



RPA METRO WEST

Final Draft Scoping Report for Consultation

July 2008



Metro West

Final Draft EIS Scoping Report

July 2008

DOCUMENT HISTORY LOG

Revision	Report Status	Issue Date	Description	Prepared	Reviewed	Approved
01	<i>Draft</i>	28 th March 2008	MW – Draft EIS Scoping Report for Consultation	BQ	TO'R	AL
02	<i>Final Draft</i>	29 th June 2008	MW - Final Draft EIS Scoping Report (incorporating consultation feedback)	BQ	TO'R	AL

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GLOSSARY

Term	Definition
Agronomy	The science of soil management, land cultivation, and crop production.
Alignment	The position of tracks relative to the surrounding topography.
Alternative route Options	Route options which were considered other than the route that was decided upon.
Alternatives	Any EIS must include an outline of the main alternatives considered during the development of the project design and an indication of the main reasons why significant decisions were made, taking into account the environmental effects. Alternatives typically relate to alternative route alignments, alternative designs and alternative construction processes.
An Bord Pleanála	An Bord Pleanála was established in 1977 under the Local Government (Planning and Development) Act, 1976 and receives and assesses all railway order applications and the associated EIS. The railway order application and EIS for Metro West will be submitted to An Bord Pleanála for deliberation.
Aquifer	An underground bed or layer of earth, gravel, or porous stone that yields water.
Archaeological sites	All upstanding and buried archaeological monuments, deposits, and features which pre-date the year 1700AD. All monuments which are listed in the Sites and Monuments Record of the Department of Arts, Heritage, Gaeltacht and the Islands. All sites described and mapped by the SMR have the full protection of National Monuments legislation (1937-1995).
Baseline environment	Detailed description of the existing environment prior to the introduction of the proposed scheme. Future environmental conditions are assessed relative to this baseline.
Census	A census of the population of the whole of Ireland, occurring every ten years between 1821 and 1911.
CO	Carbon Monoxide
Construction compounds	Site where construction equipment is to be stored and construction operation is to be managed from.
Construction phase	The period of time over which Metro West will be constructed
Contamination	The act of contaminating or polluting; including (either intentionally or accidentally) unwanted substances or factors.
Cumulative impacts	Impacts that occur as a result of the addition of the incremental impact of an action to other past, present or reasonably foreseeable actions
DART	Dublin Area Rapid Transport.

Term	Definition
Direct impacts	The impacts that will occur as a direct result of the project.
DMRB	Design Manual for Roads and Bridges (UK).
Dublin Transportation Office (DTO)	Statutory agency which provides transport and landuse advice to organisations operating in the Greater Dublin Area.
Environmental Impact Assessment (EIA)	The process of examining the environmental effects of the proposed development – from consideration of environmental aspects at design stage through to preparation of an Environmental Impact Statement, evaluation of the EIS by the competent authority and the subsequent decision as to whether the development should be permitted to proceed, also encompassing public response to that decision
Environmental Impact Statement (EIS)	A statement of the effects, if any, which proposed development, if carried out, would have on the environment. This document presents the findings of the EIA to the decision-makers and the public
Environmental Protection Agency (EPA)	Ireland's statutory body for the balanced and sustainable protection and management of the environment.
Eastern Regional Fishing Board (ERFB)	The statutory body responsible for maintaining and improving environmental quality and developing and protecting the fisheries resource in the eastern region of Ireland.
Fauna	Animals
Flora	Vegetation
Geotechnical Phase	Investigations performed by geotechnical engineers or engineering geologists to obtain information on the physical properties of soil and rock around a site to design earthworks and foundations for proposed structures and for repair of distress to earthworks and structures caused by subsurface conditions.
Geological Survey of Ireland (GSI)	Founded in 1845 it is responsible for providing geological advice and information, and for the acquisition of data for this purpose.
Greenfield	Uncontaminated, undeveloped land
Groundwater	Groundwater is the water beneath the surface that can be collected with wells, tunnels, or drainage galleries, or that flows naturally to the earth's surface via seeps or springs.
Habitat	The physical and living environment in which an organisms or community of organisms live
Hydrocarbon contamination	The contamination of an environment with substances consisting only of carbon and hydrogen atoms e.g. oils
Indirect impact	Impacts on the environment which are not a direct result of the project, often produced away from the project or as a result of a complex pathway

Term	Definition
Linear project	A scheme that is linear in dimension
Luas	Dublin's light rail transport system
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.
Mitigation measures	Measures taken to avoid, reduce and, if possible, remedy significant adverse effects
Modal shift	The decision by people to discontinue using one particular mode of transport and to move to another for their routine journeys.
Monitoring	Repetitive and continuous observation, measurement and evaluation of (environmental) data to follow changes over a period of time. In the context of EIA, monitoring is used to assess the efficiency of control and mitigation measures
NO₂	Nitrogen Dioxide
Non-technical summary	Information for the non-specialist reader to enable them to understand the main environmental impacts of the proposal
NOx	Nitrogen Oxides
National Roads Authority (NRA)	Ireland's statutory body for securing the provision of a safe and efficient network of national roads.
Operational phase	The period of time over which the scheme will be in operation
Overhead contact system	The system through which power is supplied to the scheme.
Park & ride sites	Facilities at public transport stations that allow commuters to leave their personal vehicles in a car park and transfer to a bus, rail system (rapid transit, light rail or commuter rail) or carpool for the rest of their trip.
Permanent impacts	Impacts that are not reversible and which will persist indefinitely
Habitat Survey	Standard ecological field survey methodology to identify, record and map the key habitats and species.
PM₁₀	Particulate matter with a diameter of less than 10 microns
Railway infrastructure	Any land, buildings, structures, equipment, systems, vehicles, services or other structures used in connection with, or necessary or incidental to, the movement of passengers by rail
Railway order	The authorisation given by An Bord Pleanála for a railway project to commence construction.
Railway Procurement Agency (RPA)	The independent statutory body responsible for securing the provision of light rail and metro infrastructure

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Term	Definition
Receiving environment	The extent of the existing environment within which the project is to be developed and any area that may be impacted upon as a result of the project.
Records of Monuments and Places(RMP)	A database of all archaeological monuments in the state compiled by the Archaeological Survey of Ireland.
Register of Historic Monuments (RHM)	The name, location and a brief description of all the historic monuments and archaeological areas in State compiled by the National Monuments Service of the Department of the Environment, Heritage and Local Government.
Residual impact	Those impacts that would remain after the effect of mitigation measures have been accounted for
Risk	the likelihood of a specific effect occurring within a specified period or in specified circumstances
Route option	Prior to decision on the route of Metro there were various route options that were considered.
Scope	The spatial and temporal extent which the environmental impact assessment is to be evaluated over.
Scoping	The process of identification of the most significant issues to be addressed within the EIA process. It is a method of ensuring that an EIA focuses on the important issues and avoids those that are considered to be less significant
Segregated	Separated
Sensitive receptors	Those who are likely to experience a change in their environment as a result of the construction of Metro due to their own nature
Severance	The separation/reduction in separation of population from facilities and services they use within their communities.
Significant impact	An impact which, by its character, magnitude, duration of intensity alters the environment
Sites and Monuments Record (SMR)	Lists with accompanying maps and files of all certain or possible archaeological sites and monuments mainly dating to before 1700AD for all counties.
Stakeholders	Those who may be potentially affected by a proposal (e.g. local people, the proponent, government agencies, NGOs, donors and others).
Stop	Points at which passengers will be able to embark and disembark Metro
Stop access points	The points via which the stops can be accessed.
Track gauge	The distance between the two rails

Term	Definition
Transport 21	The capital investment framework through which the transport system in Ireland will be developed, over the period 2006 to 2015.
Utilities	Services provided such as water, gas, electricity and telecommunications.
Vibration attenuating trackforms	Types of track that are specifically designed so as to minimise the potential for impacts associated with vibration
Visual amenity	The value of a particular area or view in terms of what is seen
Wildlife Corridors	A strip of habitat connecting wildlife populations separated by human activities

1.0 INTRODUCTION

1.1 BACKGROUND

The Railway Procurement Agency (RPA) was established under the Transport (Railway Infrastructure) Act in December 2001. Its statutory functions include:

- Securing the provision of, or providing, such light railway and metro railway infrastructure as may be determined from time to time by the Minister for Transport.
- Entering into agreements with other persons in order to secure the provision of such railway infrastructure whether by means of a concession, joint venture, public private partnership or any other means.

Transport 21 was announced by the Minister for Transport in November 2005 and as incorporated into the National Development Plan 2007 – 2013 represents Government policy on integrated transport commitments for the country and in particular for the Greater Dublin area.

In addition to expenditure on national roads, mainline and suburban rail, Transport 21 provides for the delivery of 7 proposed new Luas lines and 2 new Metro lines for Dublin. One of these new proposals entails a line linking Tallaght, Clondalkin, Blanchardstown and Porterstown and will provide a fast commuter service to the city centre and the airport via Metro North. This line represents a length of approximately 26km. This proposed line is known as Metro West.

As part of the Government's commitment to involvement of the public sector in the finance and delivery of new infrastructure projects, it is intended that Metro West be procured through a Public Private Partnership (PPP) arrangement.

Following initial route optioneering studies and the selection of two defined route options, an emerging preferred route corridor for Metro West was determined in the summer of 2007.

The Transport (Railway Infrastructure) Act, 2001 (the Act of 2001) as amended by the Planning and Development (Strategic Infrastructure) Act, 2006 sets out the process under which statutory authority for new railway projects is to be granted. This process, in short, involves an application being made for a Railway Order for the construction, operation and maintenance of a railway. A fundamental requirement of the railway order application for the project and, a key component of the decision making process as to which is the best alignment option for the proposed Metro West project, is an Environmental Impact Assessment (EIA).

The application for a Railway Order must be accompanied by a draft of the Order being sought, a plan of the works to be carried out under it, a list of any properties shown on the plan of the works and the purported owners and occupiers of those properties (known as a Book of Reference) affected by the application and an Environmental Impact Statement (EIS). The EIS is required to comply with section 39 of the Act of 2001. Upon commencement of the Planning and Development (Strategic Infrastructure) Act, 2006 the power to grant or refuse a Railway Order application transferred from the Minister for Transport to An Bord Pleanála.

2.0 THE EIA PROCESS

Technical studies and consultation facilitate the route evaluation process which supports route selection stage of Metro West. Route selection also includes an environmental evaluation of the route options. Once the preferred route has been selected the EIS preparation and design of the route to railway order application stage commences with both activities running in parallel and supporting each other. These two activities will incorporate EIA consultation feedback in relation to the final draft EIS Scoping Report.

The EIA process requires a multi disciplinary approach due to the many varied environments (ecological, human, built environment etc) to be impacted. For a valid non-biased assessment of the impacts, specialists within the relevant fields will complete the assessment.

Once the EIA methodologies outlined in this report have been applied, the end product of the process will be reported in an EIS to accompany the Railway Order application. The EIS will assess the preferred route option and will identify all

significant environmental effects, measures proposed to mitigate these effects, residual impacts and any remedial measures and or monitoring required for the life of the project.

The EIS will be prepared by an EIA team appointed by the Railway Procurement Agency. This final draft EIS Scoping Report will form the basis of the EIA for the project.

