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Low Point Sump Construction Method Statement

Transport Infrastructure Ireland

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Introduction

This Method Statement describes the construction methodology for the construction of a low point sump pump station between St Stephens Green and Charlemont Stations.

1.1 Tunnel Realignment

The tunnel realignment does not present any material change to the description of the TBM tunnelling works as presented in EIAR Appendix A5.13 as the tunnel will remain within the Limestone with 5m additional cover.

1.2 Low Point Sump

There will however be a need for an additional pumping station at the sump in the alignment between St Stephen's Green and Charlemont stations. The construction of these pumping stations is covered in EIAR Appendix 5.13

As set out in Appendix 5.13, the low point sump passages required for these pumping stations will be constructed using SCL techniques from the main tunnel after the TBM has finished. The sequence of works will be:

- Install survey monitoring points in the main tunnel;
- Divert any in-tunnel services;
- Provide fissure grouting to reduce in situ permeability following drilling and testing;
- Install in tunnel props;
- Pull or break out top section of tunnel lining rings or remove the top half of the segmental open set;
- Excavate top heading of 1st advance of passage;
- Spray SCL to support top heading;
- Pull or break out lower section of tunnel rings;
- Excavate and shotcrete bottom section;
- Continue advancing passage until end chainage; and
- Construct internal concrete finishes.

Prior to any works on the low point sump passage, monitoring points will be established in the main tunnel and background readings taken to establish baseline values. These monitoring points will be surveyed daily while the works are carried out to ensure no movement in the main tunnel. The monitoring points will be installed shortly after the TBM passes, which would give plenty of time to obtain a stable baseline. Any services that will still be required will be diverted around the proposed opening before breaking out the tunnel rings and excavating the initial advances of the eye of the passage. The top section of the passage will be excavated and sprayed concrete applied before the lower section of tunnel rings are broken out. The passage will then be advanced by top heading and invert to the location of the sump in advances typically 1m to 1.3m long. All inverts will be closed with sprayed concrete to provide a stable tunnel. Once the SCL works have been completed, the internal shape of the sump will be formed by in-situ concrete delivered along with track bed concrete.

All SCL works will be controlled by a Required Excavation and Support Sheet (RESS) which will be produced by a Senior SCL Engineer as described in Appendix A.13, section 4.8.