Installation of High Voltage Underground Cables

V3

Temporary Working Strip

When installing a high voltage electrical underground cable, a temporary working strip is normally fenced off, to permit construction of the underground cable, safely and efficiently. The width of this temporary working area will always be greater than the width of any agreed easement area required by National Grid and may not necessarily be centered on the underground cable. Typically working strips can be between 40 - 80 mtrs in width. The temporary working width allows for storage of topsoil and subsoil, excavated from the trench(es) and construction requirements. These soils are stored separately during construction to allow proper reinstatement of the soil structures.

Within the fenced area, a temporary construction haul road will be installed to allow easy passage for construction vehicles to travel along the cable route. At agreed locations, suitable crossing points can be installed for occupiers use to move stock or machinery, mitigating disruption and land severance, wherever possible and practical.

The width of the working strip is dependent upon the voltage of the cable and the type of underground construction being installed. The number and type of cables will determine how many trenches are required. The width may be increased in sections, for example, at road, rail, river and canal crossings, to accommodate the more complex construction processes at these locations.

Temporary fencing of the working area normally remains in place for the duration of construction and until reinstatement of the land is completed. The type of fencing will normally be determined by the grantor's requirements, but generally will be, but not restricted to, standard stockproof type fencing or a demarcated fence line.

At the conclusion of the project, all fencing will be removed or, subject to prior agreement, can be left for the landowner or occupier's use.

The following illustration show how a typical underground cable construction swath may be set up.

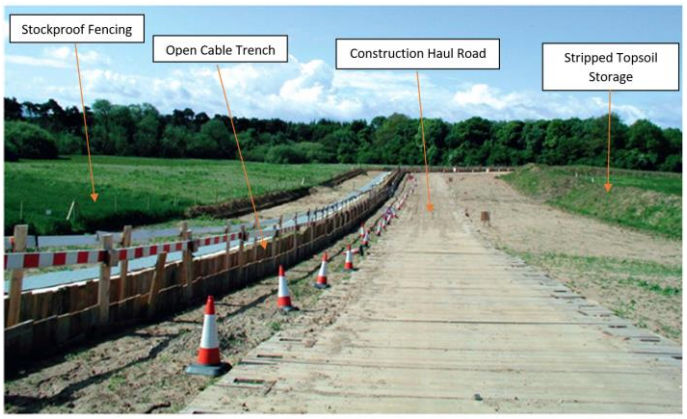

Image: Indicative cable route construction swath

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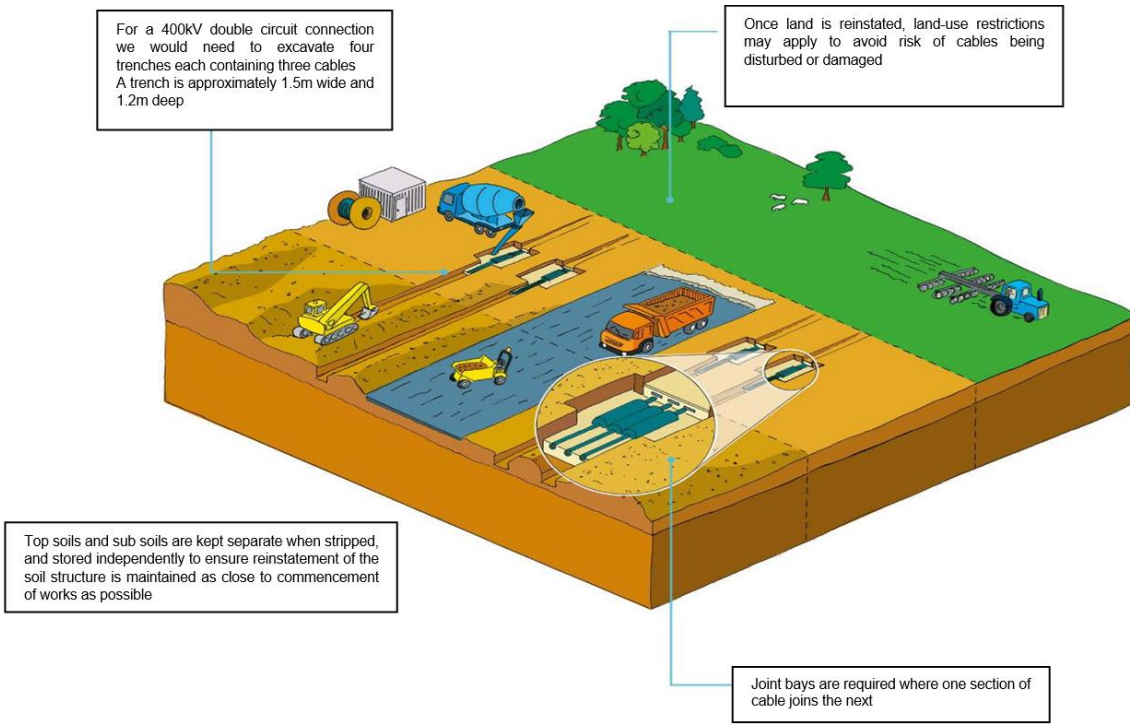

