A map of Dublin, Ireland, showing the proposed Metro North route. The route is indicated by a dotted line connecting various stations. The stations are labeled from north to south: Belinstown, Usherhall, Crumay, Seaview, Swords, Fonestown, Airport, Dardicross, Northwood, Ballynua, Dublin City University, Giffchavenue, Drumcondra, Mace, Parnell Square, O'Connell Bridge, and St. Stephen's Green. The map is overlaid with a blue and purple color scheme.

ENVIRONMENTAL IMPACT STATEMENT – METRO NORTH

BELINSTOWN TO ST. STEPHEN'S GREEN

ANNEXES

VOLUME 3 – BOOK 2 OF 2

ANNEX I part 1

Annex I

Metro North EIS

Information supporting the traffic chapters

- Baseline traffic report

Information Note

Project Title:	Metro North EIA		
MVA Project Number:	C8103900		
Subject:	Alterations to Baseline Report		
Note Number:	1	Version:	1
Author(s):	Emma Healy		
Reviewer(s):	Ian Byrne		
Date:	06 August 2008		

1 Alterations to the Baseline Report

The Metro North Baseline Report was issued in November 2007. During the subsequent period the proposed scheme has developed and evolved and as such, a number of alterations to the proposed scheme have been made. These include name changes for stops and the expansion of the line northwards to Belinstown. A fixed terminology has also been agreed when referencing certain aspects of the proposed scheme. The following table outlines the textual, formatting and technical changes adopted since November 2007.

November 2007	August 2008
Lissenhall Stop as the northern most stop on the line	Extension of the alignment further north of the Lissenhall Stop to the Belinstown Stop. Lissenall is now designated as a future stop (similar to the Estuary Stop).
Park and Ride site located at Lissenhall Stop	Park and Ride site relocated to Belinstown Stop
Santry Demesne Stop	Santry Demesne Stop now called Northwood Stop
Metro Park Stop	Metro Park Stop now called Dardistown Stop
Area 1, Area 2, etc	Area MN101, Area MN102, etc
2013 and 2028 future years	2014 and 2029 future years

Do-Metro	Do-something
References to 'Metro North'	All references to 'Metro North', excluding those relating to the Metro North Traffic Model (MNTM), replaced with 'the proposed scheme' or 'the proposed alignment'
Footnotes	Footnotes integrated into text
No accident data	Accident data available and included in the Baseline Summary
No traffic volume data	Traffic volume data available and included in the Baseline Summary
No off-peak data	Off-peak data available and included in the Baseline Summary
Appendix A - AM Peak Traffic flow data tables	Appendix A - Updated AM Peak traffic flow data tables. Text within the Baseline Report must be revised to reflect the updated flow data.
Appendix B1 and B2 – MID and Pedestrian flow analysis	The former Appendix B1 and B2 now become Appendix C1 and C2
No Off-Peak traffic flow data in Appendix	The Appendix B - Off-Peak traffic flow data tables

Metro North Environmental Impact Assessment

Baseline Traffic Report

Report for RPA

In Association With Environmental Resource Management

November 2007



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1 Background

1.1 Metro North Background

- 1.1.1 Metro North is a mass transit rail system connecting Swords to the city centre, serving Dublin Airport and a number of important communities and institutions on the north side of Dublin. It was officially announced by the Government on November 1st, 2005, as part of the announcement of Transport 21.
- 1.1.2 The Railway Procurement Agency (RPA) is mandated by the Government with implementing Metro North. Part of the statutory process of Railway Order application is the development of an Environment Impact Statement (EIS). The EIS will comprehensively examine all potential environmental impacts of the Metro North project. Environment Resource Management (ERM) has been commissioned to undertake this work.
- 1.1.3 MVA Consultancy was commissioned as sub-consultant to ERM to undertake the traffic impact assessment element of the EIS. On completion, the traffic impact section of the EIS will focus on the impact Metro North will have on the surrounding road network during the construction year, the opening year, and a horizon of 15 years post opening. As a result, the short, medium and long term traffic impacts are considered.

1.2 Metro North Environmental Impact Assessment

- 1.2.1 The main aspects of the Environmental Impact Assessment that are related to traffic flow include:
- Traffic noise;
 - Air quality;
 - Impact on users of mechanised modes; and
 - Impact on pedestrians, cyclists and community effects.
- 1.2.2 This report describes the baseline traffic environment and conditions pertaining to the area envisaged to be directly affected by the Metro North scheme during both the construction and operational phases.

1.3 Traffic Impact Assessment Approach

- 1.3.1 The process for undertaking the traffic assessment of Metro North is as follows:
- Development of suitable validated base and future year traffic models to be used as a basis for undertaking the traffic impact assessment of the Metro North scheme;
 - Determination of Baseline traffic conditions (described in detail in this report) through the assessment of latest traffic survey data and information extracted from the validated traffic models;
 - Determination of forecast year traffic conditions, using the future year traffic models , for

1 Background

- A without Metro North scenario, this can also be referred to as the Do Minimum scenario (also described in this report); and
- A with Metro North scenario during both its construction and operational phases, this can also be referred to as the Do Something scenario(s).

