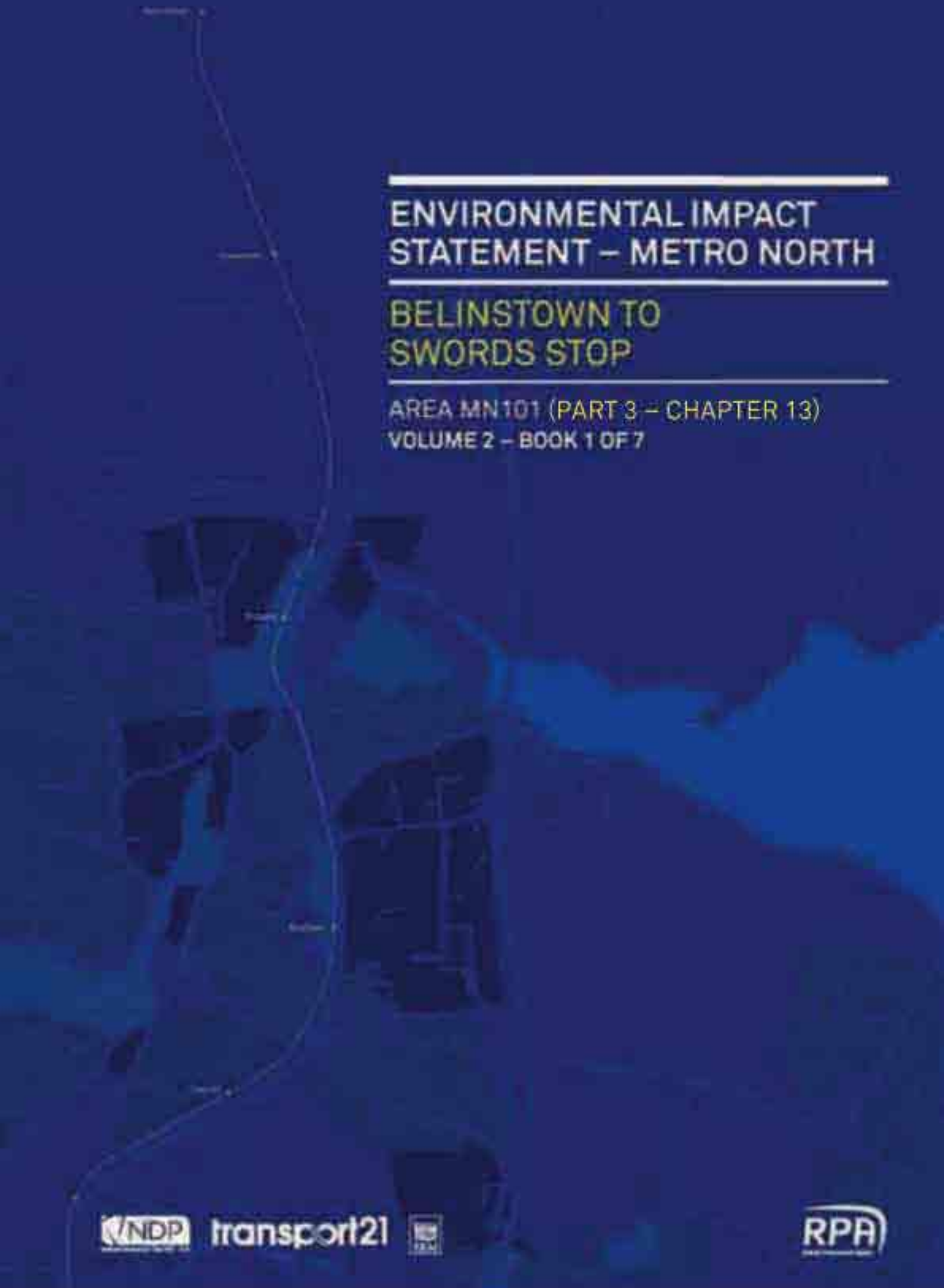
ENVIRONMENTAL IMPACT STATEMENT – METRO NORTH

BELINSTOWN TO SWORDS STOP

AREA MN101 (PART 3 – CHAPTER 13)

VOLUME 2 – BOOK 1 OF 7



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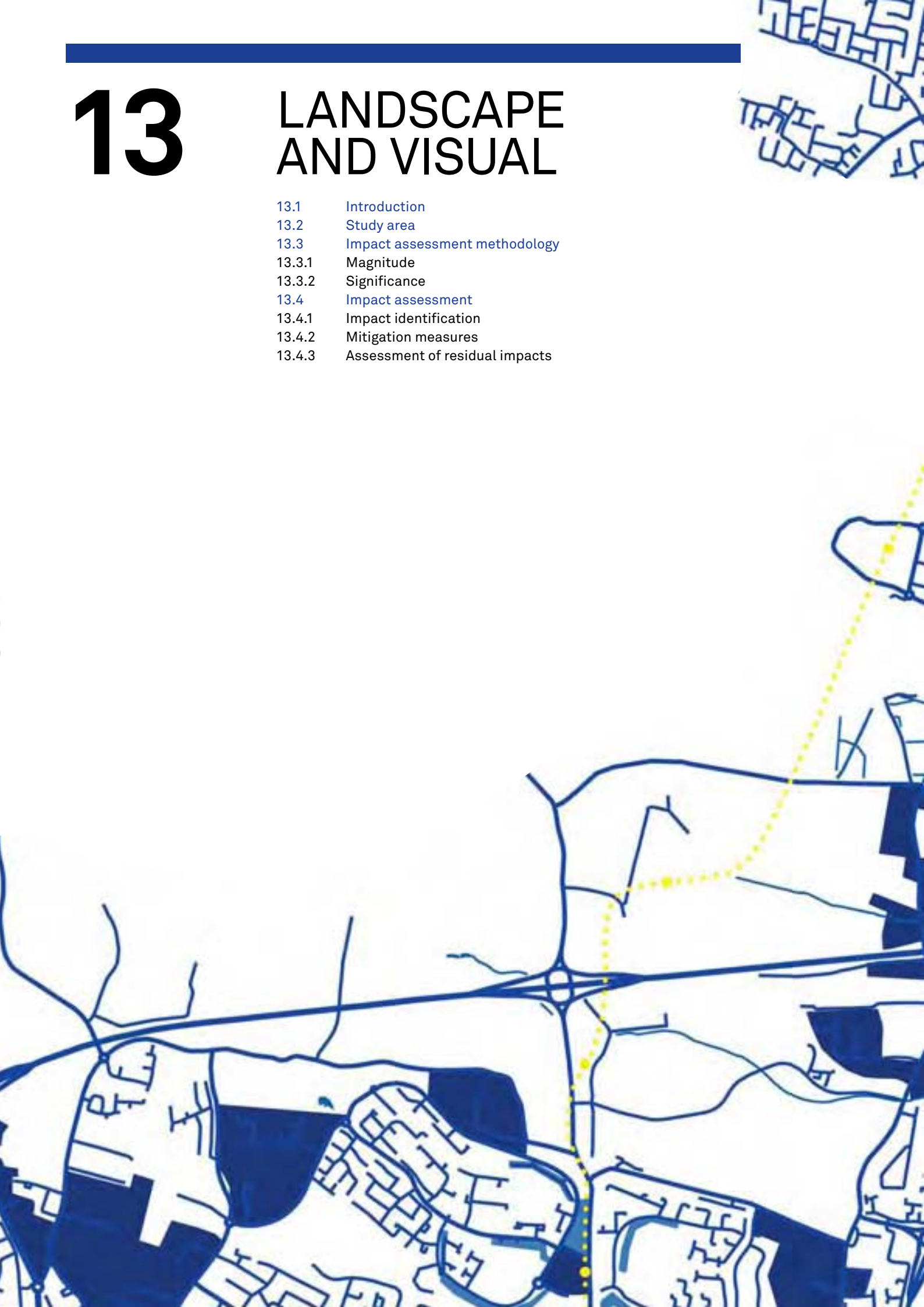
13 LANDSCAPE AND VISUAL



This chapter of the EIS evaluates the potential for landscape and visual impacts arising from the construction and operation of the proposed scheme in Area MN101.

13.1 INTRODUCTION

This chapter of the EIS evaluates the potential for landscape and visual impacts arising from the construction and operation of the proposed scheme in Area MN101.

13.2 STUDY AREA

The study area corresponds to the potential zone of visual influence of the proposed scheme. The study area is illustrated on maps (Baseline Landscape and Visual) included in Volume 3, Book 1 of 2.

The dimensions of the study area vary in width depending on the local landscape. In built-up areas, the study area typically extends to the edges of the buildings on either side of the centre line of the proposed scheme. The dimensions of the study area are generally wider in locations where the proposed alignment runs through open space or farmland where longer distance views are possible.

13.3 IMPACT ASSESSMENT METHODOLOGY

The source and type of all potential impacts is described in Section 13.4.1.

Mitigation measures to be put in place are defined in Section 13.4.2. Mitigation measures are defined for any adverse impacts that are deemed to be of medium or greater significance prior to mitigation. The extent to which mitigation is needed increases as the significance of the impact increases.

The residual impacts on landscape and visual amenity are assessed based on the assumption that all mitigation planting will be established successfully and good growth and development will have taken place over a 15 year period from implementation of the planting. The planting is therefore assumed to be effective in providing visual screening of the proposed scheme which will be most effective during the summer months and hence the impact of the scheme is expected to be significantly reduced.

Residual impacts that persist after mitigation measures have been put in place are evaluated in terms of magnitude and significance as described in this section. A summary of all residual impacts is provided in Section 13.4.3.

