national highways

Strategic Charging Infrastructure Guidance

Directional drilling for motorway crossings

03 February 2025

Table of contents

Glossary

CD 622	Managing geotechnical risk - geotechnical design standard within the DMRB that defines the technical approval and certification procedures to be used
DBFO	Design Build Finance Operate – project delivery structure where a private company manages part of the SRN on behalf of National Highways
Designer	Company that undertakes the geotechnical design of the drilling route and produces the CD 622 submissions
DGA	Designer's Geotechnical Advisor – person working within the designer who has a CD 622 designated role and is responsible for CD 622 submissions
DMRB	Design Manual for Roads and Bridges – contains all National Highways' design standards, which must be followed
ERP	Emergency Response Plan – details the actions if the directional drilling trigger levels are exceeded and time frames for responses
GDR	Geotechnical Design Report - a report type within CD 622
GFR	Geotechnical Feedback Report - a report type within CD 622
GI	Ground investigation – needed to determine the ground properties
GIR	Ground Investigation Report - a report type within CD 622
GISR	Ground Investigation Scope Report - a report type within CD 622
MAP	Monitoring Action Plan – details of the carriageway monitoring to be undertaken, including time frames
NHGA	National Highways Geotechnical Advisor – technical authority responsible for geotechnical certification under CD 622 (termed the Overseeing Organisation's Geotechnical Advisor in CD 622)
NH Operations	National Highways Operations – regional teams in National Highways who manage the operational and renewal aspects of the SRN
PSSR	Preliminary Sources Study Report - a report type within CD 622
RCI	Rapid Charging Infrastructure – charging points and associated electrical cabling/infrastructure
SOI	Statement of Intent – a report type within CD 622
SRN	Strategic Road Network – the routes managed by National Highways, which include motorways and trunk roads
TM	Traffic management – set up to provide a safe working area on a live carriageway

1. Introduction

1.1.1. When undertaking a Rapid Charging Infrastructure (RCI) scheme, there may be a need to install electrical cables beneath motorways using directional drilling techniques. This note summarises the processes to follow and submissions needed to allow such drilling to proceed.

1.1.2. Although these processes are common across National Highways, there are occasional regional differences in their implementation, which are not covered in this document. Annex 1 shows the National Highways regions. In addition, some motorway routes are operated and maintained by separate DBFO companies, who would manage the processes in-house.

1.1.3. To find the initial point of contact in the relevant regional NH Operations team or DBFO company, email the National Highways customer contact centre (info@nationalhighways.co.uk).

1.1.4. The timescale for completing cable installations beneath a motorway from the initial route determination through the planning, design, construction and closeout stages can be around one year.

2. Statutory/Technical Requirements

2.1. Statutory

2.1.1. Carrying out any construction around motorways will require statutory consent from the regional NH Operations team or DBFO company.

2.1.2. The statutory requirements for working on highways are contained in the New Roads and Streetworks Act 1991 (NRSWA), supplemented by the Traffic Management Act 2004 (TMA). The term ‘street’, as defined in NRSWA Section 48, includes adjacent footways and cycle tracks.

2.1.3. Under NRSWA Section 61, motorways have ‘protected street’ designation and therefore all RCI scheme proposers will require written consent via a permit from NH Operations or the DBFO company, even if they hold statutory installation powers. Additional conditions may also be attached to the issued permit as allowed under the TMA.

2.1.4. If the RCI scheme proposer does not have any pre-existing statutory powers, then a NSWRA Section 50 streetworks licence will be required in addition to the Section 61 consent.

2.1.5. If directional drilling spans both National Highways (including DBFO companies) and the Local Authority network, then both highway authorities need to be consulted. If Network Rail assets are impacted, then their technical procedures need to be followed as well.

2.1.6. Under NRSWA Section 54, the highway authority must be notified in advance before commencing construction. The notification period will be confirmed by the NH Operations team or DBFO company.

2.1.7. Processing and issuing the necessary permits and licences will be undertaken within NH Operations in each region or the DBFO company, including invoicing for the various costs.

2.1.8. NRSWA Section 61 permits will only be issued following completion and certification of the required technical submissions.

2.2. Technical

2.2.1. The design, reporting and approval requirements to be followed for directional drilling under a RCI scheme are contained in the DMRB Standard CD 622 (CD 622 - Managing geotechnical risk).

2.2.2. The regional National Highways Geotechnical Advisor (NHGA) who will review the CD 622 geotechnical submissions can be found by contacting the team email address: GeotechnicsTeam@nationalhighways.co.uk.

