant advice by DEFRA.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf

Note:

See RSK soils guidance for more information. This is found on the inHouse Production page.



TREES

A Tree Protection Order (TPO) and protected hedgerows plan should be on site and adhered to. Any protection required must be installed prior to work commencing on site, and maintained during works. The local authority / ecological consultant will provide specification on the type and location of protection. Sites must follow NHBC guidance for building near trees and refer to the constraints plan.

Technical must obtain guidance from a qualified ecologist and / or an arboriculturalist where the removal or work to existing trees or hedgerows is required and adhered to.

ECOLOGICAL NETTING

The starting position should be to always program works outside of the nesting period but it is understood that this is not always possible. The use of ecological netting will only be considered appropriate once other options have been eliminated and should be assessed on a site by site basis. The assessment must be completed by an ecological consultant and should take into account the length of time the netting will be required, the physical extent of the netting required and the wider impact on the character and appearance of the site and surroundings. Technical approval is required prior to any works. Further to the above:

- 1 TW HSE team must be notified prior to the installation of any netting.
—
- 2 Netting should only be installed under the supervision of an ecologist;
—
- 3 Netting should be kept to a minimum to ensure no impact to potential wildlife and ensure the character of the site is not affected.
—
- 4 Technical in conjunction with an ecologist must provide a summary position providing full details of the proposals including time frames, extent of the netting or works, status of necessary permissions for works, together with wider landscape, ecology and biodiversity benefits of the scheme.
—
- 5 Netting in place for long periods of time increases criticism of both the practice and its effectiveness due to damage or movement, caused by tree and hedge growth. This can result in further problems where vegetation grows through the netting making it difficult to separate and dispose of sustainably. In such circumstances, it may be more appropriate to avoid the use of netting and instruct an ecological survey and undertake works under supervision as an alternate approach.
—



PRE-INSTALLATION CHECKS

EXISTING MANHOLES AND DRAINAGE CONNECTIONS



- 1** Existing connection points and invert levels should be checked against the design.
Installed drainage should be as straight as practical and checked with a system (i.e. laser).
—
- 2** The SiteM should be aware of any existing sewers and services. The sewer installation should be checked regularly with the local water authority and approvals recorded.
—
- 3** Highway manholes and drainage runs should also be checked regularly with the Highways Inspector.
—
- 4** The silt management plan should be followed.
—
- 5** Refer to the mandatory 'Design and Construction Guidance' (DCG) which replaced the Sewers for Adoptions Standards and gives provision for Sewerage Undertakers to adopt SUDs facilities.
—

MANHOLES



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- 1 Groundworkers should bench their manholes as construction proceeds and certainly prior to the sewer becoming live, this will help prevent blockages due to snagging of waste on rough benching.

Benching should be steel trowelled to provide a smooth finish and rounded corners. Falls to benching should be between 1:10 to 1:30.

Benching is not required with preformed manholes.

NEW



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- 2 Layouts for manhole placement should be followed however, consideration should be given to locating manholes not within vehicle track lines on driveways, outside of front doors and located fully in the garden or footpaths. Local adjustments can be made to accommodate the considerations highlighted above.

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ROAD CONSTRUCTION



- 1 The SiteM must ensure capping and sub base material is installed as per specification. The roads inspector must be notified at the correct time and encouraged to regularly inspect the road construction process. The SiteM must ensure the roads inspector approves the formation once dug and exposed.

The construction of the road is divided into two parts, the foundation (capping and sub-base) and the pavement (surface, binder and base courses). Each layer is laid to a tolerance as indicated in the table below. The depth of the running surface should be periodically checked during installation works to ensure the correct depth is being laid as per specification to avoid TW being overcharged.

NEW

Note:

Utilities design must be available in appropriate time prior to road formation completion to allow for road crossings to be installed as per design. Ensure utilities road crossings are installed as per design and installed during road construction.

Road surfaces – general – adjacent to a surface water channel	± 6mm + 10-0mm
Binder course	± 6mm
Base	± 15mm
Subbase under concrete pavement surface slabs laid full thickness in one operation by machines with surface compaction	± 10mm
Subbases other than above	+ 10-30mm



- 2 Placement of gully guards (or standard protection, e.g. straw and terram) in all gullies during construction and inspected, replaced / cleaned regularly.



SERVICES SUCH AS NOTED BELOW CAN SOMETIMES HAVE SIGNIFICANT LEAD TIMES. ENSURE THAT THIS IS FACTORED INTO THE PROGRAMME.



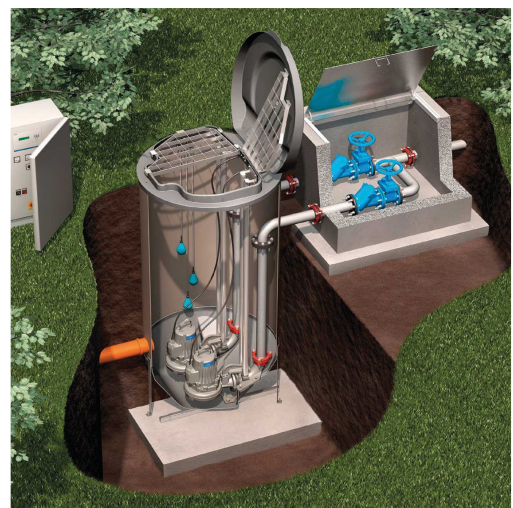
1 GAS GOVERNOR

A gas governor is designed to ensure that the pressure in a gas main or a gas pipe does not exceed the max design pressure. Ensure that gas governors are located as per design.