- Assessment of the traffic impact for the 'peak' construction year and the mitigation measures required to alleviate and reduce the associated traffic impact;
- Assessment of the traffic impact for operational year of opening and a +15 horizon operational year;
- Extraction of traffic flow statistics for mechanised modes of transport from the traffic models (i.e., cars, heavy goods vehicles and buses) to be used as an input into the environmental and traffic assessment of the Metro North scheme; and
- Understanding the impact of the scheme on:
 - non-mechanised transport modes, such as pedestrians and cyclists, through the use of industry standard assessment techniques and recent survey data; and
 - general traffic management and operational issues on both a local and strategic level.

1.3.2 The assessment of the impacts of the Metro North scheme is dependent on a thorough understanding of current conditions for each road based mode of transport operating in the vicinity of the Metro North corridor. It is also important to understand the traffic conditions pertaining to the No Metro or do minimum future year scenarios as these will represent the baselines to which the traffic impact of the With Metro or do something future year scenarios are measured against.

1.3.3 In this report, descriptions of both infrastructural provision and usage of that infrastructure by each mode for the baseline scenarios is presented in detail along the corridor of the Metro North scheme. This report therefore includes reference to the following modes:

- General Traffic (cars, taxis, LGVs, HGVs);
- Buses;
- Light Rail;
- Heavy Rail;
- Emergency Vehicles;
- Pedestrians and cyclists; and
- Mobility impaired and disabled.

1.4 Traffic Model Development

1.4.1 To undertake a traffic assessment for a scheme as extensive as Metro North it is important to develop comprehensive traffic modelling tools that are 'fit for purpose'. These models must be capable of identifying the relative changes in traffic movements and conditions along the Metro North corridor during both the construction and operational phases. The Metro North scheme is approximately 18km in length and therefore penetrates a large number of areas with very different receiving environments. These environments vary in terms of the

1 Background

concentration of traffic movements and the make up of that traffic (i.e. cars, pedestrians, cyclists, buses etc.).

- 1.4.2 The city centre, for example, has a high quantity and concentration of pedestrians, buses, cars and hgvs etc. in a limited spatial environment. It is important therefore to use traffic models and techniques that are capable of measuring the impact of these modes in such a complex and tight environment.
- 1.4.3 Other areas outside the city centre do not have the same quantity and concentration of modes and therefore do not require the same detailed traffic model as the complexity of the modal interaction in these areas is not as complex and intensive as the city centre.
- 1.4.4 A number of traffic models with varying levels of sophistication have therefore been developed to assess the traffic impact of the full Metro North scheme. These models are described briefly below:
 - The Metro North Traffic Model (MNTM) – The MNTM has been developed from the Dublin Transportation Office Traffic Model (DTOTM). It is a SATURN based traffic model and is used primarily to assess the strategic implications of the Metro North scheme. The MNTM is also used to inform the other more detailed traffic models (briefly described below) of strategic changes in travel patterns for general traffic (car and hgv) and bus;
 - The City Centre VISSIM micro-simulation model - This model is used to assess the impact of the Metro North scheme in the city centre during the construction phase of the Metro North scheme. This model is required for the city centre as it facilitates a much greater level of detailed multi modal operational assessment particularly in terms of modelling bus movements and car park accessibility; and
 - Swords (R132) VISSIM micro-simulation model – This model is used to assess the impact of the Metro North scheme along the R132 in Swords during the construction phase. This model is a corridor model and provides a similar detailed level of multi modal operational assessment as the City Centre VISSIM model.

1.5 Structure of Report

- 1.5.1 The Report is structured as follows:

Chapter 2: Terminology and Study Area

This chapter defines the Traffic Impact Assessment Study Area and the terminology used in this report.

Chapter 3: Planning Policy and Objectives

- 1.5.2 Chapter 3 provides a summary of the key transport policy documents and a summary of their objectives as they relate to Metro North.

Chapter 4: Baseline Assessment Methodology

- 1.5.3 Chapter 4 provides an outline of the processes applied in determining baseline traffic conditions.

Chapter 5: Baseline Traffic Conditions (2006/ 2007)

- 1.5.4 Chapter 5 describes in detail the baseline traffic conditions for each distinct area along the Metro North Corridor. Each mode of transport is considered in detail in terms of a quantitative (e.g. the physical infrastructure available such as no. of traffic lanes, traffic flows) and qualitative (the operating environment in terms of levels of congestion experienced) by each mode.

Chapter 6: 2011, 2013 and 2028 Do-Minimum Traffic Conditions

- 1.5.5 Chapter 6 describes the do-nothing traffic conditions pertaining to the future year do-minimum or do-nothing traffic conditions.

2 Terminology and Study Area

2.1 Introduction

2.1.1 This section defines the terminology used to describe the different traffic and transport assessment scenarios. Also described in this section is the extent of the study area.

2.1.2 Three different scenarios are used for the traffic impact assessment of the Metro North scheme. There are two baseline scenarios and one impact scenario. These are described below:

Baseline Scenarios

- Base Year – this scenario represents the existing situation and also the year to which the traffic models are validated to. For the Metro North assessment the traffic models have been validated to 2006¹; and
- Do Minimum Future Scenarios – these scenarios represent the future year(s) situation without the Metro North scheme in place.