Table 13.1 Criteria for assessment of magnitude of change on landscape

Criteria	Magnitude of change
A clearly evident and frequent or continuous change in key landscape characteristics or components affecting an extensive area.	very high
A clearly evident change either over a restricted area or infrequently perceived or a moderate change in key landscape characteristics or components, frequent or continuous and over a wide area.	high
A moderate change either over a restricted area or infrequently perceived or a small change in key landscape characteristics or components over a wide area.	medium
A barely or rarely perceptible change in key landscape characteristics or components.	low
Imperceptible change.	very low

Table 13.2 Criteria for assessment of magnitude of change in visual amenity

Criteria	Magnitude of change
Major changes in view such as at close distances, affecting a substantial part of the view, continuously visible for a long duration, or obstructing a substantial part or important elements of view.	very high
Clearly perceptible changes in views such as at intermediate distances, resulting in a either a distinct new element in a significant part of the view, or a more wide ranging, less concentrated change across a wider area.	high
Moderate changes in views, such as at long distances, or visible for a short duration, perhaps at an oblique angle, or which blends to an extent with the existing view.	medium
Change which is barely visible, such as at very long distances, or visible for a very short duration, perhaps at an oblique angle, or which blends with the existing view.	low
Imperceptible change.	very low

13.3.1 Magnitude

The magnitude of change affecting landscape or visual receptors depends on the nature, scale and duration of the particular change that is envisaged, the location in which it is proposed, and the overall effect on a particular view. This may be very small if the scheme is at some distance. In a landscape, the magnitude of change will depend on the loss or change in any important feature or change in the backdrop to, or outlook from, a landscape. The angle of view, duration of view, distance from the proposed scheme, degree of contrast with the existing view and the extent of visibility all influence the magnitude of the change in view.

The criteria used to assess the different levels of magnitude of change associated with impacts on landscape are shown in Table 13.1. The criteria used to assess the different levels of magnitude of change associated with impacts on visual amenity are shown in Table 13.2.

13.3.2 Significance

Significance is determined by considering the sensitivity (functional value) of the landscape or visual receptor and the magnitude of change expected as a result of the proposed scheme. Each case is assessed on its own merits as significance is not absolute and factors unique to each circumstance need to be considered. However, the general principles underpinning the evaluation of significance are set out in Table 13.3 and this table provides a guide to the application of professional judgement and experience in each individual case.

Table 13.3 Criteria for assessment of impact significance

		Magnitude of change				
		very low	low	medium	high	very high
Sensitivity of landscape / viewpoint (Functional value)	low	Not significant	Low significance	Low significance	Medium significance	Medium or High significance
	medium	Not significant	Low significance	Medium significance	High significance	High or Very high significance
	high	Not significant	Low significance	Medium or High significance	High or Very high significance	Very high significance

13.4 IMPACT ASSESSMENT

13.4.1 Impact identification

Sources of impact on landscape and visual amenity include the following:

- All above ground structures including track sections, rolling stock, elevated structures, bridge crossings, roads and road realignments, buildings, earthworks, Park & Ride facilities, the depot, stops and associated furniture;
- Lighting.

These sources of impact will result in the following impact types:

Direct Impacts

- Loss of landscape elements, including permanent land loss, vegetation losses, severance of watercourses, loss of built elements (which are part of the existing landscape or townscape fabric);
- Changes in physical topography as a result of the introduction of earthworks embankments or cuttings;
- Physical changes arising from the introduction of new structures into the receiving landscape or townscape.

Indirect Impacts

- Change to the character of a local landscape arising as a result of the visibility of the proposed scheme.

Landscape and visual impacts may be:

- Positive: a change, which improves the quality of the environment (for example, improving landscape diversity, removal of an existing negative aspect etc.);
- Neutral: a change, which does not affect the quality of the environment;
- Negative: a change, which reduces the quality of the environment (for example, impact on broadleaved woodland, obstructing an existing view etc).

13.4.2 Mitigation measures

13.4.2.1 Construction

The following mitigation measures will be applied throughout the construction phase to minimise landscape and visual impacts:

- Fencing will be erected around all temporary work sites;
- Materials and machinery will be stored tidily during the works;
- Portable machinery will be stored behind fencing in compounds when not in use;
- Roads providing access to site compounds and work areas will be maintained free of excessive dust and mud as far as is reasonably practical;
- Lighting of compounds and work sites will be restricted to agreed working hours and that which is necessary for security;
- Temporary fencing, barriers, traffic management and signage will be removed when no longer required;
- All existing trees to be retained will be protected prior to the commencement of construction in accordance with BS 5837 (or an equivalent standard);
- On completion of construction, all remaining spoil and construction material will be removed;
- Work sites and other land occupied temporarily will be reinstated.

The assessment of residual construction impacts assumes that the mitigation measures described in this section are implemented.

13.4.2.2 Operation

In assessing the impact of the proposed scheme on the landscape and visual environment, account was taken of various measures that will be taken to mitigate potential adverse effects. The landscape mitigation measures specific to Area MN101 are described in this section and illustrated in the Landscape Insertion Plans see page 222 to page 323.

The mitigation measures that will apply to the proposed scheme overall include the following:

- ecologically sensitive integration of the proposed scheme into the receiving environment. The proposed landscape treatments will complement the surrounding ecological network and will counter the potential barrier and fragmentation effect of the proposed scheme as well as compensate for the loss of habitat;
- consideration of the landscape character and context of the proposed scheme in the preparation of the landscape design which will also consider the road user. The proposed scheme will aim to retain and reinforce regional identity where possible;
- use of landscape planting treatments that require minimal long term maintenance and whose species content match or enhance the character of the surrounding area;
- a range of different habitats will be created to enhance local biodiversity including grasslands, scrub, woodland planting and hedgerows.

Additional landscape mitigation measures that will be implemented repeatedly in particular locations along this area of the alignment are listed in Table 13.4.

Table 13.4 Mitigation measures specific to Area MN101

Landscape mitigation measures	Description and purpose	Area in which mitigation will be put in place (Additional detail regarding mitigation measures is provided in the Landscape Insertion Plans see page 222 to page 323)
GLM 1	As much existing vegetation as possible will be retained within and adjacent to the scheme. Vegetation to be retained will be protected in accordance with BS5837. Where any woodland is removed for essential safety reasons the potential effects of wind-throw will be assessed and appropriate measures included in the design to mitigate any effects.	LLCA1: Woodland at the edge of Balheary Demesne LLCA2: At the crossings of both the Broad Meadow and Ward River. LLCA4: Protection of existing vegetation to be retained will apply in the following locations: - linear stretches of woodland located on either side of the R132 road from Estuary Roundabout to Seatown Roundabout; - vegetation around the Seatown Roundabout; - vegetation on the western side of the R132 road between Seatown Roundabout and Chapel Lane; - vegetation on the western side of the R132 road between Chapel Lane and Malahide Roundabout; - vegetation on the western side of the R132 road between Malahide Roundabout and south of Swords Stop.

Landscape mitigation measures	Description and purpose	Area in which mitigation will be put in place (Additional detail regarding mitigation measures is provided in the Landscape Insertion Plans see page 222 to page 323)
GLM 2	Planting to be introduced to compensate for vegetation loss and contribute or reinstate local landscape character.	LLCA1: Local road (roadside planting) adjacent to the Balheary Demesne LLCA4: Replacement planting measures will apply to the following: - On the eastern side of the R132 road between the Seatown Roundabout and the Malahide Roundabout; - Around the abutments of the proposed pedestrian footbridge at Chapel Lane; - On the southern side of the Malahide Roundabout surrounding the abutments of the proposed replacement footbridge; - On the eastern side of the R132 road between Malahide Roundabout and south of the Swords Stop; - On the western side of the R132 road north of Carlton Court.
GLM 3	Planting and/or hedgerow to be introduced to mitigate loss of landscape pattern and contribute to or reinstate local landscape character.	LLCA1: Along the length of the proposed alignment and proposed access roads throughout this local landscape character area. LLCA2: Along the line of the footpath parallel to the R132 road between the Broad Meadow and Ward Rivers.
SLM 1a	Earthworks bunds and planting to be introduced to screen the proposed depot and Park & Ride from view	LLCA1
SLM 1b	Planting to be introduced to screen the proposed Belinstown Stop and Park & Ride from view from residents of dwellings located west of the proposed scheme	LLCA1
SLM 1c	Planting to be introduced to screen the proposed scheme	LLCA1: To screen Lissenhall Stop from residents living west of the proposed scheme LLCA3: to screen the scheme from view within this open space
SLM 1d	Planting to be introduced to soften earthworks embankment and assist its integration into the receiving landscape.	LLCA1 LLCA3
SLM 1e	Access to dwelling house to be realigned. Possible requirement for planting as part of realignment. Planting also to be introduced to soften earthworks embankment and assist its integration into the receiving landscape.	LLCA1
SLM 1f	Planting to be introduced to soften earthworks embankment and assist its integration into the receiving landscape.	LLCA1

13.4.3 Assessment of residual impacts

13.4.3.1 Project scenario: construction phase

LLCA 1 Lissenhall Farmland
Construction Compound 1, at the depot, will be situated within LLCA 1 for a period of four years. It is the single largest of all the proposed compounds. The compound will eventually be the permanent location of the depot facility including multi-storey car park, depot buildings and railway sidings and light metro vehicles (LMVs). Vegetation, principally in the form of hedgerows, will be removed as a consequence of the construction of these permanent structures, rather than as a consequence of the location of the construction compound.

Compound 1 will contain offices and welfare buildings which will be static elements visible in the wider area for four years. These temporary facilities may be stacked above each other causing a visual impact and indirect impact on the area for four years. In addition, large amounts of topsoil and material will be stored in this compound and therefore there will be considerable visible movement of vehicles in this area.

Also located within LLCA 1 is Construction Compound 2, Option 1. This mainly serves as a storage area for works at Compounds 3 and 4. Offices and welfare buildings will be static visible elements in this area. It will be situated in this LLCA for 2 years.

There will be cranes, lorries and workers moving variously along the alignment throughout this LLCA. There will also be considerable movement of construction traffic, materials and workers introduced into this area which has been categorised as of high landscape sensitivity (functional value).

There are a number of close visual receptors to Compound 1 and similarly close to Compound 2: Option 1.

With regard to Compound 1, the magnitude of change in terms of both landscape and visibility during the construction period is considered very high resulting in a construction impact of Very high significance albeit temporary. In terms of the rest of the alignment and Compound 2: Option 1, the magnitude of change in terms of both landscape and visibility is considered as medium and the significance of construction impact is judged to be Medium and of a temporary nature.

LLCA 2: Broad Meadow and Ward River Corridors
Compound 2, Broad Meadow: Option 2 is located in a heavily vegetated area close to the Ward and Broad Meadow Rivers. This landscape has been assessed as of High Sensitivity (functional value) and the trees/woods are protected. If existing trees are removed only as a consequence of locating the compound then the magnitude of change would be very high and consequently the significance of the impact would be very high. As little as possible of the existing vegetation, particularly the mature trees should be removed in creating this compound, in order to reduce the level of predicted impact.