The following specialists are involved in the EIA for the Metro West project and have provided support to the development of this final draft EIS Scoping Report:

Organisation	Role
Compliance Engineering Ireland Ltd.	Electromagnetic Radiation Assessment
Environmental Resources Management Ltd	Noise & Vibration, Air Quality Assessment
Faber Maunsell	Traffic Assessment
Fehily Timoney and Co.	Soil, Geology, Water Quality and Waste Assessment
Murray and Associates	Landscape, Visual Impact and Tree Survey Assessment
Natura Environmental Consultants	Ecology Assessment
Philip Farrelly and Co.	Agronomy Assessment
Railway Procurement Agency	Report Co-ordination, Human Beings (Socio-Economic and Planning Policy and Land-Use)
Valerie J. Keeley Ltd	Archaeology, Cultural, Architectural Heritage Assessment

Table 1 – EIA Specialists

The following illustrates the process for EIS preparation in parallel with the Railway Order design:

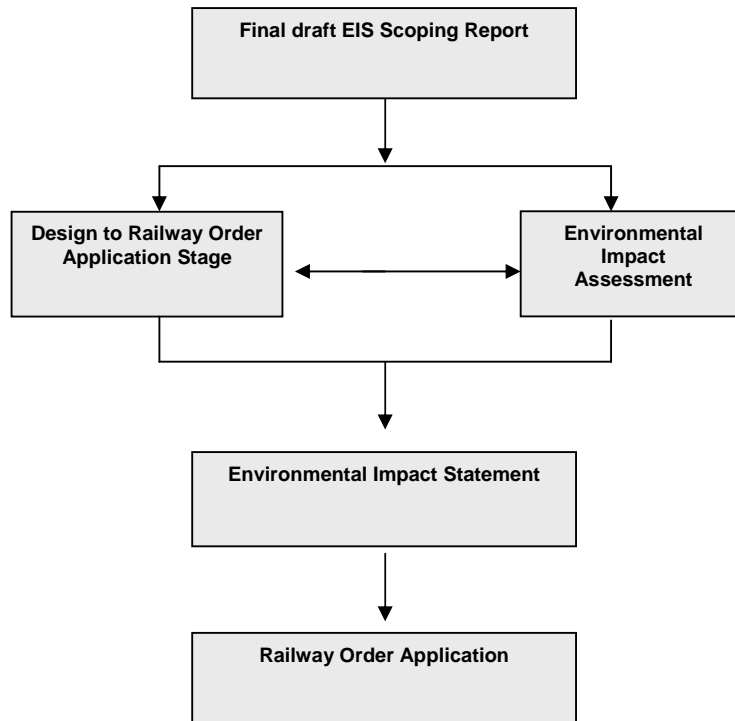


Figure 1 – EIS Preparation

The EIA is being completed in accordance with the following:

- “Guidelines on the information to be contained in Environmental Impact Statements” issued by the Environmental Protection Agency
- “Advice Notes on current practice (in the preparation of Environmental Impact Statements)” issued by the Environmental Protection Agency
- Assessment Guidelines relevant to the specialist area
- Relevant existing and or emerging national and European legislation
- Best practice

Preparation of the Metro West EIA will also consider previous experience gained from other Luas and Metro projects.

2.1 THE SCOPING PROCESS

The EIS scoping study is a key element of the EIA process and signifies commencement of the development of an EIS. Even though it is not a requirement of the Transport (Railway Infrastructure) Act, 2001, as amended, it is considered best practice.

The purpose of this EIS scoping study is twofold:

1. To establish the scope and methodology for the EIA, based on a consideration of the potential environmental impacts and opportunities arising from the construction and operation of the proposed Metro West project.
2. To provide agencies and other interested parties with information on the proposed Metro West project.

The EIS scoping process is one of the steps of a wider EIA for the best route and its findings will be incorporated into the final EIS document produced as part of the Railway Order Application.

The scope and methodology of the EIS scoping study will identify the:

- Potential environmental impacts (based on both the sensitivity of the receptor and the likely magnitude of impact)
- Opportunities which might arise during the life (construction and subsequent operation) of the project and which therefore should be addressed in more detail as part of the EIA.
- Proposed methodologies for undertaking the EIA are also outlined at this stage. It also examines potential environmental impacts and determines whether any may be partially or wholly omitted from the EIA (scoped out). This ensures that resources and time are focused on the key issues.

Scoping ensures that mitigation and enhancement measures are identified at an early stage in the design process, thereby minimising the need for subsequent design amendments and that environmental protection and sustainability are key factors in the project design.

It must be noted that scoping of issues is reversible, as the project design develops and it becomes apparent that a significant impact may arise, the environmental issues will be readmitted to the EIA as appropriate. It is not the purpose of this report to undertake detailed measurement, calculation or assessment of potential impacts. Detailed assessment will be carried out during the development of the EIS.

The output of the EIS scoping study will feed into and inform the ongoing project design. The draft EIS Scoping Report will form a basis of common reference for consultation about the scope and methodology for the EIA.

The EIS scoping for Metro West is a three stage process: -

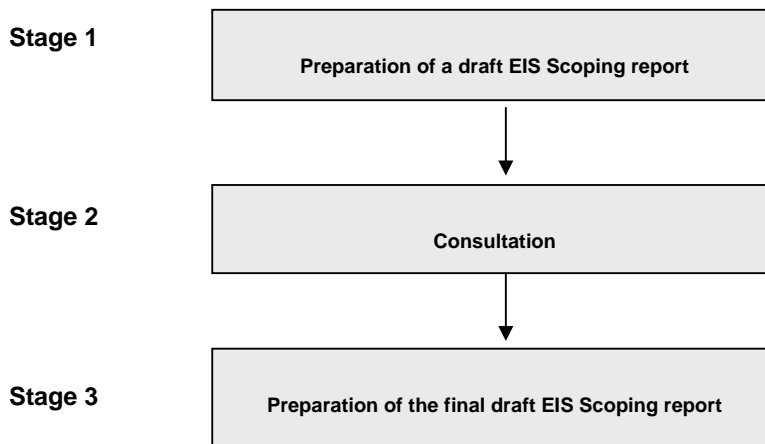


Figure 2 – EIS Scoping Process

The technical studies, work complete to date, previous experience of light rail development in Ireland and the skills and experience of the RPA project team and specialist consultants form the basis of this final draft EIS Scoping Report. This report only focuses on detail relevant to the EIA for Metro West and is not an assessment or evaluation of any of the emerging preferred route.

2.2 CONSULTATION

2.2.1 The Approach to Consultation

Consultation in relation to the draft EIS Scoping Report has taken place to ensure that the Metro West EIS covers all concerns of those consulted, that the necessary studies have been set up and that the EIA is appropriate to particular local circumstances and the scale of the project. This consultation focused on the environmental aspects of the study, allowing the opportunity for views to be put forward on such issues as heritage, traffic, noise and vibration, safety, ecology, geology and hydrogeology, agronomy, air quality, landscape and visual amenity and water quality.

Statutory consultees were issued the draft EIS Scoping Report and were asked to comment on the document setting out the proposed scope of the Metro West EIS. Parties involved in this consultation initiative are listed in Appendix I

The draft EIS scoping report was available on the RPA website at www.rpa.ie. RPA advised of the availability of this to the public, stakeholders and interested parties through the publication of newspapers notices commencing the 3 April 2008. The draft EIS Scoping Report could be downloaded from this website and comments on the draft EIS scoping report were invited..

Feedback received as a result of this consultation initiative are summarised in Appendix III of this final draft EIS scoping report.

It is important to note that the consultation process is an ongoing process and will evolve and continue right through the railway order preparation process.

Consultation on the draft EIS Scoping Report was undertaken over a 5 week. All comments thereafter received in relation to the EIA will be incorporated into the EIS as appropriate. All responses and feedback in relation to consultation on the draft EIS Scoping Report have been incorporated into this final draft EIS Scoping Report, as appropriate. The final draft EIS Scoping Report will be made available on the RPA website (www.rpa.ie).

In addition to consultation on the scoping element of the EIS, there will be consultation undertaken by the various specialists to ensure that all relevant issues are included in their respective assessments. A list of consultees related to EIA consultation and each specialist assessment which has been identified at this stage is provided in Appendix I.

2.3 PROJECT DESCRIPTION

2.3.1 Route Selection Process

According to the 2001 Act, the EIS must contain ‘an outline of the main alternatives studied by the applicant and an indication of the main reasons for its choice, taking into account the environmental effects’. Consideration of the main alternatives for the scheme will be presented in the EIS and will describe the following stages:

a) Route selection

A summary will be provided of the route evaluation work that was carried out in relation to the alternative route options considered prior to route selection.

b) Detailed design of the emerging preferred route

Once the Emerging Preferred Route was selected, more detailed design work has been initiated in order to refine the final route alignment. This work involves further consideration of alternatives on a more local scale and at particular locations, such as different ways to cross a junction (i.e. elevated or at ground level) or access to a stop. An outline of the main options considered in this regard will be detailed in the EIS.

2.3.2 Metro West

A detailed indicative description of the proposed Metro West route corridor including proposed stops, interchanges, park and ride and location of the depot is provided in Appendix II. It should be noted that the Metro West project is currently at design stage and the alignment, stops, park and ride, and location of the depot as shown in Appendix II are indicative at this stage.

For ease of reference the Metro West preferred route corridor has been divided into three areas; Area 201, 202 and 203. These areas have also been provided in Appendix II.

Area 201 extends from the Tallaght Square Shopping Centre, along Belgard Road, through Clondalkin, along Fonthill Road and up to the N4 Liffey Valley Junction.

Area 202 extends from the N4 Liffey Valley Junction, across the River Liffey and west of Carpenterstown, across the Royal Canal, along Blanchardstown Road South, through Millennium Park and Blanchardstown Town Centre, across the N3 and Tolka River and along Snugborough Road to a point east of the National Aquatic Centre.

Area 203 runs from east of the National Aquatic Centre, across largely agricultural ground in Abbotstown and Cappoge, across Cappagh Road, south of Huntstown Quarry and across the N2. The corridor then runs across agricultural lands and greenfields in Meakstown, Sillogue and Harristown, before connecting to the proposed interchange with Metro North immediately south of Dublin Airport.

2.3.3 System Concept

In terms of its size and capacity, Metro West is considered to be in between the existing Luas system (a partially-segregated rail system) and the DART system (a segregated rail system). The system will be designed initially to operate with capacity similar to that of existing Luas but with the capability of being significantly enhanced over time. It is intended that Metro West will be segregated from other road users except at some junctions where the system will cross traffic under signal control. Segregation allows Metro West to operate at greater speeds and more frequent intervals than an on-street line. Metro West will thus combine the high level of accessibility associated with light rail with the high level of reliability and fast journey times associated with other rail systems.

The system will be electrified with a power supply of 750 volts of direct current (DC) supplied via a number of substations along the route. Metro West will have an overhead contact system which supplies power to the individual vehicles. The track gauge of Metro West will be 1,435mm, which is the same as the Luas Red and Green Lines. The width of the vehicle will be 2.4 metres.

Metro West will have significant reserve capacity to accommodate the large growth in passenger numbers anticipated in the long term. This will be achieved through maintaining service frequency and longer tram vehicles.

2.3.4 System Construction

The construction of a linear project such as Metro West is typically undertaken at a number of locations simultaneously with many work activities running concurrently. The construction period will take approximately 4 years. During this period, a number of construction compounds will be located along the route corridor in addition to stop access points, the proposed depot and park and ride sites.

3.0 PROPOSED METHODOLOGIES FOR THE ASSESSMENT OF IMPACTS

This section details the environmental aspects that will be assessed and potential impacts associated with Metro West that will be included within the EIA. A brief outline of the potential impacts in relation to both construction and operation of Metro West, which have been identified at this stage, is provided. A brief overview and basic summary of the assessment methodologies for each environmental aspect is provided so that this can be communicated effectively to stakeholders and the general public.

3.1 HUMAN HEALTH

Feedback from public consultation has shown that there are concerns with respect to the potential for human health effects associated with a project of this nature. These concerns relate principally to the construction phase of the project. To address such concern a public health specialist will be appointed to the EIA team and the EIS will contain a chapter specifically focusing on human health.

3.1.1 Construction Impacts

During the construction phase, there is potential for human health effects due to emissions such as noise, vibration, electromagnetic radiation, dust or traffic. Disturbance of vermin populations may also occur and the potential for any human health impacts to occur as a result of this will be assessed.