With Metro Scenarios

- Do Something Future Scenarios – these scenarios represent the future year situation with the Metro North scheme in place. These scenarios contain the same assumptions underpinning the Do Minimum scenarios, the only difference being the intervention of the Metro North scheme.
- 2.1.3 The focus of this report is to only describe the conditions pertaining to the baseline scenarios, described above. The traffic conditions for the base year and for the do minimum forecast years are therefore described in detail in this report. The traffic conditions pertaining to the with-Metro scenarios are described in the Traffic Impact of the Metro North Scheme Report.

2.2 Definition of Base Year Scenario

2.2.1 As briefly described above, the base year scenario represents a baseline or the existing situation. The base year traffic models are required to be validated to latest traffic survey information to ensure that the models represent the current traffic conditions. This information includes latest traffic count data, usually in terms of vehicles on roads and at junctions and also in terms of journey times along major roads within the assumed modelled area.

2.2.2 The validation of the baseline models demonstrates that existing traffic conditions are represented accurately and, most importantly, that future year traffic models (which are developed directly from the base models) have a robust foundation and are 'fit for purpose'.

¹ 2006 was chosen as the Base Year for the development of the traffic models because of the large quantity of available traffic survey data for that year

2.3 Definition of do-minimum

- 2.3.1 In undertaking the assessment of the traffic impact of Metro North it is necessary to have a reference, against which the do-something scenario, or with Metro scenario, can be assessed. This reference, the do-minimum, includes various transport and land use development proposals which are in existence in the assumed base year, in addition to those which are likely to be implemented on or before the respective future years, i.e. 2011, 2013 or 2028.
- 2.3.2 Transport infrastructural schemes included in the do minimum scenario are those for which committed lines of funding have been established, or where the relevant local authority has indicated that the scheme will be completed at a certain point in the future.
- 2.3.3 From a land use perspective, the Regional Planning Guidelines provide population and employment forecasts on future year populations within the Greater Dublin Area as a whole, and the breakdown within this region. The Metro North Traffic Model (MNTM) uses the Regional Planning Guidelines population and employment forecasts as a basis for determining the do-minimum land use characteristics, and their associated trip demand.

