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York Street Interchange



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**INVESTORS
IN PEOPLE**

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About Transport NI

Transport NI, formerly branded as Roads Service, is a business unit within the Department for Regional Development (DRD), playing a significant role in facilitating the safe and convenient movement of people and goods throughout the province and the safety of road users, through the delivery of road maintenance services and the management and development of the transport network. It also informs the Department's policy development process to ensure that measures to encourage safe and sustainable travel are practical and can be delivered.

Transport NI is responsible for the maintenance of over 25,000km of public roads together with about 9,700km of footways, 5,800 bridges, 271,000 street lights and 367 public car parks. It also has responsibility for the development of the transport network and a range of transport projects designed to improve network safety, sustainability and efficiency.

The key objectives of Transport NI are to:

- Manage, maintain and improve the transport network to keep it safe, efficient, reliable and sustainable;
- Promote increased customer satisfaction with the services delivered by Transport NI;
- Work constructively with Transport NI's key stakeholders to support the delivery of high quality services;
- Develop Transport NI's capacity and capability to meet objectives;
- Ensure effective management of Transport NI's budget, assets and corporate governance arrangements; and
- Improve Transport NI's resilience in responding to emergencies.

For the purposes of this report, references to Transport NI shall be read as references to its former Roads Service brand.

Further information about Transport NI is available on the Department for Regional Development website, please visit www.drdni.gov.uk.

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LIST OF ABBREVIATIONS

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3D	Three dimensional
AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic
AD	Anno Domini
ADEPT	Association of Directors of Environment, Economy, Planning and Transport
AEP	Annual Exceedance Probability
AFBI	Agri-Food Biosciences Institute
AIES	Assessment of Implications on European Sites
AMIs	Advanced Motorway Indicators
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQS	Air Quality Standards
AR	Arterial Route
ASSI	Area of Special Scientific Interest
ATC	Area of Townscape Character
BAP	Biodiversity Action Plan
BC	Before Christ
BCC	Belfast City Council
BELB	Belfast Education and Library Board
BEP	Bad Ecological Potential
BES	Bad Ecological Status
BGS	British Geological Survey
BHA	Belfast Harbour Area
BIP	Biodiversity Implementation Plan
BMA	Belfast Metropolitan Area

Abbreviations	
BMAP	Belfast Metropolitan Area Plan
BMTP	Belfast Metropolitan Transport Plan
BMUA	Belfast Metropolitan Urban Area
BNCR	Belfast & Northern Counties Railway
BoCCI	Birds of Conservation Concern Ireland
BRP	Bat Roost Potential
BRT	Belfast Rapid Transit
BS	British Standard
BTO	British Trust for Ornithology
CaCO ₃	Calcium Carbonate
CAFE	Clean Air for Europe
CBC	Common Bird Census
CC	City Centre
CDM	Construction Design Management
CEDaR	Centre for Environmental Data and Recording
CEF	Connecting Europe Facility
CEMP	Construction Environmental Management Plan
CIfA	Chartered Institute for Archaeologists
CIRIA	Construction Industry Research and Information Association
CKD	Combined Kerb and Drainage
CLR	Contaminated Land Report
CNCC	Council for Nature Conservation and the Countryside
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COBA	Cost Benefit Analysis
CoCP	Code of Construction Practice
COSHH	Control of Substances Hazardous to Health
CPT	Cone Penetration Test

Abbreviations	
CRTN	Calculation of Road Traffic Noise
CS	Characteristic Situation
CSM	Conceptual Site Model
CSO	Combined Sewer Overflow
DARD	Department of Agriculture & Rural Development
DBFO	Design, Build, Finance & Operate
DCAL	Department of Culture, Arts & Leisure
DETI	Department of Enterprise, Trade and Investment
DFP	Department of Finance and Personnel
DfT	Department for Transport
DIN	Dissolved Inorganic Nitrogen
DMRB	Design Manual for Road and Bridges
DOE	The Department of the Environment
DRD	Department for Regional Development
DSD	Department for Social Development
DTM	Digital Terrain Model
DVA	Driver & Vehicle Agency
DWD	Drinking Water Directive
DWG	Drinking Water Guideline
DWS	Drinking Water Standards
EC	European Commission / European Community
ECI	Early Contractor Involvement
EclA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EEC	European Economic Community
EFT	Emissions Factor Toolkit
EIA	Environmental Impact Assessment
EPS	European Protected Species