2 ELECTRIC SUBSTATION

Electric substations should be located as per design and supply the design max voltage.



3 PUMPING STATION

Pumping stations are typically required where the outfall is higher.



4 SUDS POND

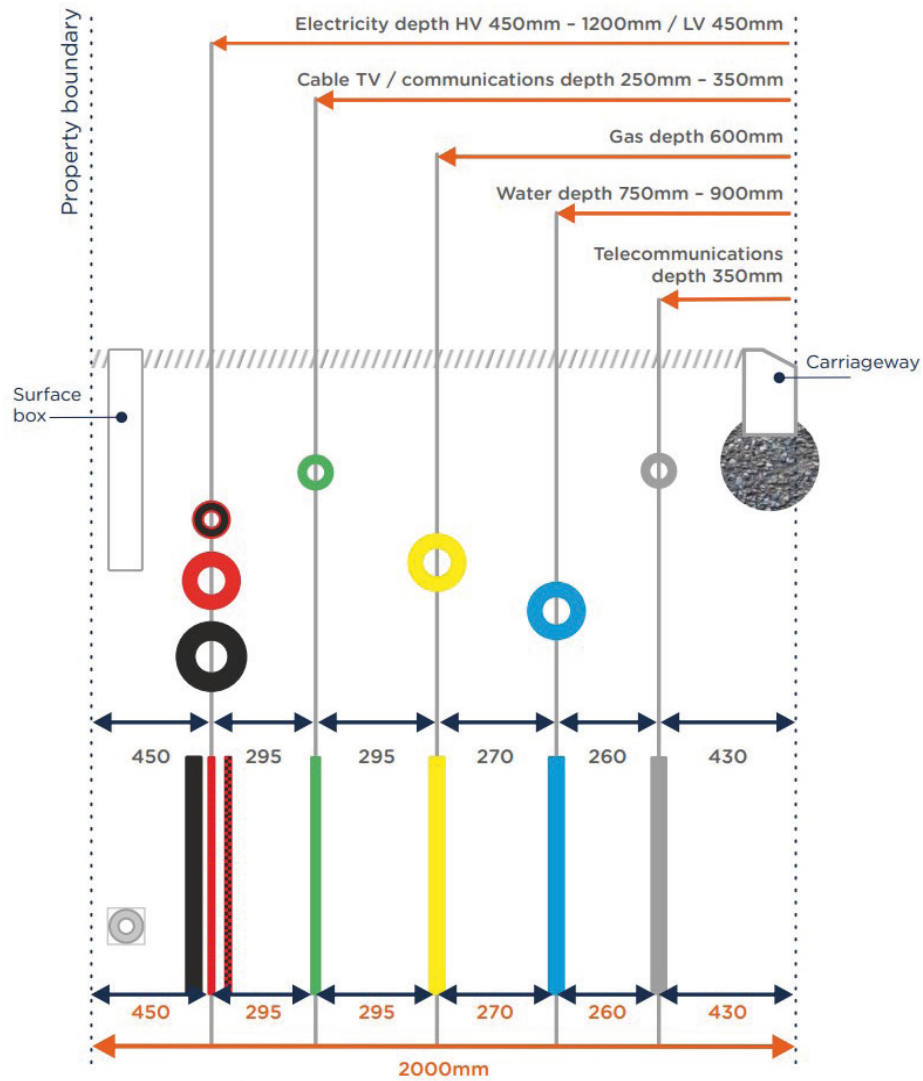
A Sustainable Urban Drainage System (SUDS) pond is a sustainable ground drainage system. It should be installed as per design.



TYPICAL FOOTPATH SERVICES LAYOUT

RECOMMENDED POSITIONING OF UTILITY APPARATUS IN A 2 METRE FOOTWAY

NEW



* Diagram is not to scale

TYPICAL FOOTPATH SERVICES LAYOUT



- 1** Procedures for the installation of services may vary and depend on the provider. Installation guidance should be obtained.
—
- 2** SiteM should refer to service providers plans.
—
- 3** Services should be laid as per the footpath and road sections in line with local authority and roads authority consents.
- 4** Ensure marker tape is provided over laid services.
—
- 5** Refer to the National Joints Utilities Group (NJUG) Guidelines in the positioning of underground utilities apparatus for new development sites for further information.
—

MAINS SERVICES INSTALLATION

- 1** All mains services should be programmed to be laid as soon as roads are constructed to base course. Service main installation once plot works have started will cause major disruption and delays and should be avoided.
—
- 2** SiteM should ensure that service tracks are backfilled with the appropriate and agreed material.
—



KERB PROTECTION



- 1 Tracked vehicles should be minimized on roads. Any roads in and around the site should be regularly scraped and kept clean.

Where tracked vehicles are required to cross over service strips, these should be planned, recorded on the existing services drawing and adequately protected to avoid damages. Where appropriate, kerbs should be protected.

PHASED HANDOVERS



- 1 Dependent on the planning consent and adoption process, phased handover of open space, roads and sewers to the local authorities should be pursued on multi-phase developments.

For production site close out and adoption procedures, please see Section 20, Production Site Closure of this Manual.