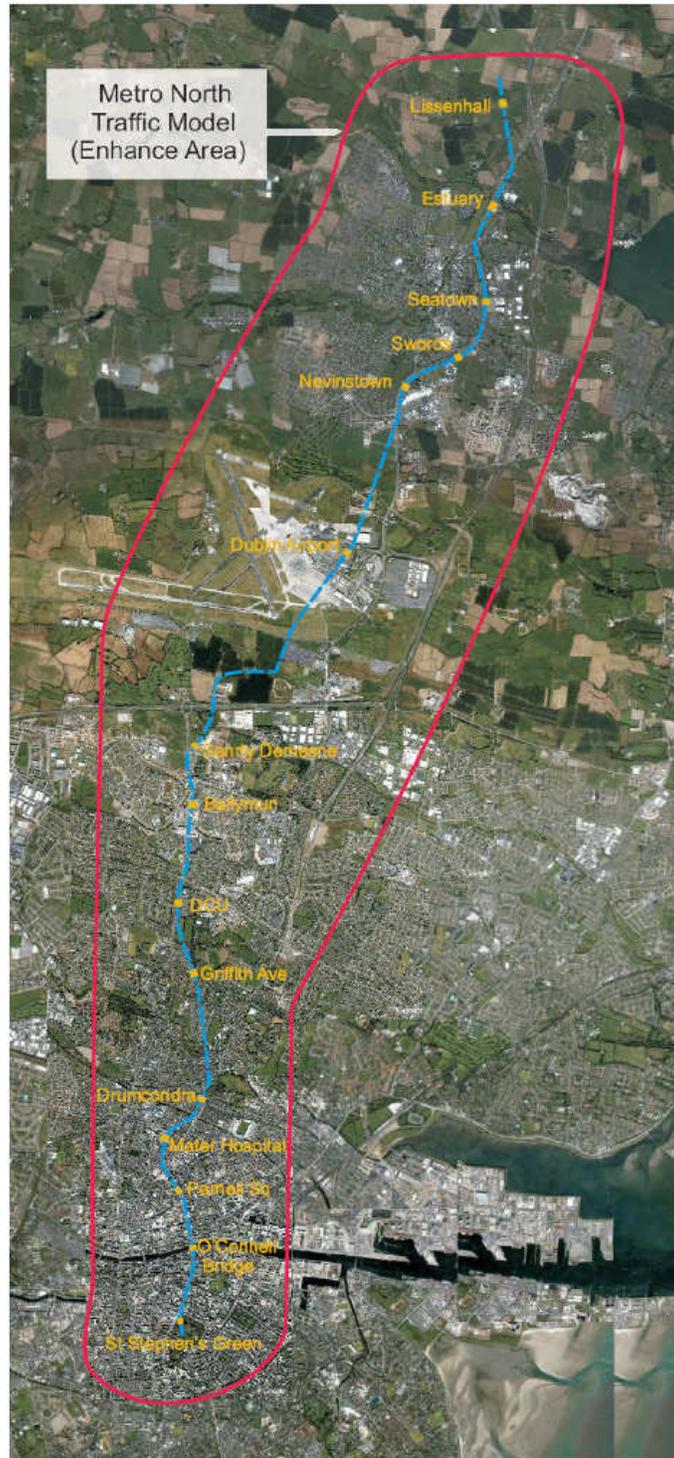
2.4 Definition of Study Area

- 2.4.1 Given the scale and length of the Metro North scheme, the study area required to assess the impact of such a scheme is extensive in size. It is anticipated, therefore, that the Metro North scheme will have both strategic and localised traffic impacts. The assessment approach should reflect this and enable analysis of both categorisations of impacts. For this reason, the Dublin Transportation Office Traffic Model (DTOTM) is used in full as the starting point for the development of the MNTM.
- 2.4.2 The DTOTM is a multi-modal transport model that models all modes of mechanised transport in the Greater Dublin Area. The DTOTM can be defined as a strategic model that models trip movements very well on a strategic level (i.e., city wide travel patterns). However the DTOTM is not suitable for modelling travel patterns on a more detailed local level. For this reason the DTOTM had to be greatly enhanced in terms of network and land use representation before it could be used to assess the full range of traffic impacts associated with the Metro North scheme on both a detailed local and strategic level.
- 2.4.3 The road network representation in the DTOTM, within an approximate 2-4km band of the area penetrated by the Metro North scheme, was enhanced so that local travel patterns could be modelled. The area of the network enhancement can be defined as the Metro North study area. All other features outside the Metro North study area are still retained from the DTOTM. This approach will ensure that the full strategic (i.e., greater Dublin area) and local impacts of the scheme are considered during both construction and operational phases of the Metro North scheme. This new model is called the Metro North Traffic Model (MNTM).
- 2.4.4 The definition of the enhanced modelled area for Metro North can be defined as the area within which traffic flows, journey times or delays may be affected by the implementation of the scheme. The scale of the modelled area required is determined with consideration to:
- trafficked routes envisaged to be affected by both phases of the scheme;

2 Terminology and Study Area

- where traffic congestion is deemed to occur during the construction phase of the scheme;
- where relief to congestion may be provided by the operational phase of the scheme;
- impacts of traffic level changes in affected areas; and
- where dis-benefits occur due to traffic induced onto less congested roads caused by the transfer of trips to Metro.

Figure 2.1 Metro North Study (Metro North Traffic Model) Area



2 Terminology and Study Area

- 2.4.5 The area shown above in Figure 2.1 is the section of the full DTOTM in which most traffic impacts of Metro North will be concentrated. This area contains road network approximately 2 km either side of the full Metro North alignment. A distance of 2 km was selected as this represented the area within which the most pronounced direct traffic impacts will be felt, i.e., as a result of construction works; and indirect benefits, as a result of transfer from other modes to Metro North would be experienced.
- 2.4.6 As it is most likely that local traffic impacts will be contained within this 2 km band either side of Metro North alignment it is therefore termed the study area. Strategic impacts outside the enhanced model area will also be experienced, and the MNTM, covering the Greater Dublin Area (Dublin, Meath, Kildare and Wicklow) will also allow for the determination of these impacts.
- 2.4.7 The network is enhanced within this area to improve local traffic representation along the alignment. A study area definition also gives a convenient reference for reporting on forecast year analysis.

Micro-Simulation VISSIM Model Areas

- 2.4.8 In conjunction with the development of the MNTM it was also necessary to develop other traffic models to assess areas of the Metro North alignment where there is a high concentration of traffic in a limited space environment often leading to congestion. The areas covered by these models include the City Centre and the Swords R132. Figures 2.2 and 2.3 illustrate the extent of each model respectively.
- 2.4.9 The primary purpose of these models is to examine in detail the impact of the Metro North scheme during the construction phase as the traffic management required to facilitate the construction of Metro North is significant and requires very detailed modelling.
- 2.4.10 Importantly, these models are linked to the larger MNTM to ensure that strategic traffic changes affecting other parts of the Metro North alignment are always considered. Furthermore local changes made in the micro-simulation models are also fed back into the MNTM. This approach maintains a clear understanding of how local and strategic impacts inter-relate.