3.1.2 Operation Impacts

The potential for human health effects during operation is considered to be largely positive. However, potential psychosocial impacts such as violence, suicide and stress could also occur and will be fully assessed.

3.1.3 Assessment Methodology

The baseline human health assessment will comprise an overview of relevant consultation feedback and a literature review. This will identify the human health effects that will be assessed. Census data and landuse survey data will be used to identify sensitive receptors in electoral districts along the alignment. These receptors will be described in terms of their location and sensitivities.

The potential effects associated with the construction and operational phase will be assessed as follows:

The potential for health effects associated with noise and vibration during the construction and operational phases will be assessed through review of the results of the noise and vibration modelling exercises. Particular attention will be given to potentially sensitive receptors such as schools and hospitals and potential effects such as disturbance of sleep. The modelled levels will be assessed by comparing the predicted levels with levels specified in relevant standards. Refer also to Noise & Vibration section below.

The potential for health effects associated with radon gas during the construction and operational phases will be assessed through review of predicted levels of radon occurrence and comparison of these levels to relevant standards. Similarly the potential for health effects associated with EMF (Electrical and Magnetic Fields) during the construction and operational phases will be assessed through review of predicted levels of EMF occurrence and comparison of these levels to relevant standards. Refer also to Electromagnetic Radiation section below.

The potential for health effects associated with traffic during the construction and operational phases will be assessed through review of the traffic modelling results. Refer also to Traffic Impact section below.

The potential for health effects associated with dust particularly relating to the construction phase but also the operational phase will be assessed. This information will be reviewed and assessed through comparison with relevant standards. Refer also to Air Quality section below. Potential for disturbance, excavation and handling of contaminated soils will be assessed. Refer to Soils & Geology section below.

The potential effects of biological agents e.g. from sewers and the potential for contamination of water supplies, will be assessed through review of information provided by the construction design team.

The potential psychosocial impact (violence, suicide, stress etc) of the construction and operational phases of the project will be assessed using evidence from similar projects elsewhere both in Ireland (e.g. Luas) and elsewhere. Consultation will be held with HSE (Health Service Executive) personnel to ensure that local factors are recognised and considered.

3.2 HUMAN BEINGS

The potential impacts on human beings is partially covered by other environmental topics, such as noise, vibration, electromagnetic radiation, light, landscape, dust and traffic. These will be addressed from a human beings perspective in the EIS.

Based on the EPA's *Advice notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 2003), the human beings topics will address the identification and evaluation of the impacts from the construction and operation of Metro West. This includes policy, socio-economic impacts, and land use applications.

3.2.1 Planning policy

The overall policy context for Metro West will be fully considered within the EIS. A qualitative assessment methodology will be used.

3.2.1.1 Proposed Assessment Methodology

The Metro West project will be assessed for compliance against relevant planning policy documents including the following:

National

- Sustainable Development – A Strategy for Ireland (1997)
- National Development Plan (2007)
- National Climate Change Strategy (2000)
- A Platform for Change (2001)
- National Heritage Plan (2002)
- National Spatial Strategy (2002)
- National Biodiversity Plan (2002)
- Transport 21 (2005)

Regional & Local

- Ten-Year Framework Social Partnership Agreement 'Toward 2016'
- Regional Planning Guidelines for the Greater Dublin Area
- South Dublin Development Plan 2004 – 2010
- Fingal Development Plan 2005 – 2011
- Dublin City Development Plan 2005-2011
- North Ballymun Local Area Plan (2005)
- Dublin Airport Masterplan (2006)
- Greater Dublin Strategic Drainage Strategy (2005)
- Tallaght Town Centre Masterplan
- Clonburris SDZ
- Liffey Valley Town Centre LAP

- Naas Road Gateway Masterplan
- Dublin Airport LAP
- North Ballymun LAP
- Cappagh Road LAP
- Diswellstown LAP
- Meakstown LAP

3.2.2 Socio-economics

Metro West serves many of the areas in west Dublin, with a large population within its catchment. A demographic profile of the area of the Metro West route corridor will provide the socio-economic context within which socio-economic impacts may be assessed.

3.2.2.1 Construction

The construction stage has the potential to disrupt people and businesses along the route corridor. Construction will require the temporary closure of specific roads to allow construction of the stops and track infrastructure. Best practice and lessons learned from the construction of the Luas lines will be used to assess the impact and propose mitigation for temporary disruption along the route.

3.2.2.2 Operation

There are likely to be long-term socio-economic benefits during the operational phase. Metro West will provide an orbital public transport corridor serving the growing populations in west Dublin. Metro West will also provide an important link in the transport network, as it will provide interchange points with Metro North, Luas Line F (Lucan), the existing Luas Red Line and its extension to City West (Luas Line A1), and heavy rail, with interchange stations on the Kildare and Maynooth Lines. There will also be links with numerous Quality Bus Corridors (QBCs) and National Primary Road Networks via Park & Ride.

Metro West is likely to support the economic development along the route corridor by increasing access to employment, services and amenities.

3.2.2.3 Assessment Methodology

A desk-top study of the receiving environment will be conducted using the 'Small Area Population Statistics' from the Censuses 2002 and 2006. A one kilometre buffer will be applied around stop locations. This buffer represents the catchment of the Metro West route. The socio-economic profile will be presented under the following headings:

- Population, population growth and settlement patterns
- Household formation
- Age Profile
- Employment profile of the population
- Profile of employment in the catchment
- Social Class
- Community facilities
- Access to public transport

Issues for consideration during construction will include:

- An assessment of the nature and duration of disruption that is likely to arise during construction
- The presence of construction workers may contribute to the local economy

Operational issues to be considered include:

- A quantitative assessment of improvements in accessibility as a result of the project's implementation
- A discussion of the potential contribution that Metro West will give to economic development in west Dublin

The assessment will also consider expected greenfield development prior to the operation of Metro West. This will be determined from estimated rates of development and forecasts furnished from the relevant Local Authorities.

Guidelines and data sources will include:

- Environmental Protection Agency (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements
- Fingal County Council (2005) *Fingal Development Plan*
- South Dublin County Council (2004) *South Dublin Development Plan*
- Various local area plans that fall within the Metro West catchment
- Census data from 2002 and 2006
- Working papers and other supporting studies undertaken by RPA.

3.2.3 Land use and land take

Construction of the project will require temporary use of lands, and lands will be permanently required for the operation of Metro West and associated infrastructure. The existing land uses and land take required for both construction and operation of Metro West and its subsequent effects on land use will be assessed.

3.2.3.1 Assessment Methodology

A land use classification survey will be undertaken to determine all existing land uses along the route alignment. Primary land uses (such as agriculture, residential, commercial, retail, health/medical, educational, industrial, recreational) will be identified.

Temporary (construction) and permanent (operation) land take will be assessed and evaluated in the EIS. The impact on the land being taken will be based on its use. Recreational lands will be classed with the highest sensitivity, as will schools, hospitals and protected lands. Industrial and derelict lands will be given the lowest sensitivity.

3.3 NOISE & VIBRATION

The noise and vibration assessment takes into consideration available national and international guidance. No national standards in relation to noise and vibration exist in relation to the operation of a rail system in Ireland. The National Roads Authority (NRA) has developed guidance in relation to noise and vibration, for road projects.

Assessment of impacts will be undertaken for the construction and operational phases of the project.

3.3.1 Noise

3.3.1.1 Construction

Significant airborne noise may occur during the construction associated with construction activity. Secondary noise impacts remote from the construction sites could potentially arise due to traffic diversions and construction traffic.

3.3.1.2 Operation

The main potential source of airborne operational noise is the Metro West vehicles. The route corridor passes through a variety of areas including residential, industrial and recreational areas. The roads along which Metro West runs or areas where it runs near to, are generally heavily trafficked and existing levels of noise are therefore high. The noise impact from the Metro West vehicles is therefore likely to be greater at night when background noise levels are usually lower than day-time levels.

At some locations it may be necessary to relocate existing road traffic closer to noise-sensitive buildings and this may result in noise increases at these locations (e.g. New Road and St. Brigid's Road). This will be significant only at noise receptors very close to the existing road. The proximity of the nearest receptors will depend on the final layout of the alignment. This will be fully assessed as part of the EIS.

Noise from traffic travelling to and from the park and ride sites along the route may impact on receptors along roads close to the proposed facilities. Noise will also be generated from traffic within the park and ride areas. There are a number of locations along the route where potential park and ride sites are currently being

considered. The impact of traffic will be considered in relation to all of the park and ride sites.

Noise will be generated from the operation of Metro West's depot. The depot will be used to stable and maintain the vehicles, and maintenance may take place during the out-of-service hours at night. Noise impacts are therefore likely to be greatest during the night. It is noted that potential locations being considered at Abbotstown and Silloge are already influenced by traffic and airport noise, however there are a number of dwellings located near Silloge.

3.3.1.3 Assessment Methodology

The assessment will examine the impact of the addition of airborne noise from the construction and operation of Metro West to the existing ambient noise levels. The significance of this impact will be evaluated in relation to noise receptors along the route. The noise levels will also be compared to relevant noise standards in areas where ambient noise levels are low.

The noise assessment will be based primarily on the expected change in existing noise levels as assessed over the day-time and night-time periods. The impact can be adverse or beneficial depending on whether the change represents an increase or decrease in noise level.

A noise survey will be undertaken to determine the ambient noise environment along the route. Both day and night-time measurements will be taken. In areas such as Fonthill, where the area may be redeveloped and ambient noise may change, it may be necessary to estimate ambient noise levels for future years based on predicted traffic flows or extrapolation from other comparable sites.

The EIS will also identify measures to attenuate noise to as low as reasonable practicable during construction and operation.

3.3.2 Vibration

3.3.2.1 Construction

Perceptible vibration may occur during the construction phase due to activities associated with construction of structures for example, bridges over the Liffey and Grand Canal, or retaining walls in extensive cuts e.g. near the Liffey Valley or Newlands Cross road alterations. Construction techniques and locations will be assessed during the EIA. At this stage the likelihood of significant vibration, impacts during construction is considered to be low.

3.3.2.2 Operation

Vibration could potentially occur in some areas due to the movement of the vehicles on the track. However, it is considered at this stage that the likelihood of this occurring is low.

3.3.2.3 Assessment Methodology

A survey of the existing environment in the area of the development will be carried out to identify sensitive human populations, sensitive features of archaeological/architectural importance and facilities that have vibration-sensitive equipment such as hospitals. Baseline vibration monitoring will be carried out at sensitive locations following the survey of sensitive receptors.

Vibration criteria will be developed for different receptors i.e. human beings, structure types, equipment etc. These criteria will be based on conservative international standards for annoyance and disturbance and will take into account the operational characteristics of Metro West.

Levels of operational vibration are likely to be low to negligible. Where it is identified that sensitive receptors may be exposed to vibration impacts will be predicted. The ground-borne noise and vibration assessment at the representative sensitive receivers will be used to outline the linear extent of recommended vibration attenuating trackforms.

The NRA Guidelines for the Treatment of Noise and Vibration in National Road Schemes, will be referred to in the assessment of impacts from the Metro West project.

The EIA will identify areas where mitigation is likely to be required to minimise any impacts.

3.4 AIR QUALITY & CLIMATE

The air quality and climate assessment takes into consideration available national and international guidance. The National Roads Authority (NRA) have developed guidance in relation to air quality for road projects. National air quality standards are in place, based upon relevant European Directives and are incorporated into the NRA Guidance.

Assessment of impacts will be undertaken for the construction and operational phases of the project.

3.4.1 Construction Impacts

Construction activities associated with the line have the potential to generate dust, which has the potential to cause nuisance at nearby receptors for short periods of time. The potential for dust generation during construction is strongly dependent on the type of activities taking place, on wind speed and direction. Construction may also result in temporary road closures, which may have a temporary impact on traffic flows and therefore air quality.