LLCA 3: St. Anne's Estate and Environs
Construction impacts in this area are mainly likely to arise from the construction of the Estuary Viaduct. This elevated structure will require the use of cranes for the lifting and placing of tall concrete components. There will also be considerable movement of vehicles between the nearest compounds and the stretch of viaduct.

The LLCA is classified as of high sensitivity (functional value however the majority of this work will be occurring adjacent the R132 dual carriageway. There is industrial activity present in parts of this character area and therefore, taking this and the location of the works into account, it is considered that impacts from construction will be of Medium significance of a temporary nature.

LLCA 4: Swords and Seatown Residential Area
There are three construction compounds located within this LLCA: Compounds 3, 3a and 4. Compound 3, Chapel Lane, is associated with the Chapel Lane footbridge and will contain offices and welfare facilities. There will also be construction activities within the compound. It will be present at this location for 2 years. Compound 3A, will have a similar function as Compound 3, but is located on the other side of the carriageway.

Compound 4, is located further south adjacent to the Malahide Roundabout and it primarily serves the Malahide underpass and footbridge. It will contain offices and welfare facilities and will be present for two years. Construction work will also occur within the compound.

All compounds are located on grassed open spaces with existing mature trees. Existing vegetation will require retention and protection as in most cases mature trees and shrubs will provide future screening of the scheme.

All compounds are adjacent to residential properties therefore views will be fully available towards construction activities, vehicles and any stored materials.

There is a considerable amount of different types and scales of construction within this local landscape, including viaducts, underpass, footbridges as well as the general alignment and stops. There will therefore be a considerable amount of different construction activities and types of vehicles visible within a primarily residential area. The landscape sensitivity within this area is considered medium with all of the viewpoints deemed to be of high sensitivity (functional value).

It is considered that landscape impacts arising from construction activity are of Medium significance of temporary nature. In terms of visual impact, the significance of impact from construction is considered High due to the high levels of activity. Both these impacts are temporary in nature.

13.4.3.2 Project scenario: operational phase

The impacts on both landscape and visual amenity in the LLCAs are discussed in this section. The impacts on landscape are described in terms of the direct effects (direct physical changes) that are predicted to occur and indirect effects (effects on landscape character arising from the visibility of the scheme).

The visual impact assessment is undertaken from specific viewpoint locations within the visual envelope of the scheme within each LLCA. For each viewpoint, the visual baseline is presented as a brief description of the main components in the existing view. The predicted view is also described together with the significance of visual impact with mitigation measures.

LLCA 1 Lissenhall Farmland

Landscape Impacts (Direct effects)

This Local Landscape Character area will be directly affected by the proposed scheme.

The most northerly end of the proposed scheme includes the widening of Batter Lane, and Belinstown features a depot facility including multi-storey car park, depot buildings, railway sidings and LMV's which will result in permanent loss of a large area of land and loss of hedgerow vegetation principally. Significant visual impacts will arise in the locality as a result of proposed buildings and structures, for example the multi-storey car park. There will also be a change imposed on the landscape character due to the extent of landscape bunding proposed, particularly to the south of the depot. Once planting has established, this landscape bunding will fit into the landscape character providing a positive effect.

The quantity of land lost amounts to: the area covered inside the depot security fence circa 19 ha, the area covered by Belinstown Stop, multi-storey car park and substation 3.8 ha and the area of landscape bund and surrounding earthworks 13.8 ha.

From the depot, the proposed scheme extends south across farmland at grade. A strip of farmland will be replaced with a paved surface of little landscape value. Belinstown Stop will be located in a large field for which no tree or hedgerow vegetation losses are predicted to occur. Further south, the alignment and access road will cross farmland involving severance of hedgerows. Hedgerow vegetation will also be lost to facilitate the proposed Lissenhall Stop.

Further south, the alignment and access road will cross the access road to a dwelling in Lissenhall Little. The road and local road realignment will involve vegetation losses including mature trees located at the boundary of Balheary Demesne and the access road to Balheary Demesne.

Thereafter the road joins the line of the existing R132 road involving severance of hedgerows. The alignment (track only) will cross a local access road directly north of the Broad Meadow River. Sections of at least three hedgerows containing mature trees will be lost.

Table 13.5 Direct impacts on LLCA 1

Loss of landscape elements and features
- An area of farmland will be permanently removed and replaced with infrastructure relating to the proposed depot.
- Loss of sections of at least five hedgerows at the location of the proposed depot.
- Loss of hedgerow vegetation on the minor road in order to facilitate access to the proposed multi-storey car park.
- Loss of sections of at least four hedgerows in the vicinity of Belinstown Stop along the route of the proposed scheme and access road, two of which contain mature trees.
- Loss of sections of at least two hedgerows in the vicinity of Lissenhall Little, one of which contains mature trees.
- Access road to a dwelling house (protected structure) will be crossed by the proposed scheme and access road.
- Vegetation losses associated with a new road and realignment of the existing local road includes sections of roadside hedgerows and some mature trees at the edge of Balheary Demesne.
- Loss of two sections of hedgerow, one of which contains mature trees located to the south of Balheary Demesne.
- Loss of sections of two hedgerows, one of which contains mature trees associated with the R132 road tie in
- Loss of sections of three hedgerows each of which contains mature trees north of the Broad Meadow River.
Changes to local topography as a result of earthworks structures

- Earthworks embankment (with a total length 1,041m) associated with the proposed access road in three locations as follows:
  - In the vicinity of Belinstown.
  - Crossing the access road to the dwelling house in Lissenhall Little.
  - In the vicinity of Lissenhall Little.

- Earthworks cutting associated with the scheme north of the Broad Meadow River measuring 948m
Changes arising from the introduction of proposed structures
- Depot at Belinstown including multi-storey car parking facilities and associated buildings.
- Access road including local road realignment
- Proposed alignment
- Belinstown Stop
- Lissenhall Stop
Loss of landscape elements and features
- Electricity substation adjacent to Lissenhall Stop.
- Intersection at access road to dwelling house in Lissenhall Little
- Intersection at local road north of the Broad Meadow River.

Landscape Impacts (Indirect effects)
Indirect effects will also arise in this landscape because of the visibility of the proposed scheme.

The proposed scheme, in particular the depot, is expected to be seen from many locations within this LLCA. The multi-storey car park is likely to be the most visually prominent element. Unbroken views of the depot will be gained from the farmland located immediately north and south of the site owing to the absence of vegetation screens. Outside of this area, the main areas of visibility include the route of the M1 road to the east and Batter Lane to the west and north of the site proposed for the depot. Further afield, partial distant views of the upper portions of the proposed taller structures (workshop, multi-storey car park) are likely to be gained from locations where vegetation screens are absent or through gaps in existing vegetation. The upper portions of the depot structures (including the workshop and the multi-storey car park) are expected to be visible in part and partly screened from view by the mitigation earthworks and planting.

Further south, the proposed scheme is expected to be visible over relatively short distances. The height of the proposed scheme is limited to the metro vehicles and stop structures. These elements are likely to be screened from views from further away by the existing extensive network of hedgerow vegetation containing mature trees. The proposed alignment is expected to be substantially screened from view by planting introduced as mitigation measures.

The overall LLCA especially around the area of the depot location is assessed to have a high sensitivity (functional value) to the proposed change and the magnitude of change arising from the scheme is assessed as being high, following mitigation measures. The significance of the impact is therefore assessed as being High.

Visual Impacts
The visual impact assessment results are outlined below and presented in detail in Table 13.10. For each viewpoint, the visual baseline is presented as a brief description of the main components in the existing view. The predicted view is also described together with the significance of visual impact both with and without mitigation measures.

It is predicted that there will be adverse visual impacts associated with the infrastructure during years 1 to 15 as the planting will be in an immature state.

Following the establishment of the planting mitigation, visual impacts of a High significance are predicted to apply at 2 viewpoint locations (1c and 1e). Visual impacts of a Medium significance are predicted to apply at 2 viewpoint locations (1a and 1b). Visual impacts of a Low significance are predicted to affect 1 viewpoint location (1f).

Six viewpoint locations are located within LLCA 1 (1a, 1b, 1c, 1d, 1e and 1f). A description of the visual impacts that occur at these viewpoint locations is provided in Table 13.10. For each viewpoint, the visual baseline is presented as a brief description of the main components in the existing view. The mitigation measures to be employed at these locations are shown in detail in the Landscape Insertion Plans (see page 222 to page 323). The evaluation of impacts described in Table 13.10 takes into consideration the effects of these mitigation measures.

It is predicted that there will be adverse visual impacts associated with the infrastructure during years 1 to 15 as the planting will be in an immature state. Visual impacts at Viewpoint 1d are not considered to be significant. Visual impacts at Viewpoint 1f are considered to be of Low significance. Visual impacts at Viewpoint 1a and 1b are considered to be of Medium significance. Visual impacts at Viewpoint 1c and 1e are considered to be of High significance. In order to aid the reader, a photomontage of Viewpoint 1c (view of the depot from a group of dwellings in Belinstown) has been prepared and is included in this chapter (see page 324).

LLCA 2: Broad Meadow and Ward River Corridors

Landscape Impacts (Direct effects)
This Local Landscape Character area will be directly affected by the proposed scheme.

The existing bridge crossing over the Broad Meadow River will be upgraded and modified to carry the alignment. The alignment runs broadly parallel with the R132 Swords Bypass as it crosses this character area. A line of mature trees will have to be removed. One track of the proposed scheme will cross the existing bridge over the Ward River and a further bridge crossing over this river will be required to carry the second track which will be located to the west of the existing bridge. The new bridge will have an effect on the existing bridge by precluding views and affecting its setting. Further mature tree losses will occur at this location. This impact is assessed to be Very high based on a high magnitude of change as mitigation measures will take a considerable time to replace the existing mature trees.

Table 13.6 Direct impacts on LLCA 2

Loss of landscape elements and features
Loss of a linear stretch of mature trees located at and in between the Broad Meadow and Ward Rivers.
Changes to local topography as a result of earthworks structures
Earthworks cutting associated with the proposed scheme measuring 82m.
Changes arising from the introduction of proposed structures
At grade alignment and new bridge over the Ward River.