Figure 2.2 City Centre VISSIM Model Area

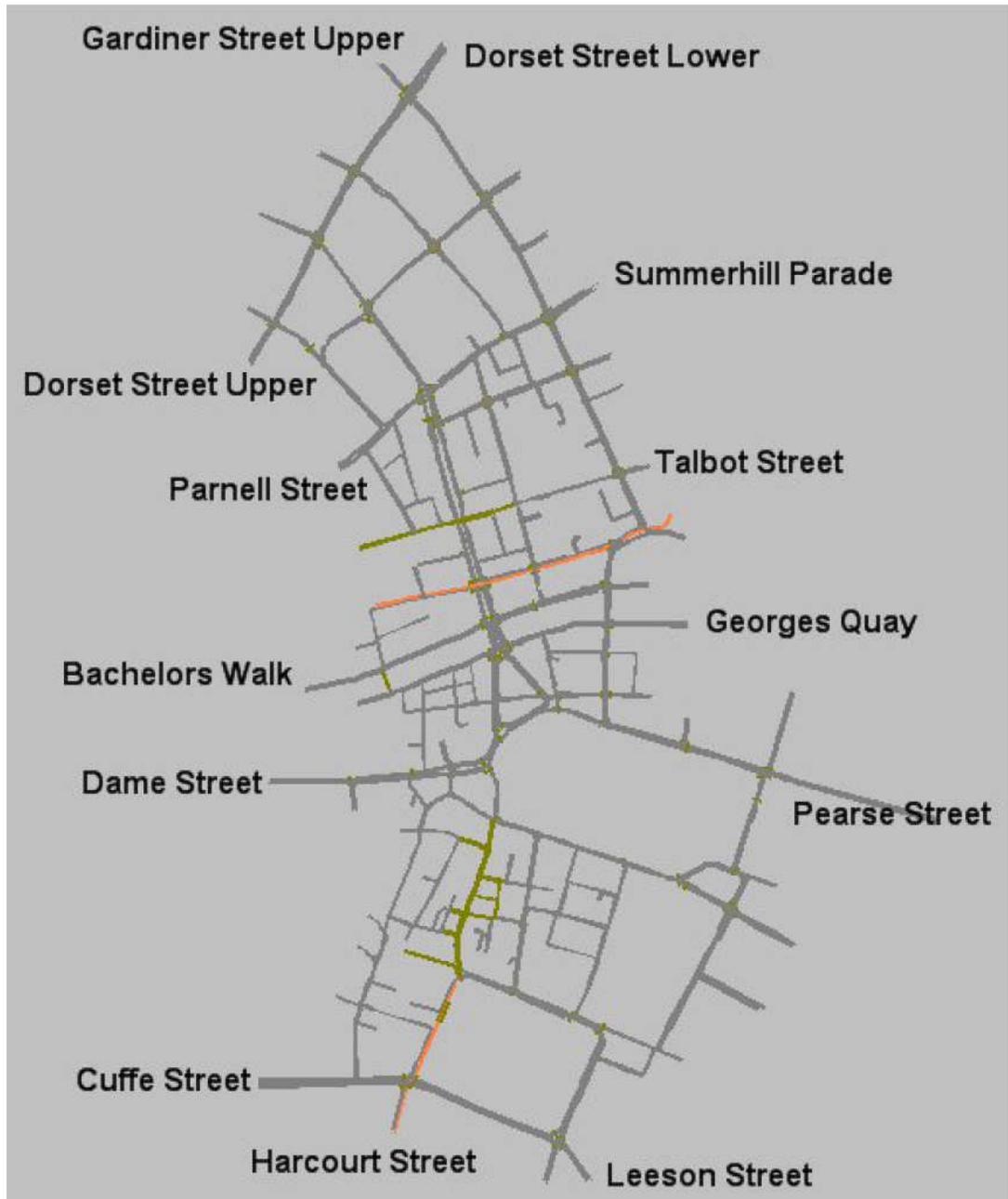
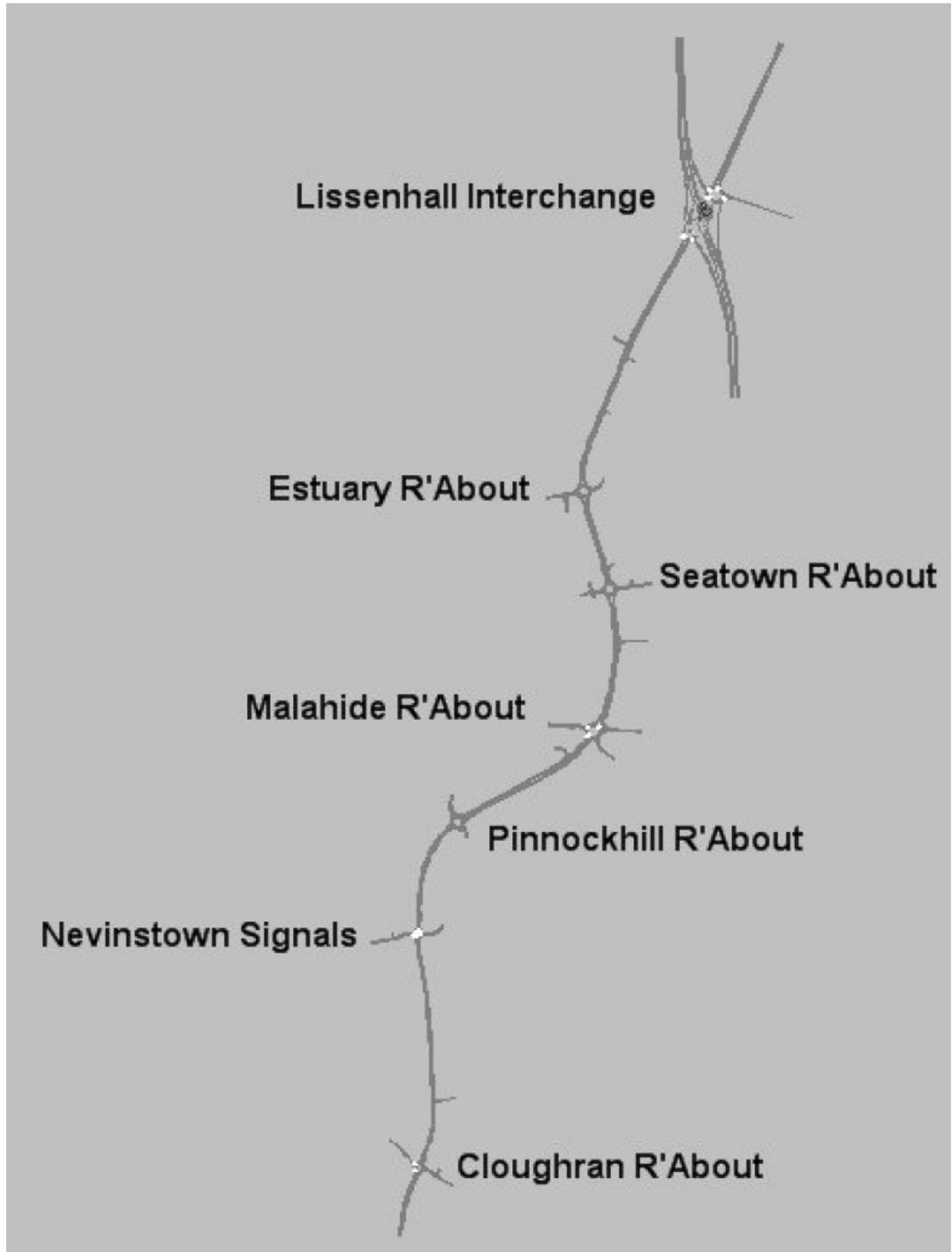


