



ANNEX 3.2

**Technical Optioneering Report:
Electrification of the Northern Line
between Malahide and Drogheda**

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Abbreviations

Abbreviation	Definition
CAF	Common assessment framework
MCA	Multi-criteria analysis
OHLE	Overhead line equipment
TSS	Train Service Specification

1 Introduction

The purpose of this report is to introduce the technical input to the Preliminary Option Selection Report for the electrification package of work.

This Annex provides the technical assessment of the electrification of the Northern Line between Malahide and Drogheda. The nature and spread of the works is such that the report has been split into relevant Sections, as outlined in section 2. Each Section is contained within its own document.

Sections provide the technical assessment; from option selection through to the Emerging Preferred Option, including the options considered and how the Emerging Preferred Option was chosen.

Table 2-1 outlines which Sections have applied the standard multi-criteria analysis (MCA) process. Each Section includes:

- An introduction and description of the study;
- A summary of the option assessment approach undertaken;
- A description of the existing situation;
- The requirements;
- The relevant constraints;
- The option assessment containing:
 - Longlist of options;
 - Sifting of longlist of options;
 - Summary and details of the shortlisted options;
 - Multi-criteria analysis (MCA);
- The Emerging Preferred Option.

For Sections not subject to the MCA process, the layout is broadly similar, with the options assessment following a technical-driven process.

2 Packages of work

The scope of work for DART+ Coastal North covers a wide range of interventions on the Northern Line needed in order to meet the Train Service Specification (TSS) requirements. To appropriately assess options against each other, the works have been split into separate work packages and detailed in Annexes to the preliminary option selection report. Where appropriate, the Annexes have then been further split down into Sections. The annex for the Electrification of the Northern Line between Malahide and Drogheda (*this document*) has been broken down into Sections. Table 2-1 provides document references and titles, and details whether or not the section goes through the longlisting and MCA process.

Table 2-1: Sections contained within Annex 3.2: Electrification of the Northern Line between Malahide and Drogheda

Section	Title	Longlisting	MCA content
A	OHLE system	No	Not required as the OHLE system type is driven by standards and any options have no material effect on external parties, the public and/or the environment.
B	OHLE foundation solution	No	Not required as this has no material effect on external parties, the public and/or the environment.
C	OHLE foundation solution at underbridges	Yes	Assessment of the OHLE solution for underbridges which are of heritage value, visually prominent or over environmentally sensitive areas.
D	Bridge parapet modifications	No	Not required as solution is driven by safety requirements.
E	OHLE Bridge Clearance works	No	Not required as the OHLE solution adopted is driven by standards.
F	Traction Power Supply (will form part of Public Consultation 2)	Yes	Not required for traction power supply strategy which is set by operational requirements and standards, however is required for localised substation locations due to potential impacts on external parties, the public and / or the environment.

Section	Title	Longlisting	MCA content
G	User worked level crossing south of Donabate	Yes	Assessment of various interventions in response to impact of electrification/service frequency increases.
H	Fencing and lineside safety	No	Not required as the option is driven by safety standards

3 References

This report should be read in conjunction with the following related optioneering reports:

Table 3-1: List of key documents associated with this report

Annex	Title	Description
N/A	DART+ Coastal North Preliminary Option Selection Report	This is the main report which summarises the optioneering process and the different packages of proposed works on the DART+ Coastal North project.
N/A	DART+ Coastal North Preliminary Option Selection Report – Executive Summary	This report summarises the main Preliminary Option Selection Report.
1	Emerging Preferred Option Maps	Includes drawings for each Emerging Preferred Option, to support the Preliminary Option Selection Report.
2.1	Policy Context	This presents a detailed review of the European, National, Regional and Local policy context for the DART+ Programme and the DART+ Coastal North Project
2.2	Useful Links	Useful links to documents/websites relating to the DART+ Coastal North project.
3.1	Constraints Report	This report reviews the DART+ Coastal North constraints.
3.2 (<i>this document</i>)	Technical Optioneering Report: Electrification of the Northern Line between Malahide and Drogheda.	The Technical Optioneering Report for the Electrification of the Northern Line between Malahide and Drogheda. The report is divided into a series of sections, as described in Table 2-1.
3.3	Technical Optioneering Report: Works around Drogheda MacBride Station	The Technical Optioneering Report for Works around Drogheda MacBride Station. The report addresses track and station modifications to allow for the

Annex	Title	Description
		increased number of DART services.
3.4	Technical Optioneering Report: Works around Malahide Station	The Technical Optioneering Report for Works around Malahide Station. The report addresses track modifications required to allow trains to be turned back clear of through running services.
3.5	Technical Optioneering Report: Works around Clongriffin Station	The Technical Optioneering Report for Works around Clongriffin Station. The report addresses track modifications required to allow trains to be turned back clear of through running services.
3.6	Technical Optioneering Report: Works around Howth Junction & Donaghmede Station	The Technical Optioneering Report for Works around Howth Junction & Donaghmede Station. The report addresses the addition of tracks to allow a higher frequency shuttle service.
3.7	Technical Optioneering Report: Howth Branch Level Crossings	The Technical Optioneering Report for the Howth Branch Level Crossings. The report addresses the impacts of all proposed increases in train frequency on existing level crossings on the Howth Branch.

4 Option Assessment Approach

As shown in Table 2-1, a number of the Sections have gone through an MCA process whilst others do not require this. This requirement has been defined using the Department of Transport's Common Appraisal Framework for Transport Projects and Programmes (CAF).

Sections containing options which have the potential to be geographically different from each other and have a material difference on external parties or the environment follow the MCA process.

For other Sections, elements can be scoped out of the MCA process for any of the following criteria:

- If the type of system to be used is solely governed by IÉ standards and specified by technical requirements, then the CAF/MCA process is not utilised;
- OR
- If the type of design/systems to be used has no material effect on external parties, the public and or environment then the CAF/MCA process is not utilised;
- OR
- If there is no material geographic difference between the options, then the CAF/MCA process is not utilised.

When one or more of these statements is correct, the development of an Emerging Preferred Option is not subject to the MCA process and is instead based upon technical requirements.

Further details can be found in the Option Selection Process section of the Preliminary Option Selection Report