Landscape Impacts (Indirect effects)
The alignment is expected to be partially visible (filtered through existing vegetation to be retained) from the R132 road and from the open spaces associated with the river landscape located to the west of the alignment. Views of the alignment will also be gained in part from the footpath aligning the Ward River, in locations where vegetation screens are absent in the direction of the scheme.

This LLCA is assessed to have a high sensitivity (functional value) to the proposed change and the magnitude of change is assessed as being medium. However, taking the mitigation measures into account, the significance of the landscape impact is assessed as being Low.

Visual Impacts
The visual impact assessment results are outlined below and presented in detail in Table 13.10. For each viewpoint, the visual baseline is presented as a brief description of the main components in the existing view. The predicted view is also described together with the significance of visual impact both with and without mitigation measures.

It is predicted that there will be adverse visual impacts associated with the infrastructure during years one to 15 as the planting will be in an immature state. Indirect adverse impacts will continue to arise in this local landscape character area because of the visibility of parts of the proposed scheme. It is expected however that views of the proposed scheme will be available over a very restricted part of this landscape character area owing to the screening effect of the mitigation planting. The visibility of the proposed scheme is expected to rise particularly in wintertime owing to leaf loss.

Visual impacts of a Medium significance are predicted to affect one viewpoint location (2c). Visual impacts of a Low significance are predicted to affect two viewpoint locations (2a and 2b). Both these judgements take mitigation measures into account.

Three viewpoint locations are located within LLCA 2 (2a, 2b, 2c). A description of the visual impacts that occur at these viewpoint locations is provided in Table 13.10. For each viewpoint, the visual baseline is presented as a brief description of the main components in the existing view The mitigation measures to be employed at these locations are shown in detail in the Landscape Insertion Plans (see page 222 to 323). The evaluation of impacts described in Table 13.10 takes into consideration the effects of these mitigation measures.

It is predicted that there will be adverse visual impacts associated with the infrastructure during years one to 15 as the planting will be in an immature state. Indirect adverse impacts will continue to arise in this local landscape character area because of the visibility of parts of the proposed scheme. It is expected however that views of the proposed scheme will be available over a very restricted part of this landscape character area owing to the screening effect of the proposed mitigation planting. The visibility of the proposed scheme is expected to rise particularly in wintertime owing to leaf loss. Visual impacts at Viewpoint 2a are considered to be of Low significance. Visual impacts at Viewpoint 2b are considered to be of Low significance. In order to aid the reader, a photomontage of Viewpoint 2b (view of Balheary Bridge from recreational lands) has been prepared and is included in this chapter (see page 325). Visual impacts at Viewpoint 2c are considered to be of Medium significance.

LLCA 3: St. Anne's Estate and Environs

Landscape Impacts (Direct effects)
This Local Landscape Character area will be directly affected by the proposed scheme.

The alignment is expected to cross the eastern edge of this LLCA at grade and as an elevated structure for 334m. Vegetation losses will arise along the edge of this open space adjacent to the R132 road. Specific direct impacts are thus outlined in this section.

Table 13.7 Direct impacts on LLCA 3

Loss of landscape elements and features
- Loss of four linear sections of mature trees
- Existing estuary footbridge to be demolished.
Changes to local topography as a result of earthworks structures
- Earthworks embankment associated with the proposed alignment of 167m
Changes arising from the introduction of proposed structures
- Alignment at grade or on shallow embankment measuring 657m.
- Alignment (as elevated) structure measuring 334m
- Estuary Stop.

Landscape Impacts (Indirect effects)
The alignment is expected to be clearly visible from the R132 road and from the open spaces located within this LLCA.

This LLCA is assessed to have a high sensitivity (functional value) to the proposed change and the magnitude of change is assessed as being very high. Indirect adverse impacts will continue to arise in this local landscape character area because of the visibility of parts of the proposed scheme. Elements associated with the elevated structures are likely to be visible in part whilst the section of the alignment that is approximately at ground level is expected to be screened from view. Taking the mitigation measures into account, the significance of the landscape impact is assessed as Medium.

Visual Impacts

Viewpoints for specific visual impact assessment were not selected in this LLCA. However viewpoint 2c located on the footpath adjacent to the Ward River (located in LLCA 2) passes through this open space and therefore represents many of the recreational users of this amenity. Visual impact is judged as being Medium from this viewpoint.

LLCA 4: Swords and Seatown Residential Area

Landscape Impacts (Direct effects)

This Local Landscape Character area will be directly affected by the proposed scheme.

The Estuary viaduct, carrying the proposed scheme will follow the course of the R132 road, specifically aligned over the central reservation from Estuary Roundabout to the southern side of the Seatown Roundabout. A pedestrian bridge located north of Seatown Roundabout will be demolished. Vegetation losses will occur in the vicinity of the Seatown Roundabout.

The proposed scheme, (at grade), will follow the line of the R132 road south of Seatown Roundabout. Vegetation losses will occur on the eastern side of the road route and at the abutments of the proposed replacement footbridge at Chapel Lane. Seatown Stop will be introduced.

The scheme will pass underneath the Malahide Roundabout requiring the construction of the ramps and underpass which will involve vegetation losses at the southern side of the roundabout and along the R132 road. An existing footbridge will be replaced involving vegetation losses. An at-grade section of the proposed scheme will continue along the line of the R132 road south of the Malahide Roundabout. This will include the Swords Stop.

Table 13.8 Direct impacts on LLCA 4

Loss of landscape elements and features
- Loss of a linear stretch of mature trees on the north western side of the Seatown Roundabout.
- Pedestrian bridge north of Seatown Roundabout will be demolished.
- Loss of a linear stretch of mature trees on the south eastern side of the Seatown Roundabout and adjacent to the south bound carriageway of the existing R132 road.
- Loss of mature trees on the western side of the R132 road at Chapel Lane.
- Loss of a linear stretch of mature trees on the eastern side of the existing R132 road extending south as far as the Malahide Roundabout. This includes a group located near Chapel Lane.
- Loss of two groups of mature trees located south of the Malahide Roundabout.
- Pedestrian bridge south of Malahide Roundabout will be demolished
- Loss of linear stretch of mature woody vegetation adjacent to the southbound carriageway of the R132 road. This vegetation extends from the Malahide Roundabout to the limit of MN 101.
- Loss of a linear stretch of mature woody vegetation adjacent to the northbound carriageway of the R132 road located between Malahide and Pinnock Hill Roundabouts.
- Loss of hedgerow vegetation in the fields beside the southbound carriageway of the R132 road north of Airside Business Park.
- Severance of hedgerows in the field beside the south bound carriageway of the R132 road just north of Pinnock Hill Roundabout.
Changes to local topography as a result of earthworks structures
- Earthworks associated with the abutments of the footbridge to be located south of the Malahide Roundabout.

Changes arising from the introduction of proposed structures

- Estuary viaduct: Elevated structure of 714m length and supported by columns extends from Estuary Roundabout to south of the Seatown Roundabout.
- At grade alignment approaching Seatown Stop.
- Electricity substation to east of R132, adjacent to Seatown Stop.
- Chapel Lane replacement footbridge.
- Tunnel portals to cut and cover alignment under the Malahide Roundabout.
- Replacement footbridge south of the Malahide Roundabout.
- At grade alignment approaching Swords Stop.
- Swords Stop.
- Electricity substation to east of R132, adjacent to Swords Stop.

Landscape Impacts (Indirect effects)
Indirect effects will also arise in this landscape because of the visibility of the proposed scheme.

The proposed elevated structure is expected to be visible in part at short range from many locations albeit filtered through relatively thin vegetation screens. In wintertime the visibility of the proposed scheme is expected to increase owing to leaf loss. In some locations, where existing vegetation will have to be removed, the proposed scheme is expected to be fully visible. Examples of such locations include the Chapel Lane pedestrian bridge crossing and part of this LLCA located to the south of the Malahide Roundabout.

This LLCA is assessed to have a medium sensitivity (functional value) to the proposed change and the magnitude of change arising from the proposed scheme is assessed as being Medium. Indirect adverse impacts will continue to arise in this local landscape character area because of the visibility of parts of the proposed scheme. Upper portions of the elevated structures and LMV's may be visible above the line of the planting introduced as mitigation measures to particular locations.

The scheme is assessed as resulting in an impact of Medium significance.

Visual Impacts
The visual impact assessment results are outlined below and presented in detail in Table 13.10. For each viewpoint, the visual baseline is presented as a brief description of the main components in the existing view. The predicted view is also described together with the significance of visual impact both with and without mitigation measures.

It is predicted that there will be adverse visual impacts associated with the infrastructure during years one to 15 as the planting will be in an immature state.

Taking mitigation into account, predicted visual impacts range from Medium for three viewpoints (4a, 4c and 4d) and Very high significance for one of the viewpoint locations in this LLCA (4b).

Six viewpoint locations are located within LLCA 4 and Area MN101 (4a, 4b, 4c and 4d). A description of the visual impacts that occur at these viewpoint locations is provided in Table 13.10. For each viewpoint, the visual baseline is presented as a brief description of the main components in the existing view The mitigation measures to be employed at these locations are shown in detail in the Landscape Insertion Plans (see page 222 to page 323). The evaluation of impacts described in Table 13.10 takes into consideration the effects of these mitigation measures.

It is predicted that there will be adverse visual impacts associated with the infrastructure during years one to 15 as the planting will be in an immature state. Indirect adverse impacts will continue to arise in this local landscape character area because of the visibility of parts of the proposed scheme. It is expected however that views of the proposed scheme will be available over a very restricted part of this landscape character area owing to the screening effect of the proposed mitigation planting. The visibility of the proposed scheme is expected to rise particularly in wintertime owing to leaf loss. Visual impacts at Viewpoint 4a, 4b, 4c and 4d are considered to be of Medium significance.

13.4.3.3 Summary of residual impacts

A summary of all residual impacts is provided in Table 13.9 and Table 13.10.