Figure 2.3 Swords R132 VISSIM Model Area



3 Planning Policy and Objectives

3.1 Transport Context

- 3.1.1 The provision of high quality public transport is central to government policy on sustainable development as expressed in the government document 'Sustainable Development – a Strategy for Ireland' and in the Dublin Transportation Office Strategy - 'Platform for Change'. The delivery of a Metro in Dublin is seen as an essential component in securing a consolidated and sustainable city. A northern metro route was included in 'A Platform for Change' between the city centre and Swords, via the airport. This northern metro alignment is planned to be the first of a number of integrated metro services. Metro North was subsequently included in the government's ten year transport investment plan, Transport 21.

3.2 Transport 21

- 3.2.1 Metro North is a key component in the overall public transport network that is proposed for Dublin as part of the Transport 21 investment programme. Under the Transport 21 investment programme a new Metro line will be developed which will run from Dublin city centre to north of Swords in County Dublin. The route, known as Metro North, was chosen under specific evaluation criteria and following a detailed Railway Procurement Agency (RPA) public consultation, which involved the consideration of four possible overall route options.
- 3.2.2 The Metro is a significant step in the creation of an integrated public transport system for Dublin. The first phase, Metro North, will link together all of the existing rail corridors in Dublin, by interchanging with the DART, the northern, north-western and south-eastern suburban rail lines, and the Luas Red and Green lines and bus services along the route.

3.3 Fingal County Development Plan 2005 – 2011

- 3.3.1 A number of specific policies in the Fingal Development Plan 2005-2011 support the provision of the Metro project as follows:
- 3.3.2 Policy TP 7 : "To prioritise public transport by safeguarding future Metro, other rail and bus routes; promoting and facilitating the provision of new Metro and other rail facilities, rail and bus routes"
- and
- 3.3.3 Policy TP 12: "To facilitate and promote the development of a new and improved rail based transportation system including a Metro rail link from the City to Swords via the Airport"
- 3.3.4 In addition to the policies that are directly related to Metro North, a number of general traffic and transport policies are important in the context of the baseline assessment. The following Fingal County Council policies and statements are relevant and should be taken into consideration:
- the roads infrastructure will remain an important component of the national, regional and local transportation network, catering for the movement of buses and goods vehicles, pedestrians and cyclists, as well as private cars;

3 Planning Policy and Objectives

- as far as is practicable health, community and educational facilities should be accessible by means of public transport; and
- the Council is strongly committed to the promotion of sustainable means of travel including public transport, walking and cycling, and the encouragement of modal change from private car use to these means.

3.4 Dublin City Development Plan 2006 to 2011

- 3.4.1 The Dublin City Development Plan includes a number of policies that relate to traffic and transport. Within the plan, Dublin City Council expresses support for the sustainability principles set out in the National Spatial Strategy, Dublin Transportation Office's 'A Platform for Change' and the Regional Planning Guidelines for the Greater Dublin Area.
- 3.4.2 The development of Metro North is provided for within the Development Plan and Paragraph 7.4.0 states that:
- 3.4.3 "Dublin City Council support the measures currently being implemented or proposed by the Railway Procurement Agency, Iarnrod Eireann, Dublin Transportation Office and other agencies to enhance capacity on existing lines/services and provide new infrastructure includingprovision of Metro. Dublin City Council supports a City Centre Rail connection to Dublin International Airport with a preference for stops at Dublin City University and Ballymun"
- 3.4.4 In addition to the policies that are directly related to Metro North, a number of general traffic and transport policies are important in the context of the baseline assessment. The following Dublin City Council policies are relevant and should be taken into consideration:
- the traffic management policy recognises the varying needs of the city through the day such as commuter peaks, shopping and business, service and delivery etc.;
 - in assessing priority, account will be taken of the number of people and not exclusively the number of vehicle movements;
 - it is the policy of Dublin City Council to improve the management and control of traffic in the city to increase accessibility, and to tackle the adverse road safety and environmental impacts of the transport system;
 - the imposition of increased restrictions on the use of road space, for road works or general construction, [should be undertaken] in acceptance with the "Directions for the control and management of road works". This point is of relevance to the construction phase of Metro North.