Significant construction-related impacts on climate are not envisaged. Significant impacts in terms of the generation of heat during construction are not expected therefore this will not be assessed..

3.4.2 Operation Impacts

Operation of the project itself may have an impact on air quality due to changes in traffic flows. In addition secondary and remote impacts will be associated with the generation of electricity for the project.

The primary impacts on air quality will arise, indirectly, due to changes in traffic flows. At this stage of the project there are no detailed designs complete but it is possible that traffic flow changes may happen due to the permanent closure of some roads on the route and diversion of existing traffic onto alternative routes. The proposed park and ride sites may also result in localised air quality impacts, due to increased local traffic.

The paving of green areas and the introduction of significant structures such as bridges could have a localised effect on the microclimate of the receiving environment in specific areas. Metro West is also likely to reduce the volume of potential car-based journeys and therefore indirectly lead to a reduction in the quantities of carbon dioxide produced due to car journeys. However, this will be offset to an extent due to the additional power resources that will be required for the project. These issues will be examined in the EIA.

Significant impacts in terms of the generation of heat during operation are not expected. Therefore this will not be assessed.

3.4.3 Assessment Methodology

Relevant air quality baseline data will be obtained from a number of sources including Dublin City Council, Fingal County Council and the EPA. Climate data will be obtained from Met Éireann.

In terms of Construction Impacts, the potential adverse impacts of dust will be assessed qualitatively by considering the potential for impacts at sensitive receptors along the route and in close proximity to work sites.

The air quality effects associated with significant changes to traffic flows will be investigated using the Transport Analysis Guidance (Department of the Environment, (2004) and the Design Manual for Roads and Bridges (DMRB) (Highways Agency, (2003) Air Quality methodology.

Changes to roadside air quality will be determined through the application of a dispersion model to the outputs of the traffic modelling on a link by link basis.

There are no established criteria for the assessment of dust deposition arising from construction sites. A risk-based approach has therefore been developed to identify the potential to generate significant quantities of dust near to sensitive receptors. This is based on studies highlighted by the Building Research Establishment.

The significance of any impacts on air quality as a result of temporary road closures will also be assessed.

Operational impacts from the proposed project will be assessed against EU air quality standards which have been transposed into Irish law. The legislation relevant to this assessment is the Air Quality Standards Regulations 2002 which transposes the first two daughter Directives set by the European Commission. These established new air quality standards with respect to SO₂, NO₂, NO_x, PM₁₀, lead, CO and benzene.

The assessment will compare the number of road links where pollutant concentrations exceed the air quality standards by considering the impact from the project in combination with predicted background concentration levels. This will be done for both the Do Minimum and Do Something scenarios, in all assessment years. Links that show exceedence to air quality limit values in both the Do Minimum and Do Something scenarios will be identified.

The EIA will identify areas where mitigation is likely to be required to minimise any impacts.

3.5 LANDSCAPE AND VISUAL IMPACT

The proposed Metro West route corridor passes mainly through suburban, fractured landscape that would not be described as sensitive to the type of infrastructure development proposed. There are exceptions along the route corridor.

Landscape impacts are defined as changes in the fabric, character and quality of the landscape as a result of the development. This includes direct impacts to landscape receptors and greater effects that can alter the wider distinctiveness of the landscape. Landscape receptors are the physical or natural resource, special interest or viewer group that will experience an impact. The sensitivity (of a landscape receptor) is the vulnerability to change.

Visual impacts relate solely to changes in available views of the landscape and the effects of those changes on people. They include the direct impact of the development on views, the potential reaction of viewers, their location and number and the impact on visual amenity.

3.5.1 Construction Impacts

Construction of the project may have temporary negative impacts on landscape and visual aspects of the receiving environment. Such impacts include construction traffic and associated haulage routes, construction lighting, plant and machinery, hoarding and site compounds.

3.5.2 Operational Impacts

Metro West will generate general and specific effects on landscape and visual aspects of the environment. The sensitive receptors are elements or assemblage of elements that would be directly or indirectly affected by the proposed development. The sensitive receptors for this project can be divided into 'landscape' and 'viewer' groups. Landscape receptors are those physical elements of the landscape that will be altered by the project, including parks, open spaces, trees, streets, etc. Viewer receptors are those people in the affected area – primarily residents or recreational users, particularly of County Development Plan protected views – whose visual environment or specific valued views would be altered by the proposed Metro West project.

The majority of the proposed development will be visually similar to the Luas Red & Green Line with lines of tracks inground and overhead wires (approximately 5m above ground level) with supporting structures at intervals and rail vehicles passing regularly.

Particular impacts will occur where associated buildings or structures such as depots, park & ride facilities, interchanges, elevated sections of track, etc. have a greater visual load on the environment, through greater height, volume and occupation of space. Impacts in terms of lighting may also occur at associated buildings and structures. There is also potential for new, unrelated development to occur,

particularly adjacent to the proposed stations and this is considered in general terms, related to the land-use zoning of the County Development Plans (CDP).

As a result of the proposed development, it is also possible that there would be localised positive impacts on the streetscape of certain fragmented suburban landscapes associated with reduction in traffic, enhancement of the quality of street furniture, urban elements, tree and shrub planting and general streetscape improvements, due to the use of high quality materials and components. However, the proposed development could also result in the removal of street trees throughout the route. Removal of trees will be minimised and any trees removed will be replaced where feasible.

3.5.3 Assessment Methodology

The assessment will include desktop analysis of maps, aerial photos, plans, written sources, etc., identification of sensitive receptors and a field study of the route.

The assessment will follow from prescribed methodologies as set down in the following publications: -

1. Guidelines for Landscape and Visual Impact Assessment 2nd Edition, by The Landscape Institute / Institute of Environmental Assessment published by E&FN Spon (2002)
2. Advice notes on Current Practice in the Preparation of Environmental Impact Statements, published by the EPA (2003)
3. Guidelines on the information to be contained in environmental impact statements, published by the EPA (2002).
4. Design Manual for Roads and Bridges, Vol. 11, Environmental Assessment, published by HMSO (1993).
5. Visual Amenity Valuation of Trees and Woodland (the Helliwell System) Arboricultural Association Guidance No. 4

The study area used in this assessment refers to the route corridor itself and its wider landscape context in the study of the physical landscape and landscape character.

This may extend for approximately 1km in all directions from the route corridor in order to achieve an understanding of the overall landscape. In terms of the visual assessment, the study of visual amenity may extend outside the study area where relevant.

The assessment will include the following:

- Desktop survey of detailed alignments, maps, aerial photography and other information relevant to the study area, including South Dublin County Development Plan (2004-10), Fingal County Development Plan (2005-11), the Landscape Character Assessments for both counties contained therein, and the Liffey Valley Special Amenity Area Order and management plans.
- Site survey and photographic survey to determine landscape character of the general and specific landscape.
- Detailed site survey of significant landscape areas.
- Survey of all existing mature trees and significant hedgerows that will be affected by Metro West and tabulation of results.
- Assessment of the potential significant impacts of the proposed project utilising the horizontal and vertical drawings of the scheme to determine the main impacting features, the degree to which these elements would be visible in relation to observations made during the field survey. In determining visibility, the views to and from Metro West will be considered.
- Assessment of the significant impacts in terms of lighting during both construction and operation will be carried out.
- The proposal of a scheme of mitigation measures. These will be defined as measures which will be generally implemented and specific landscape measures (SLMs).
- An evaluation of the impacts of the project with and without amelioration.

3.6 ARCHAEOLOGY, ARCHITECTURE AND CULTURAL HERITAGE

The assessment in terms of archaeology, architectural and cultural heritage will be based on a review of available data and field assessments to obtain the archaeological and architectural baseline. This will be followed up by an assessment of the potential impacts from the proposed project and development of mitigation measures to reduce or ameliorate potential adverse impacts.

In terms of archaeology, architectural and cultural heritage impacts, the construction phase of the project will have the most potential impacts and this is when permanent loss/impact can occur. The most significant impact associated with the operation phase is related to visual impact.

3.6.1 Potential Archaeological Impacts

A preliminary review of baseline data has identified a number of impacts on recorded archaeological sites, outlined below. All of these sites are included in the the Record of Monuments & Places (RMP), a list of archaeological sites known to the National Monuments Service, Department of the Environment, Heritage and Local Government.

Potential impacts that have been identified at this stage include direct impact on a site of medieval settlement in Tallaght; a gateway site at Newlands Cross, medieval routeway at Fonthill Road South and on a Holy Well at Bridewell Commons. Considering that the Holy Well is currently in-tact and venerated it is potentially the most sensitive archaeological site along the route corridor. There is also potential for indirect impact on the site of the medieval town of Clondalkin.

Further north along the route in the vicinity of Millennium Park one potential direct archaeological impact on an ecclesiastical site has been identified at this stage. A potential direct impact has also been identified on the site/ environs of a tower house near Cappoge.

It is possible that further archaeological and cultural heritage impacts will be identified as baseline studies are progressed. Where avoidance of sites is not possible, a full set of mitigation measures will be provided.

3.6.2 Potential Architectural Impacts

Given the location of the proposed scheme, on the periphery of suburban Dublin, and keeping largely within the footprint of existing roads, no significant architectural heritage impact is predicted at this stage.

Preliminary assessment has identified five Protected Structures in the vicinity of the route. These comprise a Tynan Memorial Cross located opposite the Belgard and Ballymount junction, St Brigid's Well (also an RMP) in Clondalkin, Quarryvale House on Old Lucan Road, Riverside on Nangor Road and the site of a castle on Ballycoolin Rd, Cappoge (also an RMP). An additional area of potential architectural heritage significance has been identified southeast of Abbotstown on Ballycoolin Road which includes estate walls, estate workers cottage etc. It is anticipated that the field survey of the route will identify other unrecorded structures of architectural heritage.

3.6.3 Assessment Methodologies

The baseline data gathering will comprise of consultation of available data from known sources, including aerial photography and consultations with local authorities and key stakeholders. Additionally, a field survey shall be carried out to verify the desktop study and to identify all potentially-impacted areas that are intersected by, or in close proximity to the route. A catalogue of archaeological sites, archaeological artefacts and architectural features will be provided. Known cultural heritage remains will be highlighted on maps provided.

A general survey will consist of a document and cartographic search utilising a number of sources including the following:

- Record of Monuments and Places (RMP)
- Register of Historic Monuments
- Sites and Monuments Record (SMR)
- National Museum of Ireland Topographical Files
- County Development Plans

- Record of Protected Structures

- Cartographic and Photographic Sources

- National Inventory of Architectural Heritage

- Irish Architectural Archive

- Published Sources

In relation to archaeology the route alignment will be inspected on the ground by field-walking the length of the entire route within a 100m baseline corridor. Known archaeological sites identified in proximity or within the proposed route will be inspected. This is essential in determining the nature and extent of the above ground evidence and in projecting the potential impact of the project. Observations on the topography of the region can often lead to the discovery of unrecorded sites. In this event the nature and location of previously unrecorded sites of archaeological potential impacted by the route alignment will also be recorded. During archaeological field inspections previously unrecorded structures impacted by the alignment may be noted and photographed by the field archaeologist.

A field inspection of the entire route within a 50m baseline corridor will also be carried out in relation to architectural heritage. Protected structures and their attendant grounds, in the vicinity of the route will be inspected in order to assess the potential impact of the proposed route. Additionally the field inspection by the architectural heritage consultant will identify and record any previously unrecorded structures of architectural heritage merit within the baseline corridor.

The evaluation of the baseline data for Archaeological, Architectural and Cultural Heritage shall be based on the NRA 'Guidelines for Assessment of Archaeological Heritage Impacts of National Road Schemes' and NRA 'Guidelines for Assessment of Architectural Heritage Impacts of National Road Scheme'. The categorisation process considers specific designations and listings; existing status; condition/preservation; historical significance; group value; rarity; visibility in the landscape; fragility/ vulnerability; amenity value.