Table 13.9 Summary of residual impacts on landscape

LLCA ID	Sources of Impact	Amount	Impact Description	Mitigation measures	Sensitivity of LLCA (Functional Value)	Magnitude (post mitigation	Significance (Post mitigation)
LLCA 1	Depot and multi-storey car park. Alignment. Belinstown and Lissenhall Stops.	Alignment of 1,750m Proposed roads.	Vegetation losses Introduction of earthworks structures. Introduction of depot and associated buildings.	Earthworks and planting design to be introduced to mitigate depot and facilities. Planting to mitigate impact of alignment.	high	high	High
LLCA 2	Alignment crossing over Balheary Bridge	Alignment of 95m	Vegetation losses Introduction of new bridge structure	Planting to be introduced to replace lost trees and integrate new structure.	high	low	Low
LLCA 3	Alignment at approximate ground level. Alignment as an elevated structure	Alignment at approximate grade of 657m Elevated section of alignment of approximate 334m length	Vegetation losses Introduction of structures at ground level and as elevated structures.	Planting to be introduced to screen earthworks and structures from view.	high	medium	Medium
LLCA 4	Estuary viaduct. Seatown and Swords Stops. Footbridges. At grade sections of the proposed scheme. Portals to the Malahide Roundabout underpass.	Elevated structures of 1,033m total length. At grade sections of 827m	Vegetation losses primarily comprising linear stretches of mature trees aligned along the R132 road.	Replacement planting and new planting to be introduced.	medium	medium	Medium

Table 13.10 Summary of residual impacts on visual amenity at selected viewpoint locations

Viewer Type: H: Residents of dwellings/houses; R: Recreational users; T: Commuters/ pedestrians; W: Workers.

View point ID	Location and viewer type	Components of the existing view	Mitigation measures (as shown in the Landscape Insertion Plans see page 222 to page 323)	Description of the proposed view (with landscape mitigation measures)	Sensitivity of viewpoint (Functional Value)	Magnitude (post mitigation	Significance (Post mitigation)
1a	Dwelling in Belinstown (H)	Local road and earthbank in foreground. Undulating pastureland including localised ridgeline. Industrial sheds associated with haulage business.	Woodland planting to be implemented to provide visual screening of the depot and buildings. Planting also becomes a source of impact.	Local road and earthbank in foreground. Ridgeline in foreground. Industrial sheds associated with haulage business. Upper portions of some of the proposed depot buildings, including the multi-storey car park in the far distance.	high	medium	Medium
1b	Dwelling in Belinstown (H)	Farmland and hedgerow vegetation. Scattered trees. M1 motorway and traffic in far distance. Large scale buildings.	Mounding and woodland planting to be implemented to provide visual screening of the depot and buildings. Planting becomes source of impact	Farmland and vegetation. Existing agricultural buildings. Upper portions of some of the buildings including the proposed multi-storey car park behind existing agricultural buildings.	high	medium	Medium
1c	Group of dwellings in Belinstown (H)	Minor road. Open farmland. Hedgerows. M1 motorway and traffic in far distance. (Please refer to page 324 for a photomontage of this location)	Earthworks and woodland planting to be implemented to provide visual screening of the depot and buildings. Planting becomes source of impact	The western elevation of the proposed multi-storey car park will be visible at short range together with access to these facilities. The alignment and light metro vehicles will be partly visible. (Please refer to page 324 for a photomontage of this location)	high	high	High
1d	Lissadell Stables in Lissenhall Little (W)	Dwelling entrance. Hedgerows. Filtered views of farmland and golf course through hedgerows.	Woodland and or hedgerow planting to be implemented to screen the alignment from view.	The alignment will be screened to a great extent by intervening vegetation. Filtered views may be available of part of the alignment, (identifiable by the moving light metro vehicles) in wintertime due to leaf loss.	low	very low	Not signifi-cant

View point ID	Location and viewer type	Components of the existing view	Mitigation measures (as shown in the Landscape Insertion Plans see page 222 to page 323)	Description of the proposed view (with landscape mitigation measures)	Sensitivity of viewpoint (Functional Value)	Magnitude (post mitigation	Significance (Post mitigation)
1e	Location outside of dwelling (H), (T)	Driveway associated with dwelling in Lissenhall Little. Filtered views of farmland and vegetation through hedgerows.	Woodland and or hedgerow planting to be introduced to screen (as much as possible) views of the scheme.	The minor road realignment works will be visible at very short range together with the alignment and light metro vehicles.	high	high	High
1f	Dwelling on N1 road route (H)	Boundary or curtilage planting. Farmed pasture beyond and adjacent to dwelling.	Woodland or hedgerow planting to be introduced to screen views of the proposed alignment and metro vehicles.	Filtered views in wintertime (with leaf loss) of alignment from the rear garden. Short range views of the alignment to the south are likely to be available from the entrance driveway.	high	low	Low
2a	Location on R132 road (T)	Balheary Bridge crossing over the Broad Meadow River. Riverside vegetation. Open grassed spaces.	Planting to be introduced to replace tree losses where these occur and to break up the visibility of the alignment whilst affording views of the bridge structure.	The renovated Balheary Bridge carrying the passing metro vehicles will be visible at short range	low	medium	Low
2b	Location within open space (R)	Footpath. Stone wall. Bridge over the Ward River and associated piped infrastructure. Mature tree and shrub vegetation. Grassed open space in the foreground. Grassed open space beyond stone wall. (Please refer to page 325 for a photomontage of this location)	Planting to be introduced in groups to break up the visibility of the linear scheme and moving vehicles.	The new bridge carrying the northbound part of the alignment will be visible in part behind some existing structures (stone wall and drainage pipes etc). The alignment together with the metro vehicles will be visible Unsightly pipes are existing negative feature. (Please refer to page 325 for a photomontage of this location)	high	low	Low

View point ID	Location and viewer type	Components of the existing view	Mitigation measures (as shown in the Landscape Insertion Plans see page 222 to page 323)	Description of the proposed view (with landscape mitigation measures)	Sensitivity of viewpoint (Functional Value)	Magnitude (post mitigation	Significance (Post mitigation)
2c	Edge of Swords Business Campus along walkway beside Ward River (R), (W)	Open space. Shrub vegetation in foreground. Shelter belt planting in far distance. Sports buildings (partly visible through gaps in vegetation).	Planting to be introduced to screen views of the scheme at grade and the stop. The proposed planting is expected to partially screen the elevated section. There will be increased visibility of the elevated section in wintertime due to leaf loss.	Alignment (at grade)together with the LMV's and the Estuary Stop will be visible within the open space. Further south in the distance, the alignment as an elevated structure carrying LMV's will be visible.	high	medium	Medium
4a	Seatown Villas (H)	Grassed open space. Fence railing boundary and part of caravan/camping park. Mature vegetation.	Structures and LMV's should be designed to be visually aesthetically pleasing where possible.	The alignment on an elevated structure is likely to be visible in part through gaps in existing vegetation. Moving LMV's are also likely to be partly visible.	high	medium	Medium
4b	Seatown Terrace (H)	Car park (partly visible through gaps in existing standard tree planting). Railing boundary.	Structures and metro vehicles should be designed to be visually aesthetically pleasing where possible.	The alignment on an elevated structure together with metro vehicles is likely to be clearly visible in part through gaps in existing standard tree planting	high	medium	Medium
4c	Seatown Walk (H)	Open space bounded by concrete block boundary wall. Mature vegetation in background. Railing to pedestrian footbridge.	Planting to be implemented to replace existing planting removed to facilitate the bridge construction. Planting to be introduced to screen views of earthworks and thereby integrate same into the receiving landscape.	The alignment on an elevated structure together with moving metro vehicles is expected to be partly visible above the line of existing vegetation. Part of the proposed replacement footbridge structure (Chapel Lane) will also be visible together with associated earthworks at short range.	high	medium	Medium

View point ID	Location and viewer type	Components of the existing view	Mitigation measures (as shown in the Landscape Insertion Plans see page 222 to page 323)	Description of the proposed view (with landscape mitigation measures)	Sensitivity of viewpoint (Functional Value)	Magnitude (post mitigation	Significance (Post mitigation)
4d	Ashley Avenue (H), (R)	Open space and concrete boundary wall. Semi-mature cherry trees in foreground.	Planting to be implemented to replace existing planting removed to facilitate the proposed scheme. Planting to be introduced to screen views of the alignment and bridge earthworks and thereby integrate same into the receiving landscape.	The alignment and moving metro vehicles is expected to be fully visible (owing to loss of existing vegetation). Part of the proposed bridge structure (Chapel Lane) and associated earthworks is also expected to be visible at short range.	High	Medium	Medium

Landscape Baseline Plans
Batter Lane
Sheet 1 of 2

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BASELINE LANDSCAPE

Landscape Insertion Plans
Batter Lane
Sheet 1 of 2

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PLAN

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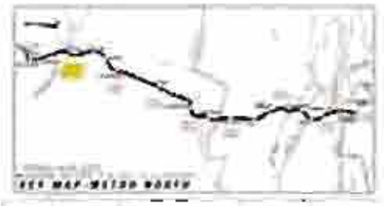

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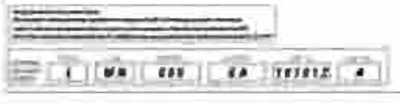
RAILWAY WORKS

LINE NN - ALIGNMENT DETAILS

BATTEN LANE SHEET 1 OF 3

101



Landscape Baseline Plans
Batter Lane
Sheet 2 of 2

RAILWAY ORDER DRAWING EXTENT

Proposed Metro North Alignment

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RAILWAY WORKS

BASELINE LANDSCAPE

Area 1 - Safter Lane Sheet 1 of 2

Landscape Insertion Plans
Batter Lane
Sheet 2 of 2

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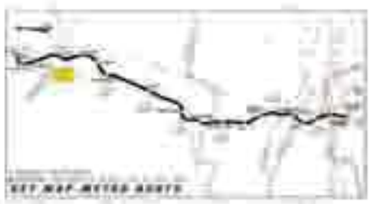

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Landscape Baseline Plans
Bellinstown Depot
Sheet 1 of 3

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RAILWAY ORDER DRAWING EXTENT