3.5 Ballymun Regeneration Masterplan

- 3.5.1 Ballymun Regeneration Ltd (BRL) is a Dublin City Council company set up in 1997 to plan and implement a regeneration programme for Ballymun. BRL prepared the Ballymun Regeneration Masterplan in 1998 which was subsequently updated in 2004. Both of these Masterplans were prepared in the context of a lack of Government commitment on the provision of Metro North, and a lack of certainty on the alignment for the scheme. The Masterplan does not take cognisance of Metro North on the future development of Ballymun.

3.6 North Ballymun Local Area Plan (LAP)

- 3.6.1 The North Ballymun LAP was prepared by the Planning Department of Fingal Co. Co. and was adopted at the County Council Meeting on 06th December 2007. The LAP recognises that suitable transport links, both internally and externally are important to the success of the scheme. A number of transport infrastructural improvements are included for in the plan. The plan states that the accessibility of homes and jobs, of services and public facilities, and of opportunities for recreation and leisure, are key factors.
- 3.6.2 The following policies laid down in the plan are relevant in the context of this baseline assessment:
- a Metro Station / Public Transportation hub will be accommodated at the eastern edge of the site;
 - cycle and pedestrian routes will be provided through the LAP area along desire lines; and
 - development phasing will be controlled to ensure that no unacceptable traffic impacts occur.

3.7 Dublin Airport LAP (Masterplan)

- 3.7.1 The Dublin Airport LAP was adopted by Fingal Co. Co. at the Council Meeting on 20th June 2006. The LAP seeks to maintain and protect accessibility to the airport as a priority. There are a number of policies within the Dublin Airport LAP that relate to Metro North, including:
- Policy PT1 "To encourage and facilitate the provision of an integrated public transport network to serve Dublin Airport."
 - Policy PT2 "To provide for the development of a transport interchange including a Metro Station at the centre of the airport campus, in accordance with the implementation of Metro North by 2012 under the Government's Transport 21 proposals"; and
 - Policy PT3 "To ensure that the development of a Metro Station in the airport campus is undertaken to best international standards for public transport interchanges."

4 Baseline Assessment Methodology

4.1 Introduction

4.1.1 This section describes the methodology used to develop the baseline assessment.

4.1.2 The baseline assessment for Metro North includes:

- determination of baseline data requirements via consultation, on-site assessments, and traffic surveys;
- traffic model development;
- a description of the existing environment; and
- a description of the do-minimum future year environment (2011, 2013 and 2028).

4.2 Determination of Baseline Data requirements

4.2.1 The data used to compile the baseline for this chapter included the following:

- consultation;
- on-site assessments; and
- traffic surveys.

4.2.2 These items are discussed in more detail in the following subsections.

Consultation

4.2.3 A number of agencies were consulted in relation to the development of the Metro North EIS most notably Dublin City Council, Fingal County Council and the Dublin Transportation Office. A number of meetings were held with these agencies at various stages in the development of the Metro North scheme. The objective of these meetings was to discuss:

- the development of the MNTM and other models for assessing Metro North;
- future year highway networks along the Metro North corridor;
- future year land uses in the vicinity of Metro North; and
- mitigating measures required for both the construction and operational phases of Metro North.

On-site assessments

4.2.4 Regular site visits were undertaken throughout the EIS development process. The purpose of these site visits was to gather data related to the current highway network, including detailed junction arrangements, banned turns, junction priority, and signal phase timings etc. This data was used to refine the MNTM along the corridor of the scheme. In addition, data on pedestrian, cycle and bus operating facilities was also gathered, which was used for the purposes of assessing the impact on these modes.

Traffic Surveys

- 4.2.5 A substantial number of traffic surveys undertaken in 2005 and predominantly in 2006 were used in the development of MNTM. These traffic surveys were used to calibrate and validate the MNTM and also the City Centre and Swords R132 VISSIM models. Appendix A1 provides a list of the junctions where traffic counts used in the development of traffic models were undertaken.
- 4.2.6 Journey time surveys were commissioned by the DTO for several radial routes into the city centre and other orbital routes in 2004. This survey information was obtained by MVA for the morning peak hour 8am to 9am and the inter-peak hour of 2pm to 3pm.
- 4.2.7 Table 1.1 below summarises the routes used for the journey time validation. These routes were selected based on their proximity to the study area. Route 4 passes through Swords and Route 5 passes directly through Ballymun; both routes therefore pass through key parts of the study area.
- 4.2.8 In addition to the above surveys, supplemental pedestrian counts were undertaken along the alignment of Metro North at various stages between Spring 2005 and Autumn 2007. These counts were used in assessing baseline pedestrian activity along the alignment of Metro North.