Abbreviations	
EQS	Environmental Quality Standards
ES	Environment Statement
ESCR	Earth Science Conservation Review
EU	European Union
FAB	Forum for Alternative Belfast
FSA	Food Standards Agency
GAC	Generic Assessment Criteria
GEP	Good Ecological Potential
GES	Good Ecological Status
GIR	Ground Investigation Report
GIS	Geographical Information Systems
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GOMMS	Guidance on the Methodology for Multi-Modal Studies
GPS	Global Positioning System
GQRA	Generic Quantitative Risk Assessment
GSNI	Geological Survey of Northern Ireland
GSV	Gas Screening Value
GWB	General Watching Brief
ha	hectare
HA	Highways Agency
HAWRAT	Highways Agency Water Risk Assessment Tool
HDV	Heavy Duty Vehicle
HES	High Ecological Status
HFS	High Friction Surfacing
HGV	Heavy Goods Vehicle
HPGD	Historic Park, Garden and Demesne
HRA	Habitats Regulations Assessment
HRA	Hot Rolled Asphalt

Abbreviations	
HSENI	Health and Safety Executive for Northern Ireland
IAN	Interim Advice Note
IAQM	Institute of Air Quality Management
IDP	Investment Delivery Plan
IEEM	Institute of Ecology and Environmental Management
IEMA	Institute of Environmental Management & Assessment
IfA	Institute for Archaeologists
INSTAR	Irish National Strategic Archaeological Research Programme
IROPI	Imperative Reasons of Overriding Public Interest
ISNI	Investment Strategy for Northern Ireland
ITS	Intelligent Transport Systems
IV	Intermittent View
JNCC	Joint Nature Conservation Committee
JR	Judicial Review
KTC	Key Transport Corridor
LAQM	Local Air Quality Management
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Area
LCT	Lagan Canal Trust
LDV	Light Duty Vehicle
LI	Landscape Institute
LiDAR	Light Detection and Ranging
LLPA	Local Landscape Policy Area
LMA	Local Management Area
LNR	Local Nature Reserve
LoLo	Lift-on / Lift-off
LPS	Land & Property Services
LTN	Local Transport Note

Abbreviations	
LVIA	Landscape & Visual Impact Assessment
LVRP	Lagan Valley Regional Park
MAC	Metropolitan Arts Centre
MBR	Monuments & Buildings Record
MEP	Moderate Ecological Potential
MES	Moderate Ecological Status
MPA	Mineral Products Association
MSFD	Marine Strategy Framework Directive
MUGA	Multi-use Games Area
NATA	New Approach To Appraisal
NB	North Belfast
NCN	National Cycle Network
NIAF	Northern Ireland Archaeology Forum
NIBG	Northern Ireland Bat Group
NIBS	Northern Ireland Biodiversity Strategy
NIEA	Northern Ireland Environment Agency
NIHE	Northern Ireland Housing Executive
NILCA	Northern Ireland Landscape Character Area
NNR	National Nature Reserve
NO ₂	Nitrogen dioxide
NO _x	Oxides of Nitrogen
NRTF	National Road Traffic Forecast
NV	No View
OS	Ordnance Survey
OSNI	Ordnance Survey of Northern Ireland
OV	Open View
PAH	Polycyclic Aromatic Hydrocarbons
PAW	Programme of Archaeological Works

Abbreviations	
PEP	Poor Ecological Potential
PES	Poor Ecological Status
PfG	Programme for Government
PI	Petrol Interceptor
PM	Particulate Matter
PPE	Personal Protective Equipment
PPS	Planning Policy Statement
PPV	Peak Particle Velocity
PRONI	Public Record Office of Northern Ireland
PRoW	Public Right of Way
PSNI	Police Service of Northern Ireland
PSSR	Preliminary Sources Study Report
PTZ	Pan Tilt and Zoom
RBMP	River Basin Management Plan
RDS	Regional Development Strategy
REAC	Register of Environmental Actions and Commitments
RG	Regional Guidance
RMSE	Root Mean Square Error
RoRo	Roll-on / Roll-off
RSPB	Royal Society for the Protection of Birds
RSPPG	Roads Service Policy and Procedure Guide
RSTN	Regional Strategic Transport Network
RSTN-TP	Regional Strategic Transport Network – Transport Plan
RTM	Remedial Targets Methodology
RTS	Regional Transportation Strategy
RV	Restricted View
SAC	Special Area of Conservation
SAM	Scheduled Archaeological Monument