Lissenhall north

Proposed Metro North Alignment

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RAILWAY WORKS

BASELINE LANDSCAPE

Area 1 - Belmont Depot Sheet 1 of 1

Landscape Insertion Plans
Bellinstown Depot
Sheet 1 of 3

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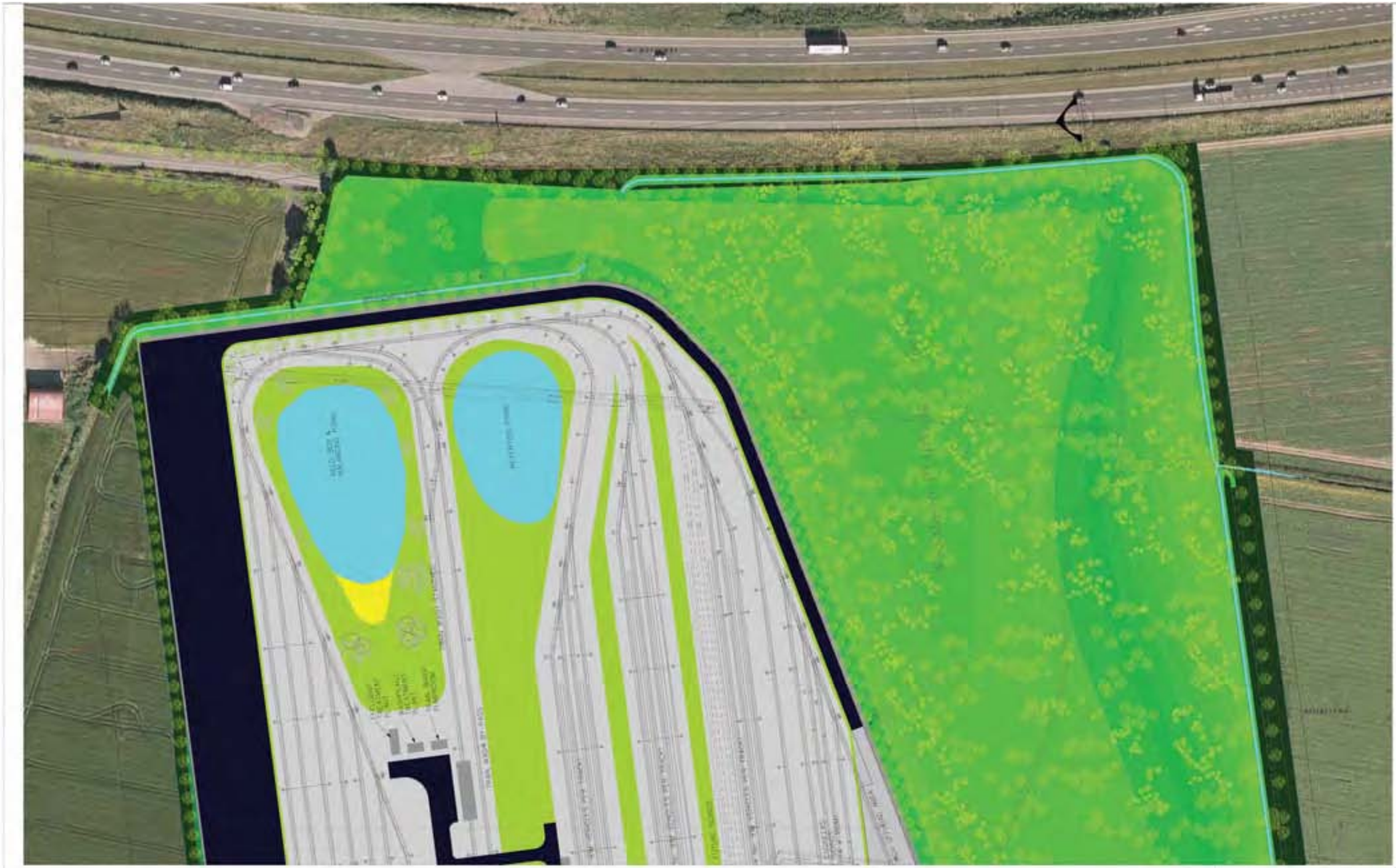

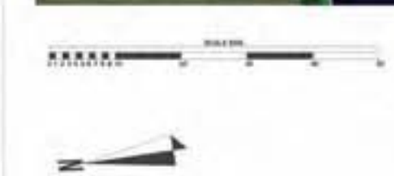

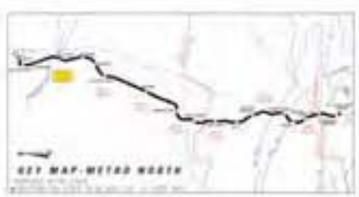

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LINE MN - ALIGNMENT DETAILS

BELINSTOWN DEPOT SHEET 1 OF 3

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Landscape Baseline Plans
Bellinstown Depot
Sheet 2 of 3

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Proposed Metro North Alignment

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BASELINE LANDSCAPE

Area 1 - Balrothery/ Depot Sheet 2 of 3

Landscape Insertion Plans
Bellinstown Depot
Sheet 2 of 3

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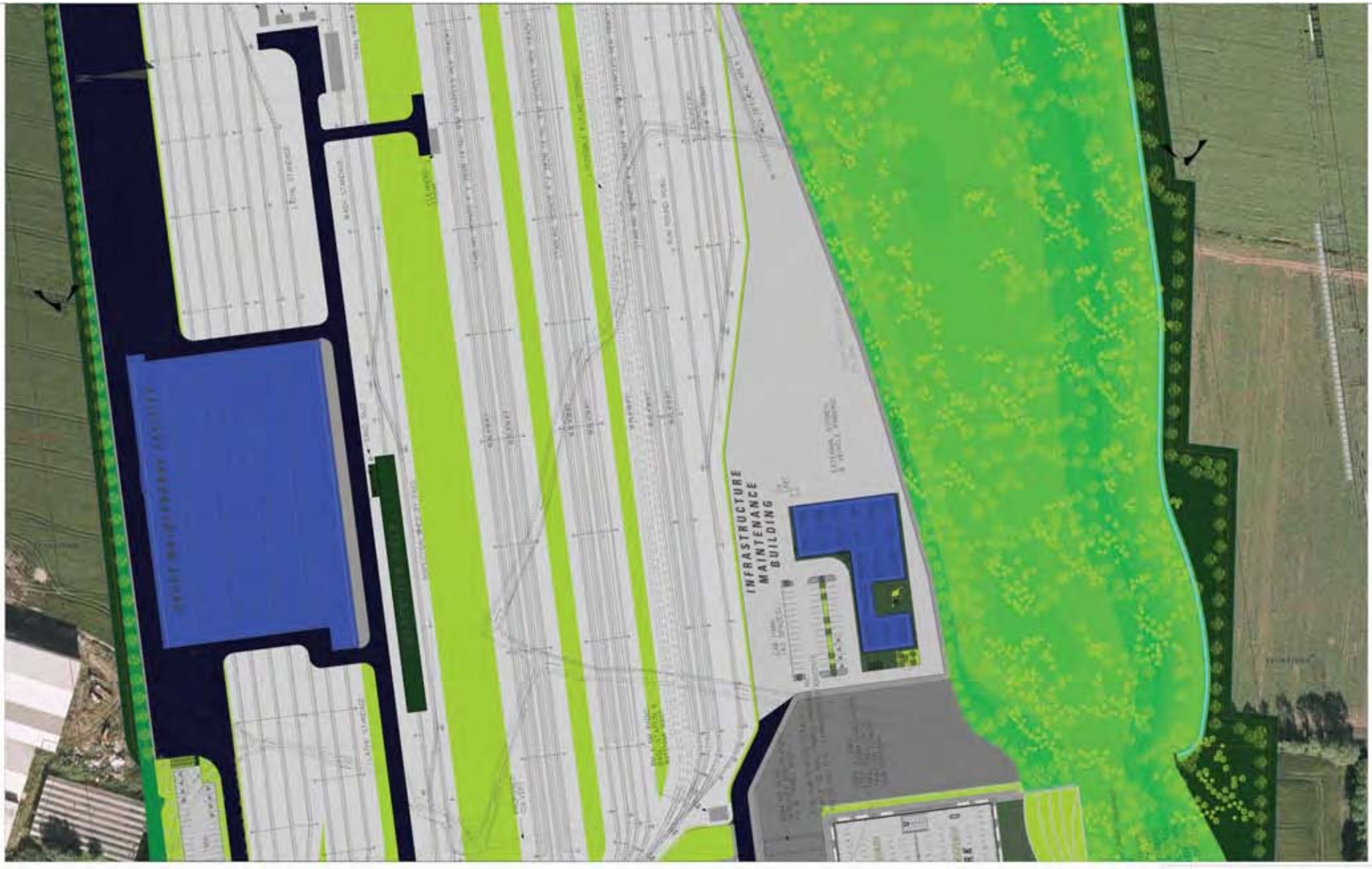

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LINE MN - ALIGNMENT DETAILS

BELINGTOWN DEPOT SHEET 2 OF 3

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Landscape Baseline Plans
Bellinstown Depot
Sheet 3 of 3


Lissenhall
RAILWAY ORDER DRAWING EXTENT
Proposed Metro North Alignment
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BASELINE LANDSCAPE

Landscape Insertion Plans
Bellinstown Depot
Sheet 3 of 3

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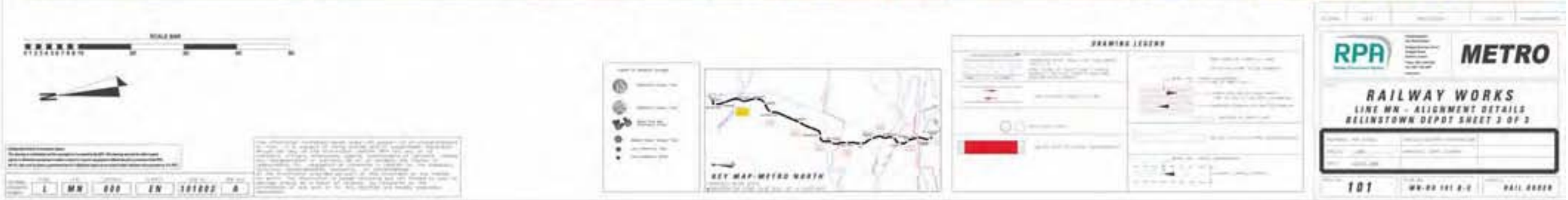
MAIN HEADQUARTERS
MULTI STOREY CAR PARK
MULTI STOREY CAR PARK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LINE MN – ALIGNMENT DETAILS
BELLINSTOWN DEPOT SHEET 3 OF 3
101
KEY MAP-METRO NORTH
DRAWING LEGEND