4.3 Traffic Model Development

- 4.3.1 As described earlier in Chapter 2 a number of traffic models were developed to aid in the traffic assessment of the Metro North Scheme during both the construction and operational phases. These models are described in more detail below.

Metro North Traffic Model (MNTM)

- 4.3.2 A traffic model, Metro North Traffic Model (MNTM) was developed to assess the impact of the scheme. The MNTM was developed from the Dublin Transportation Office Traffic Model (DTOTM), which was significantly enhanced in terms of network and zonal detail along the Metro North corridor, i.e. within a 2 km band either side of the alignment. In addition to the validated base year model (2006), the following forecast years were developed:
- 2011 (Metro North indicative construction forecast year);
 - 2013 (Metro North opening forecast year); and
 - 2028 (Metro North horizon forecast year).
- 4.3.3 The above models were used to assess the impact of Metro North during the construction and operational phases of the scheme.
- 4.3.4 The model development process has been outlined in the Metro North Traffic Model Base Year Validation Report.

City Centre VISSIM Model (CCVM)

- 4.3.5 A Micro-simulation (Vissim) model was developed for Dublin city centre to assess the localised impact of the Metro North project on mechanised modes within this area. The extent of the City Centre Vissim Model area is illustrated in Figure 2.2. The elongated model area extends from Dorset Street in the north to Leeson Street in the south.
- 4.3.6 The model includes four user classes:
- Cars and LGVs;
 - HGVs;
 - Bus; and
 - Taxi
- 4.3.7 The model is a one hour AM peak model (08:00 to 09:00hrs). The CCVM and the MNTM are interdependent so that the strategic impacts (as determined from MNTM) and the local impacts (from CCVM) are fully appreciated.
- 4.3.8 The CCVM was developed using an existing LUAS Line BX VISSIM model for the City Centre. As with the MNTM, the model was validated to 2006 traffic conditions, given that this represented the year during which the majority of traffic counts used in its development were undertaken.

Swords R132 VISSIM Model (SVM)

- 4.3.9 A Microsimulation (Vissim) model was developed for the R132 corridor in Swords to assess the localised impact of the Metro North project on mechanised modes within this area. The extent of the Swords Vissim Model (SVM) area is illustrated in Figure 2.3. The corridor model area extends from the M1/ Lissenhall Interchange in the north to south of Airside retail Park on the R132 in the south.
- 4.3.10 The model includes four user classes:
- Cars and LGVs;
 - HGVs;
 - Bus; and
 - Taxi
- 4.3.11 The model is a one hour AM peak model (08:00 to 09:00hrs). The SVM and the MNTM are interdependent so that the strategic impacts (as determined from MNTM) and the local impacts (from SVM) are fully appreciated.
- 4.3.12 As with the MNTM, the model was validated to 2006 traffic conditions, given that this represented the year during which the majority of traffic counts used in its development were undertaken.

4.4 Description of Baseline Traffic Conditions

4.4.1 Baseline traffic conditions are described for each of the following years:

- 2006/ 2007, representing base year (during which the vast majority of the traffic surveys were undertaken)
- 2011, representing the do-nothing assumed construction year
- 2013, representing the do-nothing assumed opening year
- 2028, representing the do-nothing assumed horizon year (opening year + 15 years)

4.4.2 Baseline traffic conditions are described for each road based mode of transport:

- General Traffic;
- Bus;
- Taxi;
- Pedestrians; and
- Cyclists.

4.4.3 Each mode has a series of sub-user classes, based on the multiple requirements for each mode. These requirements vary significantly from area to area. In general, the number of street requirements for each mode increases substantially from north to south along the alignment of Metro North in proportion to the density of adjoining developments.

General traffic

- Movement;
- Access/ egress to off-street multi-story car park;
- Access/ egress to off-street office and residential car parks;
- Set-down and pick-up;
- On-street parking; and
- Loading/ servicing.

Bus

- Movement,
- Bus stopping for set-down and pick-up of passengers;
- Bus turn-around between end of one leg and start of return journey; and
- Access/ egress to bus depots from start/ end of bus routes.

Taxi

- Movement; and
- Set-down and pick-up of passengers.

Pedestrians

- Movement;
- Access/ egress to adjoining buildings, public transport nodes or off-street car parks; and
- Bus passengers waiting for bus services operating on that street.

Cycling

- Movement; and
- Cycle parking.

4.4.4 For each road user type a descriptions of the baseline (2006/ 2007) conditions are described as follows:

- Infrastructure available: e.g. no. of traffic lanes, junction types, bus priority, bus stops, footpaths, pedestrian crossings, cycle lanes, etc.;
- Activity: quantified where data is available, otherwise observations of activity classified as either low, medium or high; and
- Current conditions, e.g. levels of congestion, pedestrian/ cycle environment etc.

4.4.5 Where possible, this approach has also been adopted in terms of describing the future year do-nothing years, i.e. 2011, 2013 and 2028.