Evaluation categories are assigned to individual sites as a means of predicting their relative importance. These are not definitive categorisations and subsequent investigations may alter their status/ perceived value.

Different monument types lend themselves more easily to assessment and it should be borne in mind that this can create a bias in the record, for example an upstanding stone monument such as a fortified house is easier to examine with a view to significance than a degraded enclosure site.

Once impacts have been predicted, there is a need to assess their relative significance. Impact significance will combine the baseline evaluation categorisation (referred to above) with the magnitude of the impact.

The significance of the impacts will be informed by the proposed design of construction at these locations.

In establishing the nature of individual impacts consideration will be given to the proximity of construction to the identified sites. Separate tables will be provided for direct and indirect impacts.

A mitigation strategy will be prepared for archaeology, architecture and cultural heritage. In relation to archaeological heritage, the preferred government policy is avoidance of direct impacts or preservation in situ. However, where this is not possible, the approach of preservation by record will be applied.

The mitigation section will contain a full description of any measures recommended in order to avoid, reduce and mitigate against significant adverse effects on archaeology, architecture and cultural heritage. Mitigation measures, both at pre-construction and construction phases, will be undertaken in compliance with national policy guidance and statutory provisions for the protection of Archaeological, Architectural and Cultural Heritage. All archaeological surveys and investigations will be undertaken in accordance with licences issued by the Minister for Environment Heritage & Local Government and in accordance with the Code of Practice agreed between the RPA and the DoEHLG.

3.7 TRAFFIC IMPACT

The route crosses four of the National Primary Routes from Dublin City Centre, a number of other major roadways and passes through a number of urban locations leaving significant potential disruption for road users during construction as well as operations.

3.7.1 Construction Impacts

Traffic disruption during construction of the project is likely to arise which will include road closures and traffic diversions. Construction will also require significant traffic movements to import plant, equipment and materials and also to remove construction and demolition waste.

3.7.2 Operation Impacts

In terms of operation, Metro West will result in a modal shift from other modes of transport including car. This has the potential to reduce the number of car journeys on the road network. There will be localised traffic increases and delays at specific junctions and roads near Metro West Stops. There will be localised traffic related impacts as a result of the park and ride and the depot facilities.

Key areas for consideration include:

- The need to optimise the level of service, segregation and priority for Metro West with minimal effect on other users of the transport network
- Achieving efficient network integration
- The likely and current stakeholder issues
- Methods to minimise the residual traffic impact
- Approach to construction traffic management
- Managing the impact on bus services throughout construction and operation
- Maximising accessibility for pedestrians and cyclists

3.7.3 Proposed Assessment Methodology

The traffic assessment will include the following: -

- Traffic Counts
- Model Validation
- Forecasting
- Junction Modelling Report
- Construction Impact Assessment
- Traffic Impact Assessment

The Dublin Transportation Office (DTO) holds an up-to-date strategic traffic model for the city, developed in the SATURN modelling software. This includes all proposals included in Transport 21, including Metro West. This model will be acquired from the DTO and will form the basis of a new model (or smaller models), tailored to test the impact of the Metro West route on traffic patterns.

Traffic count data will be acquired from the existing network. This will be used to validate the traffic models and to assist with the more detailed assessment of the impact on individual junctions.

A review of the existing DTO model, the data inputs, development methodology and validation will be carried out. Codings associated with Metro West will be corrected as necessary to reflect the EPR.

Initially it is proposed that the full area model will be run to assess any strategic impacts of Metro West. This will help inform the choice of cordon for sub-area models.

It is anticipated that the assessment of strategic traffic impacts will show that traffic patterns north of the Liffey are unlikely to be affected significantly by changes to the road network south of the Liffey, and vice versa. As such, subject to consultation with the DTO, it is anticipated that the following sub-area models be produced:

- Tallaght to N4 at Liffey Valley
- Liffey Valley to Abbotstown

It is intended that the exact extents of these sub-areas will be agreed with the DTO and other interested parties prior to the commencement of modelling work. These sub-area models, together with the traffic data collected, will inform the final detailed modelling associated with the assessment of the impact of Metro West on individual junctions.

The route beyond Abbotstown passes through significant areas of greenfield and areas of imminent redevelopment. As such the road network in these areas is still developing and will change.

Further data collection will be obtained to refine the new models described above. This data is likely to include traffic counts (link and junction) and journey time surveys. While it is clear that traffic data will be required at all junctions along the route itself, there is likely to be a need for some data more remote from the route. This data will allow validation of the sub-area models. The precise extent of this data will be determined following initial consultation with the DTO.

Options for construction will be assessed followed by recommended measures to mitigate impacts. This will be included in a Construction Impact Report. For areas where the proposed construction method is likely to have a significant strategic impact, the DTO model will be used, as modified, to determine the scope and scale of this impact. This will then determine the need for additional mitigation.

Detailed junction modelling will consider both the AM and PM peaks and junction models will be developed for both the before and after situations. The models will be based on both existing traffic signal data obtained from the Local Authorities and from the outline designs for junction improvements being developed as part of the Metro West proposals. As only the AM peak model will be available the PM peak will be generated by transposing and validating the PM model to observed traffic data.

Following the modelling work, locations will be identified where junction designs are likely to create significant impacts on the operation of the network.

The traffic and transport section of the EIS will primarily be concerned with traffic, roads and safety, and mobility issues associated with the proposals. The assessment specifically will include:

- Severance and delay for drivers and their passengers including users of public transport
- Impact on Road Users
- Severance and delay for pedestrians and others (including cyclists and equestrians)
- Changes to access and servicing of properties
- Amenity for pedestrians and others
- Accidents and road safety
- Parking, Loading, etc

The traffic assessment will also refer to the following guidelines: -

- National Roads Authority Policy Statement on Development Management and Access to National Roads
- Environmental Impact Assessment of National Road Schemes – A Practical Guide
- Traffic and Transport Assessment Guidelines (TTA)

3.8 SOILS & GEOLOGY

The Metro West preferred route corridor runs across a variety of soil types. In the built up areas around Tallaght, Clondalkin, Blanchardstown, Clonsilla and Corduff, along the Royal and Grand Canals and along existing roads and railways, Metro West runs over made ground. In undeveloped, greenfield areas to the west of Ronanstown, on either side of the Liffey Valley and between Corduff and the

proposed interchange with Metro North immediately south of Dublin Airport, Metro West is expected to run over glacial till. Where it crosses the River Liffey, the River Tolka, the Camac River and the Santry River and their principal tributaries, it is likely to run over mixed alluvial soils.

The Metro West preferred route also runs over a variety of rock types. South of the River Liffey, it runs over Calp which is typically described as interbedded dark grey to black limestone and shales. North of the Liffey, it runs over a variety of rocks including Lucan Formation, which is similar to Calp; ToberColeen Formation, which is a calcareous shale, and Waulsortion Limestones. Although there are no recorded rock exposures along the preferred route, soil cover may be relatively thin in some areas, most notably around the N4 Liffey Valley Interchange.

3.8.1 Construction Impacts

There is a risk that existing made ground and natural soils may be contaminated by activities during construction such as accidental fuel spills. There is the possibility that limited engineering re-use for subsoils excavated on existing agricultural lands will increase both the quantity of soil requiring off site-disposal and the aggregate import requirement.

Potential to encounter contaminated soil such as in small backfilled pits and quarries on agricultural land or beneath urban green space may occur. Specifically along the route corridor there is potential to encounter contaminated land at the former Clondalkin Mills site, alongside the Dublin to Cork and Dublin to Sligo railway line, former Iron and Starch Works adjacent to River Liffey and along the verge or central reserve of existing roads.

Other issues that may arise from construction include soil erosion and compaction and the potential excavation, disturbance and erosion of soft alluvial soils along the banks of River Liffey and River Tolka.

3.8.2 Operation Impacts

Operation impacts include the potential sterilisation of long-term reserves for any established pits or quarries in the immediate vicinity of the route. Known extraction

facilities in the vicinity of the route include quarries at Belgard and Huntstown. There is the potential for irreversible loss of agricultural soils particularly in significant areas in the jurisdiction of Fingal County Council and across the Liffey Valley.

Other potential issues include potential impacts on any features of geological or geomorphological interest and importance and the impact of surface water run-off on soil quality over the operational life of the project.

3.8.3 Assessment Methodologies

The methodology for assessment of the impacts on soil and geology will be undertaken in accordance with the recommendations contained in the following documents:

- “Guidelines on the Information to be contained in Environmental Impact Statement” published by the Environmental Protection Agency (EPA) (2002)
- “Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements)”, EPA (1995)
- “Geology in Environmental Impacts Statements – A Guide” Institute of Geologists of Ireland (2002)

The impact assessment will identify potential impacts which would likely to arise before mitigation measures are employed, and residual impacts which arise after mitigation measures have been established.

Baseline data collection will include an assessment of topographic mapping and any relevant published information in the vicinity of the route followed by a walkover survey. Agricultural lands, operational quarries or pits or features of geological heritage value in the vicinity of the route will be visited and inspected in order to obtain relevant information.

Baseline information on the nature, depth and quality of soils, rock and groundwater along the route will be obtained by means of a detailed ground investigation as part of the geotechnical phase of the project. Ground investigation and soil quality testing will be carried out at sites identified by desk based studies as being potentially

contaminated or at a higher risk of contamination (open urban green space or derelict land). Soils will be classified in terms of scale of contamination and the requirement for excavation and disposal to licenced landfills, where acceptable.

All areas that require construction on, in or under soil and/or rock will be identified in addition to the potential risks posed during the construction and operation phase.

The rating of environmental impacts of the Metro West scheme on soil and geology will be assessed by:

- classifying the importance of the soil / geological attributes and
- quantifying the likely magnitude of any impact on these attributes.

The importance of a soil or geological attribute will be assessed on quality (or degree of contamination), extent (scale) and rarity.

Specific engineering and/or construction solutions will be developed with the engineering design team and incorporated into the project to address with significant potential impacts arising from its construction and operation. Residual impacts arising after the establishment of mitigation measures will also be subject to assessment.

3.9 WASTE MANAGEMENT

The Metro West Route corridor passes through a variety of soil and rock types as described under soils and geology above. There are also a number of potentially contaminated areas in the vicinity of the route corridor. In the built up areas around Tallaght, Clondalkin, Blanchardstown, Porterstown and Corduff, along the Royal and Grand Canals and along existing roads and railways, the Metro West Route runs over made ground.

In undeveloped, greenfield areas to the west of Ronanstown, on either side of the Liffey Valley and between Corduff and the proposed interchange with Metro North immediately south of Dublin Airport, the Metro West runs over tilled, vegetated and agricultural land.

Where it crosses the River Liffey, the River Tolka, the Camac River and the Santry River and their principal tributaries, it is likely to run over bridges and viaducts above the watercourses.

As a result of the above there are significant potential issues in relation to waste management.

3.9.1 Construction Impacts

The construction phase may generate significant quantities of waste material, arising from excavated unsuitable material, vegetation, contaminated soils and building and demolition wastes. There is potential for the excavation of hazardous waste in areas where contaminated lands are crossed by the route or where demolition works on buildings encounter hazardous waste. Potential demolition works on buildings may encounter hazardous materials such as asbestos.

During construction there will be required waste management in terms of the provision of compounds, temporary material storage facilities, etc. Also there maybe limited landtake in built up areas for the handling and storage of construction generated waste.

Waste generation from construction may cause a number of direct and cross-media impacts such as dust, odours, traffic, noise, impacts on soils, contaminated land, geology, water, health, etc.

3.9.2 Operation Impacts

Waste will be generated during the operation of Metro West in the form of materials left by passengers on rail vehicles and at stops in addition to waste generation at the proposed depot (e.g. waste oils, lubricants, etc.) and park and ride areas.