Land Drainage for Underground Cables

The effect of construction on land drainage is probably the subject of most concern for the majority of landowners and occupiers, along an underground cable route. We recognise that successful construction and reinstatement on a project depends upon the quality of drainage design and installation, where required. It may be that pre-construction drainage is required, in places, as well as post construction and accordingly, we will fully consult affected landowners and occupiers on all aspects of land drainage requirements.

Landowners will also have the opportunity to inspect any drainage works, on their property, as they progress. Where it will be of benefit, ‘cut-off’ drainage will be installed before construction. Cut-off drainage is designed to ensure that existing drainage systems, outside the underground cable working strip, function properly during the construction period. They also reduce the flow of drainage water onto the working areas and into trenches, when excavated.

The main phase of drainage works occurs after the underground cable has been installed and before topsoil reinstatement. The design of the drainage schemes will be agreed in detail with the landowners and occupiers and will normally include a combination of the permanent cross connection of existing drains coupled with the installation of new land drains which will be laid in parallel to the underground cable(s).

Accurate records of all existing and new drainage will be kept, and all affected landowners and occupiers will be given copies of these records once construction is completed.

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Cable Sealing End Compound

Sealing End Compounds (SEC) are needed where a section of cable is terminated, and the circuit continues on to overhead lines. These Sealing End Compounds are generally around 30m x 80m for a 400kV circuit and house the support structures for the cable terminations/sealing ends, post insulators, earth switches and a terminal tower. These enable the transition from cable conductor to the overhead line conductor.

Image : Typical Cable Sealing End Compound (SEC)

Joint Bays

For most schemes, the jointing of cables is required at intervals along the route. This is because cable is supplied in fixed lengths which is dictated by the cable drum size.

Where there is a joint bay installation, the requirement for the preferred equipment to be site will consist of either an above ground pillar box (illustrated below) or a manhole cover within a concrete section.

The land take for an above ground installation is approx 5m x 5m, with the man hole type being less. Further discussions will be required as the design of the scheme to determine such requirements can only be made, pending numerous other factors.

Image: Indicative Joint Bay Layout

Damage, Reinstatement and Compensation

Upon completion of any works, we will:

- return the land, as far as is reasonably practicable, to its original condition, including reinstating any walls fences or hedges removed;
- compensate for all reasonable proven loss;
- ensure that any timber cut remains the property of the owner and is tidily stacked, and left on site unless removal is requested;
- repair, divert or modify land drains damaged as a result of construction works; and
- pay reasonable fees, based on National Grid fee scale policy, for any agent retained to negotiate and settle a compensation claim, should any landowner or occupier choose to be professionally represented

National Grid recognise the unique ability of any landowner or occupier to deal most effectively with their own land. We therefore continually work with landowners to agree a suitable schedule with which to undertake the most effective reinstatement format.

This is, in most cases, for the land occupiers to undertake topsoil management, once reinstated, to ensure smooth re-introduction of the land into the holdings overall farming structure. All such activities undertaken by the occupiers will be compensated for accordingly.

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