Landscape Baseline Plans
Lissenhall Little


RAILWAY ORDER DRAWING EXTENT
Forest Little Golf course
Proposed Metro North Alignment
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BASELINE LANDSCAPE

Landscape Insertion Plans
Lissenhall Little

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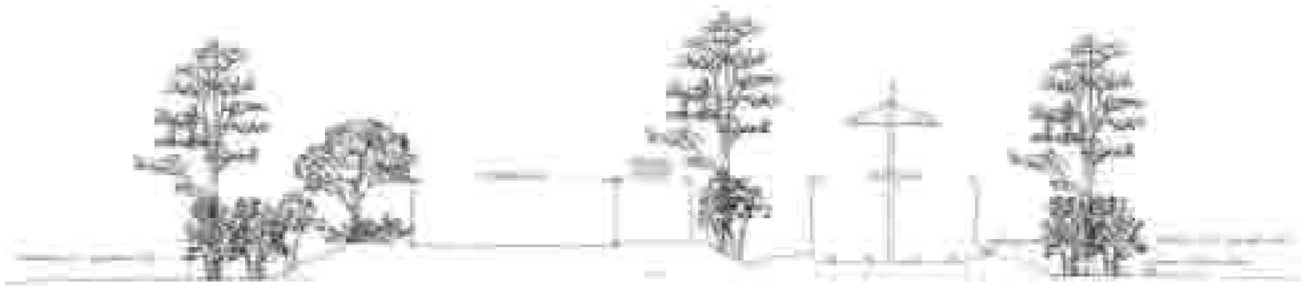

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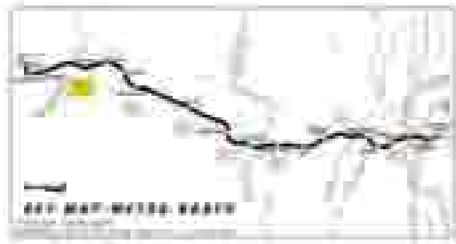

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LINE MN
Mitigation Strategy Notes

101

Landscape Baseline Plans
Retreat Road


RAILWAY ORDER DRAWING EXTENT
Lissenhall south
Retreat Road
Proposed Metro North Alignment
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BASELINE LANDSCAPE

Landscape Insertion Plans
Retreat Road

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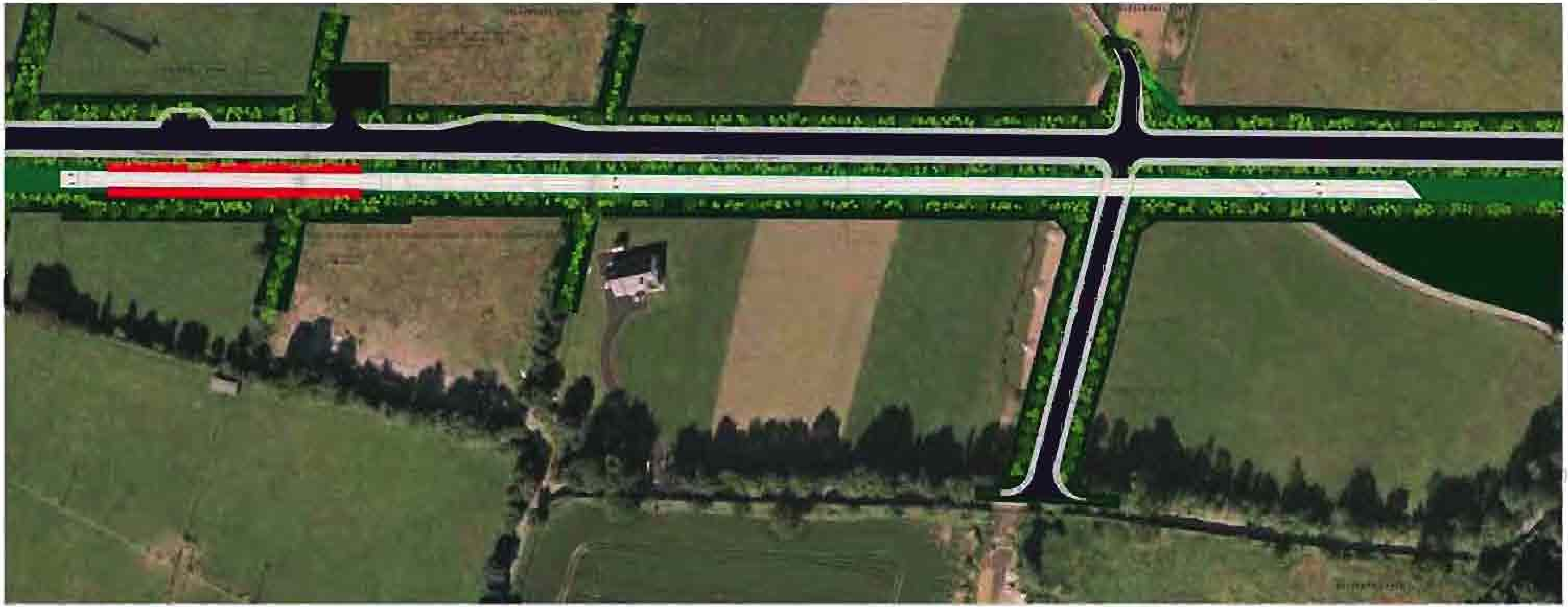

LOCATION PLAN

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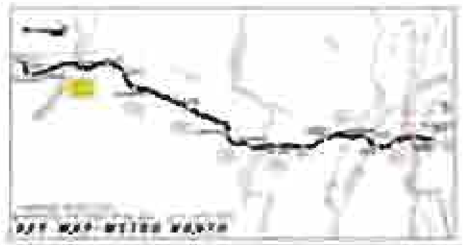

RAILWAY WORKS

LINE MN - ALIGNMENT DETAILS

RETREAT ROAD

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Landscape Baseline Plans
Retreat Road to Lissenhall Bridge


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Lissenhall Bridge
Broadmeadow River
RAILWAY ORDER DRAWING EXTENT
Retreat Road
Proposed Metro North Alignment
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RAILWAY WORKS
BASELINE LANDSCAPE

Landscape Insertion Plans
Retreat Road to Lissenhall Bridge

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PLAN

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CROSS SECTION

DRAWING LEGEND

KEY MAP-METRO NORTH

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LINE MN - ALIGNMENT DETAILS
RETREAT ROAD TO LISSENHALL BRIDGE

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Landscape Baseline Plans
Lissenhall Bridge to Estuary Roundabout

Proposed Metro North Alignment

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BASELINE LANDSCAPE

Landscape Insertion Plans
Lissenhall Bridge to Estuary Roundabout

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PLAN

CROSS SECTION

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RAILWAY WORKS

LINE MN - ALIGNMENT DETAILS

LISSENHALL RD. TO ESTUARY ROUNDABOUT

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Landscape Baseline Plans
Estuary Roundabout


RAILWAY ORDER DRAWING EXTENT
Estuary Road
R132
Estuary Roundabout
Seatown Villas
Proposed Metro North Alignment
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BASELINE LANDSCAPE

Landscape Insertion Plans
Estuary Roundabout

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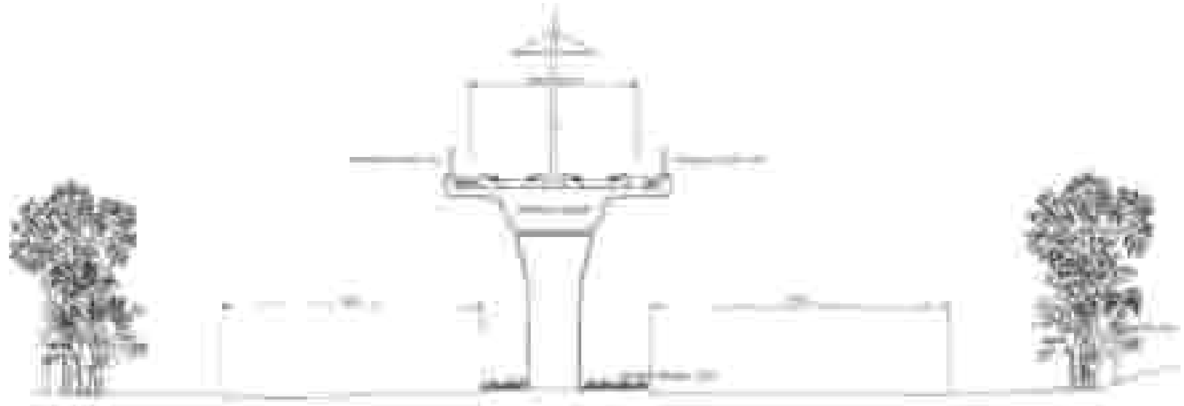

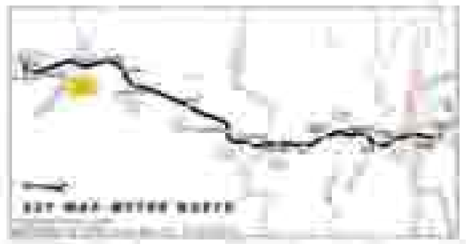

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RAILWAY WORKS

LINE MN : ALIGNMENT DETAILS

ESTUARY ROUNDABOUT

101

Landscape Baseline Plans
Estuary Roundabout to Seatown Road


RAILWAY ORDER DRAWING EXTENT
Estuary Road
Seatown Roundabout
R132
Mantua Park
Seatown Villas
Seatown Villas
Proposed Metro North Alignment
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RAILWAY WORKS
BASELINE LANDSCAPE