2.2.3. A Designer's Geotechnical Advisor (DGA - see CD 622) needs to be proposed to the regional NHGA for agreement. This person within the designer should be agreed early in the scheme to avoid delays issuing the CD 622 reports to the NHGA for review and certification.

2.2.4. The first report to be issued is a Statement of Intent (SOI). A guidance note on CD 622 submissions has been produced by the NHGA Team: *Geotechnical Certification process for Third Party Trenchless Installations Under National Highways' Strategic Road Network*. The latest version can be obtained from the regional NHGA and the potential to combine some of the future reporting can be discussed at this point.

3. Land Acquisition Considerations

3.1.1. Whether temporary and/or permanent third party land take is required will depend on the RCI scheme cable route.

3.1.2. Launch (entry) and reception (exit) pit locations for the directional drilling are commonly outside of National Highways' land boundaries and third party agreement will be needed for access and the construction works.

3.1.3. The routes to take plant and equipment across third party land from an appropriate road access point will need to be considered as well as ground/environmental protection e.g. temporary track matting.

3.1.4. Temporary access arrangements will be required separately for any ground investigation plant and equipment.

3.1.5. National Highways will not be involved in any land negotiations.

3.1.6. Obtaining agreement from third party landowners can take considerable time and the scheme programme should include a suitable allowance.

4. Existing Utility Considerations

4.1.1. Existing utilities in the vicinity of the directional drilling location may be under National Highways ownership or a third party and all will need to be identified before any works (including ground investigation) commence.

4.1.2. National Highways' utilities include drainage, communication cabling and power cabling and the regional NH Operations team or DBFO company should be consulted for information on what is in the vicinity of the drilling route (including any buried structures, e.g. culverts).

4.1.3. Third party utilities may be located beside the motorway or crossing the motorway and could be with any major provider.

5. Ground Investigation

5.1.1. Ground investigation (GI) is likely to be needed to enable design of the launch/reception pits and the drill crossing to ensure the construction risk to the motorway will be negligible.

5.1.2. The quantity of any GI can be discussed with the regional NHGA after completion of the SOI. In advance of the GI works a Ground Investigation Scope Report (GISR) will need to be submitted.

5.1.3. Ensure time is allowed to complete sufficient laboratory testing as the results will be required for the design.

5.1.4. The results of the GI and laboratory testing are reported in the Ground Investigation Report (GIR).

6. Geotechnical Design Requirements

6.1.1. Design of the directional drilling are reported and certified in the Geotechnical Design Report (GDR). The design also needs to include:

- an estimate of the settlement across the motorway carriageway extents
- how it proposes to manage the risk of ground movement and applied mitigations to control movement during drilling
- a proposed grid of survey monitoring points for the motorway carriageway surface to be checked pre, during and post construction

- a set of movement trigger values (green/amber/red) and consequent actions during drilling (which can be different for settlement or heave)

6.1.2. The drilling contractor's Risk Assessments and Method Statements (RAMS) should include a Monitoring Action Plan (MAP) and an Emergency Response Plan (ERP) in case triggers are breached (with timings for any actions). These documents will need to be submitted prior to construction for acceptance by the regional NH Operations team or DBFO company. If not available to be included in the GDR, they should be added into the Geotechnical Feedback Report (GFR).

6.1.3. All geotechnical reports (apart from the GFR) require certification before construction can commence.

7. Construction Monitoring

7.1.1. If traffic management (TM) is required for the survey equipment, then a road space booking needs to be made with the regional NH Operations team or DBFO company. Approval of the TM layout will also be required, so sufficient lead in time needs to be allowed.

7.1.2. Ensure the pre-construction monitoring of the motorway carriageway surface is completed to set up a baseline.

7.1.3. Obtain emergency contact details for a regional NH Operations or DBFO company member of staff and include them in the MAP and ERP.

7.1.4. Undertake the required monitoring during the drilling operations, as well as the agreed period following installation of the cable ducting.

7.1.5. If carriageway movement triggers are breached, then the RCI scheme proposer will be liable for any damage to the carriageway and/or utilities. It would be expected that the NRSWA Section 61 permit would refer to the agreed ERP and applicable enforcement arrangements.

8. Geotechnical Feedback Report

8.1.1. The GFR includes the as-drilled locations of the installed cable ducting beneath the motorway. All monitoring records need to be included in the report, as well as relevant photographs taken during construction.

8.1.2. Details of any problems encountered during the drilling and how they were overcome, together with an updated risk register with any residual risks highlighted should also be in the GFR, including damage mitigation measures where trigger levels have been breached.

8.1.3. If required by NH Operations or the DBFO company, a Health and Safety file for the installation should be issued, which includes the certified GFR.

Annex 1 – National Highways Regions