3.9.3 Assessment Methodologies

The methodology for assessment of impacts in terms of waste will be undertaken in accordance with the recommendations contained in the following documents:

- “Guidelines on the Information to be contained in Environmental Impact Statement” published by the Environmental Protection Agency (EPA) (2002)
- “Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements)”, EPA (1995).
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Waste Projects published in July, 2006.

The volumes of construction waste material will be calculated and the potential re-use of such wastes assessed. Requirements and recommendations will be indicated for the disposal or off-site treatment of contaminated materials.

The potential outlets for the different types of waste material expected to be generated at the site will be examined. This will include potential for beneficial re-use, recycling, recovery and disposal, if required.

The cross medial impacts of waste management issues will be considered, such as the traffic impacts from the export of waste materials from the sites and the nuisance impacts (dust and noise) from the handling and processing of waste materials.

Baseline data collection will include an assessment of topographic mapping and any relevant published information in the vicinity of the route followed by a walkover survey.

Potential waste arising from the operation phase will be identified in addition to identifying waste management measures.

The rating of waste management environmental impacts of the Metro West scheme will be assessed by:

- classifying the importance of the environmental attributes and
- quantifying the likely magnitude of any impact on these attributes

Mitigation strategies will be developed and potentially adverse environmental impacts will be avoided wherever practicable. If this is not possible, potentially adverse impacts will be reduced insofar as practicable. Specific engineering and/or

construction solutions will be developed with the engineering design team and incorporated into the railway scheme to deal with the unavoidable impacts arising from its construction and operation. Residual impacts arising after the establishment of mitigation measures will also be subject to assessment.

3.10 WATER

The water quality component of the EIA will focus mainly on the impact on the quality of surface water bodies, water courses, streams and ditches and ground water quality and hydrogeology along the route corridor, during the construction and operation of the proposed Metro West project.

In terms of watercourses, the Metro West route crosses a number of receptors including the Grand Canal, the Royal Canal, the River Liffey, the Tolka River, the Camac River and the Santry River. The route also crosses small ditches and tributaries of the above four rivers and some surface water drainage pipes and water-mains along the route. The two canals are under the jurisdiction of Waterways Ireland and the rivers/ditches and the surface water drainage pipes and water-mains are under the jurisdiction of South Dublin County Council and Fingal County Council. The water quality of the surface water bodies (lake, rivers, estuaries) in Ireland is continuously monitored by the Environmental Protection Agency.

3.10.1 Construction Impacts

All surface water bodies and watercourses are considered particularly sensitive receptors to the proposed works. The construction phase has the potential for the pollution of watercourses through uncontrolled discharges in addition to impacts to other receptors including ecology, visual amenity, recreational value and potable water supplies. Fuelling of construction vehicles, plant and machinery may result in oil spills therefore potentially contaminating surface water and groundwater.

The removal of vegetation during construction and the storage of excavated materials have the potential to cause increased sediment and silt run-off into adjacent waterbodies.

3.10.2 Operation Impacts

There is potential for hydrocarbon contamination from the operation of Metro West as a result of oils, mechanical fluids, lubricants etc in addition to the use of maintenance oils and lubricants from the depot. In addition there is the potential for contamination as a result of the use of pesticides that maybe used for the control of vegetation.

Potential impacts may also arise from the operation of Metro West in terms of drainage and flooding impacts.

3.10.3 Assessment Methodologies

The water quality assessment will be carried out in accordance with the following:-

- “Guidelines on the information to be contained in Environmental Impact Statements” issued by the Environmental Protection Agency
- “Advice Notes on current practice (in the preparation of Environmental Impact Statements)” issued by the Environmental Protection Agency.
- All relevant existing and or emerging national and European legislation.

Baseline water quality data of the study area will be collected and a desktop assessment will be carried out on available data and mapping in relation to surface water bodies, watercourses and groundwater/aquifer relating to the study area. This will be followed by field assessments and water sampling, where required.

The assessment will identify the potential risks to all relevant watercourses during both the construction and operation stage.

The assessment will include the identification of surface water drainage and proposed outfalls and the potential impact on water quality.

Mitigation strategies will be developed and potentially adverse environmental impacts will be avoided and reduced wherever practicable. Specific engineering and/or construction solutions will be developed with the engineering design team and incorporated into the railway scheme to mitigate the unavoidable impacts arising from its construction and operation.

3.11 FLORA AND FAUNA

The habitats encountered along the route of Metro West mainly comprise a mix of built land such as roads, amenity grassland including golf courses and playing fields, areas of bare ground and agricultural land. Hedgerows, treelines, individual trees and blocks of woodland are also frequently encountered.

The proposed route crosses three proposed Natural Heritage Areas (pNHA). These are the River Liffey, the Grand Canal and the Royal Canal. Other, non-designated, watercourses are also crossed, including the Camac, Tolka and Santry Rivers.

Key sensitive areas that have been identified at this stage include: -

- Mature trees at Newlands Golf Course and at Rowlagh/Ballyowen Park
- Crossings at the Camac River and the Grand Canal (pNHA)
- Crossing at the River Liffey (pNHA) and associated riparian habitat and woodland
- Crossing of the Royal Canal (pNHA)
- Areas of semi-mature or mature woodland, including the Tolka Valley and Millennium Park
- Mature or semi-mature trees, treelines and hedgerows and minor watercourses along the northern section of the route between the National Aquatic Centre and Dublin Airport.

3.11.1 Construction Impacts

All surface water bodies are considered ecologically sensitive to the proposed works. The removal of vegetation during construction and the storage of excavated materials have the potential to cause increased sediment and silt run-off into adjacent waterbodies. The construction phase has the potential for the pollution of watercourses through uncontrolled discharges and therefore may impact on aquatic ecology. For example there are potential impacts on spawning or migrating fish if watercourse crossings are not constructed in a suitable manner.

With regard to terrestrial ecology, apart from the designated nature conservation areas and habitats encountered, there may be construction impacts on flora and fauna (for example badger in hedgerows, treelines and other wooded areas, bats in trees and buildings or known rare plants along the canals and the River Liffey).

3.11.2 Operation Impacts

Significant ecological impacts resulting from the operation of Metro West are not expected, however, there remains the potential for habitat severance, pollution of watercourses, loss of habitat (particularly hedgerows/treelines), impacts on rare plants and animals, and possible bird strike (eg: collision of birds with powerlines or bridges).

3.11.3 Assessment Methodology

The following guidance documents will be used in the ecological assessment:

- Guidelines on the information to be contained in Environmental Impact Statements (Environmental Protection Agency, 2002)
- Advice Notes on Current Practice in the Preparation of Environmental Impact Assessments (EPA, 2003)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes, National Roads Authority, 2004
- Guidelines for Ecological Assessment, Institute of Ecological and Environmental Management, 2002
- Environmental Assessment and Construction Guidelines series, as published by the National Roads Authority (2006)
- All relevant existing or emerging national and European legislation
- Best practice

The assessment will establish the current baseline ecological conditions, will assess the construction and operational activities and will predict their impacts or changes to

the baseline in the future. This will be followed by the determination of mitigation measures to avoid or attenuate potential impacts.

The baseline information gathering exercise will comprise a comprehensive review of available ecological information, published and unpublished from sources including:

- National Parks and Wildlife Service (NPWS) database
- Eastern Regional Fisheries Board (ERFB)
- EPA
- Local Authorities
- Bodies such as Bat Conservation Ireland (BCI) BirdWatch Ireland and any others deemed necessary.

The desktop assessments will be followed by a full habitat survey using the Heritage Council methodology: A Guide to Habitats in Ireland (Fossitt, 2000). Based on the desktop assessment and the habitat survey the following targeted surveys will be carried out:

- Large mammal survey
- Bird surveys
- Bat surveys (daytime and night-time)
- Inspections of watercourses for protected species
- Rare plant survey

The impacts on ecology will be assessed along a corridor of appropriate width for each aspect of ecology including habitats, flora and fauna. The width of the assessment corridor will be determined following an initial assessment of the route corridor and the existing environment. The ecological baseline surveys will be carried out at appropriate times of year and in accordance with seasonal occurrence of flora and fauna.

A set of maps will be created indicating designated conservation areas, habitats, other survey results and proposed mitigation measures as appropriate.

The criteria to be used for evaluating ecological sites and rating impacts will follow the *Guidelines for Assessment of National Road Schemes*, (NRA, 2006) and comprise two parts, a site evaluation scheme and criteria for rating impacts on terrestrial and aquatic sites.

The level of significance of any and all of the impacts of the proposed Metro West will then be assessed and a full suite of appropriate mitigation measures will be incorporated into the EIS.

3.12 AGRONOMY

The agricultural impact is the overall effect of a scheme on a farm holding. The degree to which a scheme impacts upon an individual farm depends on land take, severance, farm size and type, impact on farm buildings and/or facilities.

In terms of the study area, a significant portion consists of built environment. There are areas at Newlands and Fonthill that adjoin agricultural lands that may be impacted. In the Newlands area, the lands to the west of the route corridor consist of woodland / tillage and Newlands Golf Course while the lands to the east consist of grassland and tillage / grassland. In the Fonthill area the adjoining lands consist of agricultural grassland only.

The route passes through Castleknock Golf and Country Club, some agricultural lands and local community playing pitches.

North of Abbotstown the agricultural lands consist mostly of tillage with relatively small areas of grassland at Huntstown and Silloge. The route potentially impacts on agricultural lands attached to the Abbotstown Veterinary Research Laboratory and the Marine Institute at Abbotstown.

3.12.1 Construction Impacts

Potential impacts during the construction stage may include landtake, severance of lands, noise, dust, soil disturbance, interference with access points to lands and

interference of access to severed lands. Landtake and severance of amenity lands may directly impact on the use and enjoyment of those amenity lands. Existing services on affected lands may be interrupted during the construction period and there may also be disturbance of drainage works.

3.12.2 Operation Impacts

The main potential impacts associated with the operation of Metro West are landtake and fragmentation of farm units.

3.12.3 Assessment Methodologies

The agricultural assessment will consist of a desktop review, impact assessment and a recommendation of mitigation measures.

The desktop review will involve a review of all available mapping and reports. This will enable the identification of agricultural lands which will be affected by Metro West and its associated infrastructure.

Consultation will be carried out with all affected landowners and a walkover study of the route to enable an assessment of the impact and recommended mitigation measures required.

The macro impact of the Metro West will be assessed with regard to the amount of agricultural lands required and the potential impact on farms of significance or of regional importance.

The preparation of an agricultural assessment will be guided by the following documents:

- Guidelines on the information to be contained in Environmental Impact Statements (Environmental Protection Agency, 2002)
- Advice notes on Current Practice in the Preparation of Environmental Impact Statements, EPA, 2003.

The effect of the scheme on each agricultural property will be classified as non-significant or significant. Where the effect is significant the level of significance, (i.e. severe, major, moderate or minor) will be assessed according to pre-defined criteria.

Mitigation measures will be proposed as appropriate for those properties with significant adverse effects. The residual impact of Metro West on each property will be reassessed following recommended mitigation using the same criteria.

3.13 ELECTRO MAGNETIC RADIATION

Metro West will be an electric over ground light rail system and as such the potential for interference on existing and potential receptors and potential impacts from stray currents arising from the construction and operation of Metro West will be assessed.

3.13.1 Potential Environmental Impacts

The potential for electromagnetic (EMC) emissions from railway and tramway operations are generally not considered to be significant. The electric and magnetic fields have been measured on existing Dublin light rail lines and have been found to be less than the earth's naturally occurring fields.

EMC emissions may be generated by either the power supply system such as electrical sub stations and the overhead current collection system along the route, or the propulsion system onboard the trams.