Landscape Insertion Plans
Estuary Roundabout to Seatown Road

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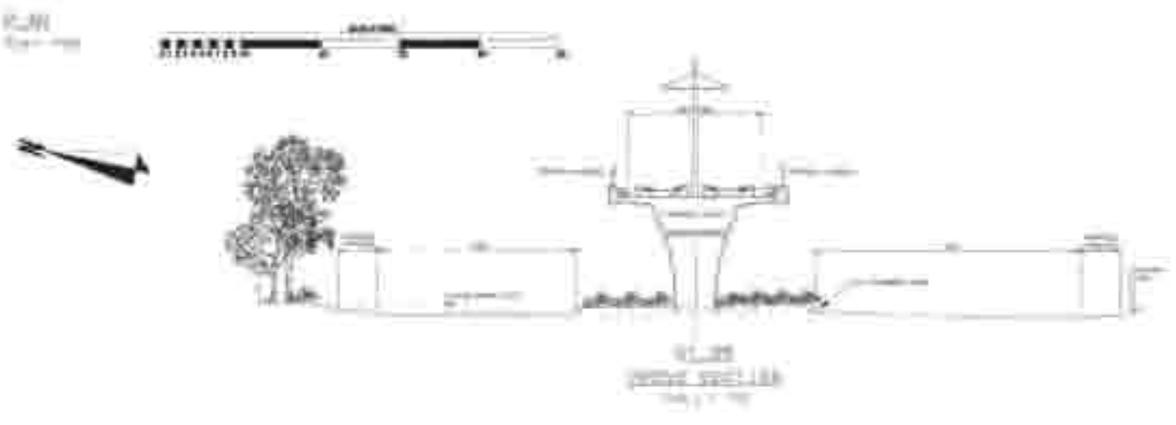

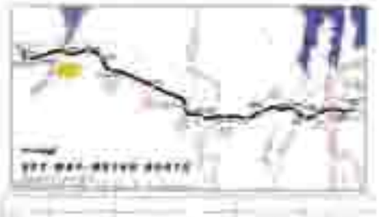

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LINE MM - ALIGNMENT DETAILS

101

Landscape Baseline Plans
Seatown to Ashley Avenue

Proposed Metro North Alignment

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RAILWAY WORKS

BASELINE LANDSCAPE

Area 1 - Seatown Road to Ashley Avenue

Landscape Insertion Plans
Seatown to Ashley Avenue

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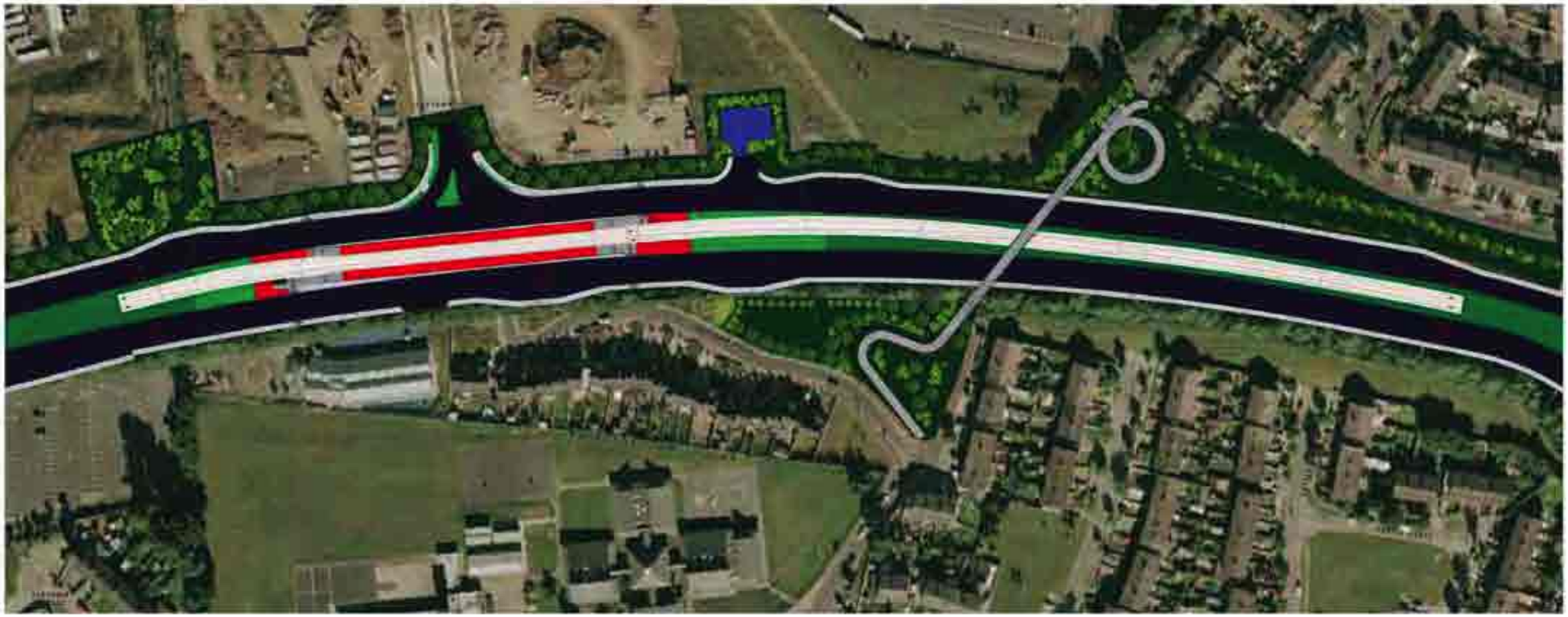

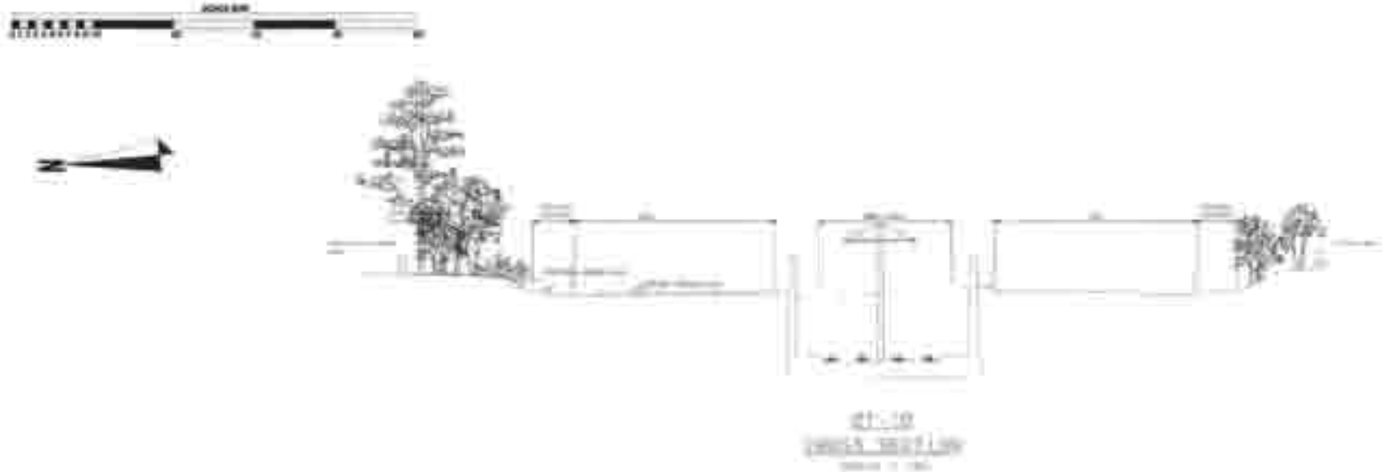

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LINE MN | ALIGNMENT DETAILS
SEATOWN ROAD TO ASHLEY AVENUE

TR1

Landscape Baseline Plans
Ashley Avenue to Carlton Court

RAILWAY ORDER DRAWING EXTENT

Malahide Road

Malahide Roundabout

R132

R132

Ashley Avenue

Proposed Metro North Alignment

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RAILWAY WORKS

BASELINE LANDSCAPE

Area 1 - Ashley Avenue to Carlton Court

Landscape Insertion Plans
Ashley Avenue to Carlton Court

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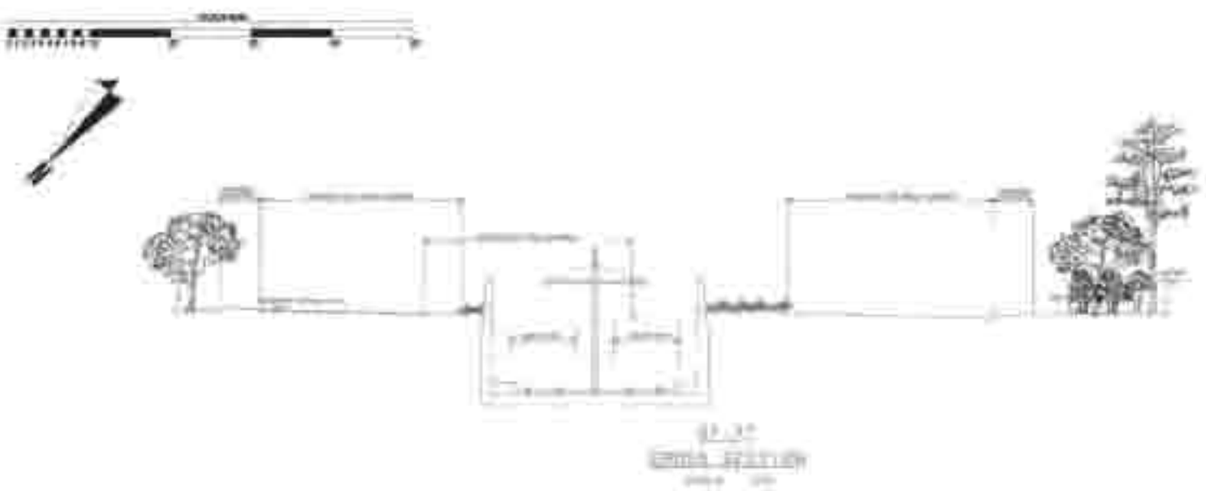

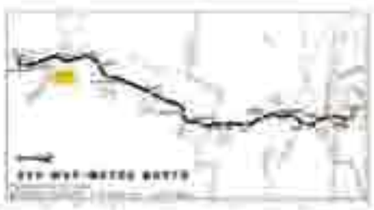

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LINE MN - ALIGNMENT DETAILS

ASHLEY AVENUE TO DARLTON CROSS

Viewpoint 1c

Viewpoint 2b