The Metro West system could be susceptible to external electromagnetic fields that are generated by sources such as electricity cables and local radiofrequency (RF) transmitters. Stray currents maybe generated from a number of sources including industrial premises and any uninsulated sections of rail, from which uncontrolled earthing takes place. This earthing can be to a variety of conductive bodies in the ground such as iron gas or water pipes and corrosion of the metal could take place at the point of earthing.

Potentially sensitive receptors that have been identified along the Metro West route include:

- Hospitals

- Quarries

- Mobile Phone Base Stations

- Telecommunication Cables

- Dublin Airport

- Radio Links

- Power Lines

The influence of EMC interference dissipates over distance. The precise distance at which the dissipation is complete will depend on the sensitivity of individual receptors. The protection distance provided in the European Directive on Electromagnetic Compatibility (2004/108//EEC) is 10m and therefore all systems located 10m or greater from the rail system should not encounter radio frequency interference.

Rail systems can generate transient emissions that are not controlled by EMC regulations. Such transients can pose a threat to the operation of neighbouring electrical and electronic equipment.

Large electrical installations can also cause voltage fluctuations on the public supply that can cause the phenomenon of flicker. Flicker is evident when lighting dims and can cause a nuisance to local residents and other sensitive receptors.

3.13.2 Assessment Methodology

The Electromagnetic Interference and Radiation Assessment will be carried out in accordance with the following:

- Guidelines on the information to be contained in Environmental Impact Statements (Environmental Protection Agency, 2002)

- Advice Notes on Current Practice in the Preparation of Environmental Impact Assessments (EPA, 2003)

- All relevant existing or emerging national and European legislation

The construction of Metro West will be required to comply with the requirements of the European Directive on Electromagnetic Compatibility (2004/108//EEC) and European Standard EN 50121 (Parts 1-5), which addresses railway EMC. In addition all electrical and electronic products placed on the market or taken into service in the European Union must comply with all applicable directives which include the above EMC Directive, the Low Voltage Equipment Directive 2006/95/EC and the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC.

It is proposed to assess the project's compliance in accordance with the above directives and standards in addition to guidelines on limiting exposures to electromagnetic fields as published by the International Commission on Non-Ionising Radiation Protection (ICNIRP) and the EU EMF Recommendation 1999/519/EC.

The levels of transient emissions will be determined based on previous experience and measurements carried out on existing operation light rail systems.

Details of the route will be assessed including the proposed electrification scheme, overhead lines, signaling, public interfaces, ESB and telecoms operators.

The baseline environment will be characterised by carrying out measurements of the pre-existing electromagnetic environment at a number of locations along the preferred route. Sensitive facilities will be identified such as hospital laboratories, quarries, Dublin Airport and close proximity residential locations. Relevant bodies will be consulted including utility providers, ComReg and the Radiological Protection Institute of Ireland.

Compliance with relevant standards and guidelines shall be achieved through design studies, mitigation measures and verification testing.

3.14 MATERIAL ASSETS

3.14.1 Utilities

Utilities refer to the physical infrastructure such as electricity, gas, telecommunications and other communications infrastructure, surface drainage and foul drainage networks, water and transport infrastructure. Along the route corridor there are several areas where such infrastructure exists, particularly high voltage

powerlines, gas pipelines and water mains. Construction of the project is likely to impact on existing utilities.

Construction of the project may also disrupt existing transport infrastructure and services such as Luas and rail.

In terms of operation, there is potential for electrical magnetic interference which is addressed under the Electromagnetic Radiation Section above.

3.14.2 Property

As the route passes through urban and suburban areas, it is possible that there will be some requirement for property take which may result in demolition or reconstruction. Property in the vicinity of the route corridor include residential, commercial, retail, social community and health infrastructure. The operational impacts on property relate to aspects already addressed in this draft Scoping Report such as noise & vibration, air quality, landscape and visual amenity and architectural heritage.

3.14.3 Assessment Methodology

The material assets assessment will be carried out in accordance with the following:

- “Guidelines on the information to be contained in Environmental Impact Statements” issued by the Environmental Protection Agency
- “Advice Notes on current practice (in the preparation of Environmental Impact Statements)” issued by the Environmental Protection Agency.
- All relevant existing and or emerging national and European legislation.

3.14.3.1 Utilities

All utility infrastructure will be identified along the route corridor. Following a desktop assessment, field assessment and consultation with all respective utility providers, the potential impacts on utilities along the route corridor will be identified.

A program for utility relocation during the construction stage will be developed. Engineering and/or construction solutions will be developed with the engineering design team and incorporated into the railway scheme to mitigate the unavoidable impacts arising from the construction of the scheme. Potential disruption to transport infrastructure will be assessed and a program detailing any proposed disruption and measures to minimise disruption will be determined.

3.14.3.2 Property

A detailed analysis of property along the route corridor will be carried out and the properties that will require demolition or reconstruction will be determined. The assessment will also refer to the noise & vibration, air quality, landscape and visual amenity and architectural heritage assessments. Mitigation measures will be developed to avoid and minimise property impacts.

4.0 INTERACTIONS, INDIRECT IMPACTS & CUMULATIVE EFFECTS

The EIS will address and describe interactions between the various environmental aspects that are being assessed. The potential indirect and cumulative impacts associated with the project will also be addressed in the EIS.

5.0 EIS STRUCTURE & CONTENTS

The EIS will be submitted to An Bord Pleanála as part of the railway order application for the project. The structure of the EIS will be in accordance with:

- Guidelines on the information to be contained in Environmental Impact Statements (Environmental Protection Agency, 2002)

The EIS will comprise of a number of sections which will include the following:

Background to the Project and EIA Process

This section will include the Planning and Environmental Legislative Requirements in relation to Metro West, description of the requirement for an EIA, the structure of the EIS and the EIS project team. A description of the needs and objectives of the Metro West project will be provided.

The overall approach to the EIA process will be detailed including a description of how the scope of the EIA was defined and the issues relating to the consultation process undertaken by RPA.

A description of difficulties encountered and any limitations and that were experienced by the project team will be provided.

Alternatives

This section will describe and appraise the alternatives that were considered during the design of the project and during the EIA process. The consultation that was undertaken with regard to the design of the project will also be discussed.

Project Description

A description on the project including the design principles, risk analysis, safety issues, construction methodology and programme will be detailed.

Planning Context

The planning context for the project, including national, regional and local policy guidance will be detailed.

Existing Environment

A description of the baseline environment along the route corridor will be provided for each environmental aspect.

Impacts of the Proposed Project

A description of the potential impacts that will occur during the construction and operational phase of the project will be provided for each environmental aspect. The likelihood, extent, magnitude, duration and significance of potential impacts will be described.

Mitigation Measures

The mitigation measures to be put in place to mitigate the significant impacts will be described and the residual impacts that will persist after mitigation has been put in place will be also be detailed.

Mitigation measures will be provided in the form of avoidance, reduction or remedy. Residual Impacts will be classified as insignificant or significant. If residual impacts are deemed to be significant, then the level of significance will be explained in the EIS.

Interactions

A section detailing the interactions between the various environmental aspects will be provided. This will be provided in the overall context, area by area assessment and a matrix summarising the interactions will be provided.

Non-Technical Summary (NTS)

A non-technical summary which is a non-technical language summary of the main findings included in the EIS will be prepared.

It is likely that the EIS will be presented in a number of volumes such as follows:

- **Volume 1: Main Report** – describing in detail the development, results of the assessment, mitigation measures and conclusions regarding impacts
- **Volume 2: Project Elements** – description of all impacts and benefits of the project, by environmental discipline in compliance with legislative requirements.
- **Volume 3: Plans and Illustrations** – plans and illustrations representing the project and its impact on the surrounding environment.
- **Volume 4: Technical Annexes** - detailed specialist technical reports (e.g. bat survey report)
- **Volume 5: A Non Technical Summary** – description in accessible and non technical language of the main findings of the EIA

It is the intention of the RPA that the EIS will be clear, concise, representative and of an appropriate standard to reflect the nature and scale of the project. The EIS will be made widely available.

APPENDIX I
LIST OF EIA CONSULTEES

List of EIA Consultees

Aspect	Stakeholders
<p style="text-align: center;">EIA SCOPING & CONSULTATION</p> <p>(Includes consultees relevant to environmental aspects listed below)</p>	<p>An Bord Gáis An Taisce Badgerwatch Ireland Bat Conservation Ireland Birdwatch Ireland Bord Gáis Commission for Energy Regulation Department of Communications Marine & Natural Resources Department of Environment Heritage & Local Government Department of Transport Dublin Airport Authority Dublin Transportation Office Eastern Regional Fisheries Board eircom Environmental Protection Agency ESB Fingal County Council Geological Survey of Ireland Heritage Council Irish Aviation Authority National Museum of Ireland National Parks and Wildlife Service National Roads Authority Office of Public Works South Dublin County Council Waterways Ireland</p>
<p style="text-align: center;">Agronomy</p>	<p>Farming Community Teagasc Irish Farmers Association Irish Creamery Milk Suppliers Association Grower groups – North Dublin Growers Association</p>
<p style="text-align: center;">Air Quality & Climate</p>	<p>Local Authorities EPA</p>
<p style="text-align: center;">Archaeology, Architectural and Cultural Heritage</p>	<p>National Monuments (DoEH&LG) Local Historical & Archaeological Groups Heritage Council An Taisce</p>
<p style="text-align: center;">Ecology</p>	<p>Eastern Regional Fisheries Board National Parks & Wildlife Service Badgerwatch Bat Conservation Ireland Birdwatch Ireland</p>

Title: MW – Draft EIS Scoping Report for Consultation

Aspect	Stakeholders
Landscape, Visual Amenity	South Dublin Co. Council Parks Department Fingal Co. Council Parks Department Sports Clubs
Material Assets	Utility Companies Commission for Energy Regulation Property owners
Noise & Vibration	Local Authorities EPA
Radiation & Electromagnetic Aspects	Dublin Fire Brigade An Garda Síochána ComReg Irish Aviation Authority Utility Companies Radiological Protection Institute of Ireland
Soils & Geology	Department of Communications Energy and Natural Resources Heritage Council Geological Survey of Ireland Teagasc EPA
Traffic	Irish Rail Dublin Bus Dublin Transportation Office Chambers of Commerce Dublin Airport Authority National Roads Authority
Waste	EPA National Construction and Demolition Waste Council
Water	Office of Public Works Eastern Regional Fisheries Board Environmental Protection Agency Waterways Ireland

APPENDIX II

METRO WEST ROUTE DESCRIPTION AND EIS SECTION PLAN AREAS

APPENDIX III

SUMMARY OF FEEDBACK RECEIVED AS PART OF CONSULTATION ON METRO WEST ENVIRONMENTAL IMPACT ASSESSMENT

Railway Procurement Agency

Title: MW EIS – Draft Scoping Report for ConsultationThe following abbreviations are used in this section:

AGS: An Garda Síochána

BGE: Bord Gáis Éireann

D15CC: Dublin 15 Community Council

DAA: Dublin Airport Authority

DoAFF: Department of Agriculture, Fisheries and Food

DoEH&LG: Department of Environment, Heritage & Local Government

EG: Eirgrid

ERFB: Eastern Regional Fisheries Board

GSI: Geological Survey of Ireland

IR: Iarnród Éireann

NDA: National Disability Authority

NMI: National Museum of Ireland

NRA: National Roads Authority

NSCDA: National Sports Campus Development Authority

OPW: Office of Public Works

PR: Private Resident

WI: Waterways Ireland

Environmental Aspect	Comment	Party
Human Health	Personal safety, security and suicide should be considered	PR
	The environmental assessment of Metro West should note provision of access to the National Sports Campus Development as a positive benefit for human health.	NSCDA
Human Beings	Concern over the impact on the recreational amenity of Porterstown Park. Concern over ball protection at the rail line boundary at Porterstown Park. Concern over impact on the recreational value of Millennium park. Concern over the impact on sports and recreation at Verona FC.	D15CC
	Local Actions Plans along the route should be assessed.	PR

Environmental Aspect	Comment	Party
	<p>Safety should be considered, along the alignment, especially where there are adjacent foot and cycle paths.</p> <p>It may be useful for the socio-economic assessment to include pre-application consultation records held in the County Council Offices for development over a certain threshold within the zone of influence of the preferred route.</p> <p>The land use zoning designated for Abbotstown has been changed from 'RU' To protect and provide for the development of agriculture and rural amenity to 'OS' To preserve and provide fro open space and recreational amenities and 'HA' To protect and improve high amenity areas. The land classification survey should take into account Fingal County Council Development Plan 2005-2011 Variation no. 16.</p>	<p>PR</p> <p>NSCDA</p> <p>NSCDA</p>
Noise and Vibration	<p>The assessment should consider the potential for vibration and settlement issues in the vicinity of Dublin Airport although at this stage impacts are unlikely due to distance the proposed route is from the airport.</p> <p>Road traffic noise implications should be quantified and mitigation measures should be identified.</p> <p>There are no national standards for noise and vibration in relation to rail. This may be a difficulty encountered.</p> <p>It is the intention of the Development Control Plan for the development of the Sports Campus Project to provide athlete accommodation at Abbotstown.</p>	<p>DAA</p> <p>NRA</p> <p>NSCDA</p> <p>NSCDA</p>
Air Quality and Climate	<p>Will certain bridges, especially the Liffey Bridge, have an impact on microclimate, wind, precipitation, shadow, in particular?</p> <p>Heat may be produced in the settling of concrete. Heat will be generated by motors, brakes, electrical systems and cabin heating systems and energy in railways is dissipated as heat.</p> <p>Vehicle exhaust emissions from traffic generated by the proposed development and impacts on air quality should be quantified.</p>	<p>PR</p> <p>PR</p> <p>NRA</p>

Environmental Aspect	Comment	Party
	Assess the potential for dust and other material deposition on national roads	NRA
Landscape and Visual Impact	<p>Consideration is to be given on the visual impact of the crossing of the Liffey Valley Special Amenity Area. Mature Trees at Clonsilla should be retained.</p> <p>Replacement of mature trees is difficult and their removal should be avoided. In some areas, only young and semi-mature trees exist. However, on a local basis they are just as important as mature trees as they are the only trees available.</p> <p>Within the Liffey Valley Special Amenity Area, sensitive views may exist that are substantially greater than 1km.</p>	<p>D15CC</p> <p>PR</p> <p>PR</p>
Archaeology, Architecture and Cultural Heritage	<p>The architectural assessment should include a field survey to identify architectural heritage merit that has not been recorded to date. Look at potential for structures or artefacts to become a visual asset to the proposed route</p> <p>RMPs should be assessed. National monuments to be identified and zones of visual amenity to be defined for them. Direct impact on national monuments requires ministerial consent. Areas of archaeological potential should be identified including sub surface archaeology.</p> <p>Archaeological sites/features that have been identified at Abbotstown include a Church, Graveyard, and a house site.</p> <p>Protected structures that have been identified at Abbotstown include Abbotstown House / Demesne and Church ruins and graveyard.</p>	<p>DoEH&LG</p> <p>DoEH&LG, NMI</p> <p>NSCDA</p> <p>NSCDA</p>
Traffic	<p>The EIS should consider extent to which Metro West will contribute to the modal split set out in the Dublin Airport Local Area Plan.</p> <p>Crossings of National Routes shall be grade separated and details to be agreed with NRA. A full assessment of construction activities on the national roads and M50 should be carried out.</p> <p>Crossing of the Quarryvale junction on the N4 should take account of a free flow junction being provided in</p>	<p>DAA</p> <p>NRA</p> <p>NRA</p>

Environmental Aspect	Comment	Party
	<p>the future. A conceptual design layout should be prepared for such a free flow junction.</p> <p>The metro route should be sufficiently set back so as not to compromise the upgrading of Ballymun junction at the M50. The alignment shall take into account the upgrade works planned for the Newlands Cross section of the N7.</p> <p>Traffic impact of proposed Park and Ride facilities in the vicinity of junctions of National Roads and the M50 to be assessed. Provision of additional accesses to national roads for provision of access to park and ride is not favoured.</p> <p>Establish traffic carrying capacity on existing and planned roads. Identify trips/traffic generating potential for the proposed development and the manner in which this will be developed. Identify appropriate traffic management measures.</p> <p>An Garda Síochána Traffic Department to be consulted in relation to the preferred route.</p> <p>In the event of an overlap in construction of the Sports Campus development and Metro West, the NSCDA would liaise with the RPA to produce a comprehensive construction traffic management plan.</p>	<p>NRA</p> <p>NRA</p> <p>NRA</p> <p>AGS</p> <p>NSCDA</p>
Soils and Geology	Sites of geological interest within the vicinity of the proposed route which are being proposed for NHA or County Geological Site Status include Lucan, Mulhuddart Holy Well, Huntstown Quarry, Kilcarbery Golf Course, Belgard Quarry, Clonldalkin Quarries. Any ground investigation should be added to the GSI database. Significant bedrock cuttings should remain visible as rock exposure.	GSI
Water	<p>The EIS should assess likely impact on local water supplies (quality and quantity) particularly during the construction phase.</p> <p>Consideration should be given to watercourses, drainage systems and catchments in the vicinity of Dublin Airport.</p> <p>Development in floodplain must be avoided where possible. Where development does occur on floodplain, the minimum flood risk management standard is to be achieved. Under Section 50 of the Arterial Drainage</p>	<p>DoAFF</p> <p>DAA</p> <p>OPW</p>

Environmental Aspect	Comment	Party
	<p>Act, 1945, as amended requires the consent of the Commissioners for Public Works be obtained prior to the undertaking of any works to alter or construct a bridge over any watercourse.</p> <p>Concern that any excavations associated with the Liffey Valley Crossing will pose a flooding risk to properties lower down in the valley.</p> <p>Potential impacts on national road drainage systems should be assessed.</p>	<p>PR</p> <p>NRA</p>
Flora and Fauna	<p>The EIS should assess impact on pNHAs (Grand Canal, Royal Canal and Liffey pNHA). A number of rare species occur in the Liffey Valley. Peregrine falcons exist at quarries, at Huntstown and Belgard. Cumulative impacts of other plans/programmes should be assessed (e.g.: Line F, Greenway electric ducting development, Clonburriss LAP & SDZ and high rise at Blackhorse bridge). Otters and bats are present at these sites and are protected.</p> <p>Habitats, flora & fauna should be assessed in addition to protected species and results are to be presented in the EIS and the potential impacts assessed. This includes impact on protected species including listed flora, birds, mammals (badgers), hares, bats and bird species. Hedgerows, and badger sets may be present. Mature hedgerows occur at townland boundaries. Watercourses to be assessed and associate species including otters, salmon, lamprey, white clawed crayfish, frogs, newts and kingfishers. Suitable riparian habitat along watercourses should be retained. Licences or derogations may be required where there are impacts. EIS should make reference to National Biodiversity Plan. EIS to make reference to alien species and methods to prevent introduction.</p> <p>The route corridor will potentially impact on River Liffey, Camac & Tolka Systems. All support Brown Trout. The River Liffey supports Atlantic Salmon and Sea Trout and thus there are Salmonid constraints and their migration should not be impeded. The Royal and Grand Canal are valuable fisheries resources. Impact on ecology should be avoided followed by mitigation by reduction and remedy. Uncontaminated water to drain to the river systems. River manipulation works (Bridging, culverting, etc) must be submitted to the Board for consultation and approval. No negative impacts on surface water or riparian habitats. Surface water management measures during construction and operation must be implemented. Storm water drainage to surface waters seen as a potential high risk. SUDS and interceptors and possible hydrobrakes to be</p>	<p>DoEH&LG</p> <p>DoEH&LG</p> <p>ERFB</p>

Environmental Aspect	Comment	Party
	<p>implemented. No entry of solids to surface water during connection of pipework. Potential Impact of foundation piling to release sediments and pollutants to watercourses. Environmental Construction Management measures to be implemented for river and estuarine protection.</p> <p>Installation of bridging structures to consult outlined requirement standard. Proposed culverts to have ongoing maintenance to allow free movement of salmonid species. Clearspan bridges are preferred to prevent in-stream impacts. In stream works to facilitate works to be carried out between May & September.</p> <p>The Royal and Grand Canals are currently being assigned ecological status under the Water Framework Directive. It is likely that section of canals potentially impacted by Metro West will be determined to be good ecological potential. Any works must not cause deterioration of this status.</p> <p>Bird strikes may be an issue at bridges or vehicles on bridges.</p> <p>Effects of spoil causing bird strike hazard should be mitigated against in the vicinity of Dublin Airport.</p>	<p>ERFB</p> <p>ERFB</p> <p>PR</p> <p>DAA</p>
Agronomy	The EIS should include an assessment of the likely disruption of agricultural activities during the construction and operation, and access to land.	DoAFF
Electromagnetic Radiation	<p>Is there a risk to large information technology installations? Will power or communications be carried within bridges, especially the Liffey Bridge?</p> <p>Potential impacts on the uses and/or facilities in Sport Campus in terms of electromagnetic radiation are uncertain at this stage. NSCDA would require further consultation and examination of this issue.</p>	<p>PR</p> <p>NSCDA</p>
Material Assets	<p>A safety risk assessment and consultation is needed in relation to the High Pressure Transmission gas main located in close proximity to the route corridor between the proposed Fonthill and Millennium Park Stops.</p> <p>A detailed impact study on possible Dublin Airport related utilities and services would be welcome.</p>	<p>BGE</p> <p>DAA</p>

Environmental Aspect	Comment	Party
	<p>Consultation is required regarding temporary and permanent access agreements for crossing Waterways Ireland Property at the Grand Canal at Clonburris and the Royal Canal at Porterstown.</p> <p>ESB and Eirgrid to be consulted in relation to the potential impacts on existing infrastructure of Metro West and where possible, account is taken in planning the route of future developments in the high voltage system.</p>	<p>WI</p> <p>EG</p>
Design	<p>During construction work, accessibility should be maintained for people with reduced mobility.</p> <p>Close consultation is required in relation to the design of the proposed interchange stations and associated facilities at Fonthill and Porterstown.</p> <p>Design of the Metro shall take account of nearby presence of M50 particularly at Cappoge and Meakstown.</p> <p>Alternative routes should be assessed in order to avoid potential demolition of residential property at Coldwinters, Finglas.</p> <p>Porterstown stop be located as close as possible to the proposed Irish Rail Station.</p> <p>The alternative route that preserves the open space at Millennium Park is preferred.</p> <p>Consideration should be made for a stop to be located between Westend retail park and the entrance to the shopping mall so as to reduce congestion and disperse passengers arriving at Blanchardstown Town Centre.</p> <p>The alternative option that crosses adjacent to the Snugborough Road is preferred due to less intrusion on the Tolka Valley.</p> <p>The cycle path along Blanchardstown road south should be retained.</p> <p>Reasoning should be provided for major design decisions such as why there is a proposed bridge over Embankment Road and not New Nangor Road.</p>	<p>NDA</p> <p>IR</p> <p>NRA</p> <p>PR</p> <p>D15CC</p> <p>D15CC</p> <p>D15CC</p> <p>D15CC</p> <p>D15CC</p> <p>PR</p>

Railway Procurement Agency

Title: MW EIS – Draft Scoping Report for Consultation

Environmental Aspect	Comment	Party
	The option of running Metro West through the existing road underbridge at the Quarryvale Junction at Liffey Valley is not acceptable.	NRA
Other	Assess mitigation of possible penetration of obstruction limitation surfaces (cranes, etc) in the vicinity of Dublin Airport	DAA

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