Abbreviations	
SEA	Strategic Environmental Assessment
SEPA	Scottish Environmental Protection Agency
SFG	Spatial Framework Guidance
SHW	Specification for Highway Works
SLNCI	Site of Local Nature Conservation Importance
SO ₂	Sulphur dioxide
SPA	Special Protection Area
SPPS	Strategic Planning Policy Statement
SPR	Source – Pathway – Receptor
SRI	Strategic Road Improvements
SS	Suspended Solids
SuDS	Sustainable Drainage Systems
SVOC	Semi-Volatile Organic Compounds
SWMP	Site Waste Management Plan
TAG	Transport Analysis Guidance
TENs	Trans-European Network
TEN-T	Trans-European Network in Transport
TG	Technical Guidance
THC	Total Hydrocarbons
TICC	Traffic Information and Control Centre
TP	Trial Pit
TPH	Total Petroleum Hydrocarbons
TPO	Tree Preservation Order
TSCS	Thin Surface Course Systems
TTM	Temporary Traffic Management
TWB	Targeted Watching Brief
UCL	Upper Confidence Level
UK	United Kingdom

Abbreviations	
UKBAP	United Kingdom Biodiversity Action Plan
UKTAG	United Kingdom Technical Advisory Group
UTC	Urban Traffic Control
UV	Ultra violet
UWWT	Urban Waste Water Treatment
v/v	volume/volume
VCB	Vertical Concrete Barrier
VCSB	Variable Concrete Step Barrier
VES	Visual Effects Schedule
VOC	Volatile Organic Compounds
WAC	Waste Acceptance Criteria
WANE	Wildlife and Natural Environment Act
WEL	Workplace Exposure Limits
WFD	Water Framework Directive
WHO	World Health Organisation
WMU	Water Management Unit
WTV	Water Target Values
ZVI	Zone of Visual Influence

York Street Interchange



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Trans-European Transport Network (TEN-T)

Volume 1

Part III

Conclusions

18. CONCLUSIONS

18.1 Introduction

This chapter outlines the conclusions of the Proposed Scheme and the main likely significant cumulative effects.

Cumulative effects are the total effect caused by the sum of past, present and reasonably foreseeable future actions. They can result from incremental changes caused by interactions between effects arising from a scheme and/or interaction with the effects from other developments. With regard to road improvement schemes, cumulative effects are considered in the following ways:

- Multiple effects from the scheme, and from different schemes (of similar or different types), upon the same resource; such as the effect on a single community of noise from several transport sources or landtake and damage due to hydrological change, affecting several sites of the same habitat; and
- Incremental effects arising from a number of small actions, including ongoing maintenance operations, having developed or developing over time.

The chapter is structured as follows:

- Methodology – how the cumulative impacts have been assessed;
- Assessment of Cumulative Environmental Effects – an assessment of main likely significant cumulative effects;
- Summary of Environmental Effects – a summary section of the findings of each technical assessment; and
- Schedule of Environmental Commitments – a summary of proposed mitigation measures.

18.2 Methodology

The assessment of cumulative impacts has been undertaken in line with DMRB Volume 11, Section 2, Part 5 (Assessment and Management of Environmental Effects; HA205/08) and Volume 11, Section 2, Part 6 (Reporting of Environmental Impact Assessments; HD 48/08).

The DMRB outlines two types of cumulative impact that are to be considered in the EIA of a Proposed Scheme. These are:

- Cumulative impacts from a single project (i.e. Interaction of Impacts); and
- Cumulative impacts from different projects (in combination with the Proposed Scheme being assessed).

18.2.1 *Cumulative impacts from a single project (i.e. Interaction of Impacts)*

The interaction of impacts arises from the combined action of a number of different environmental topic-specific impacts upon a single receptor/resource (e.g. the removal of vegetation would have a landscape, visual and ecological effect and an individual residential receptor can be affected by air, noise and visual impacts, etc.).

The technical assessments in this ES (Chapters 8 – 17) have assessed the likely significant interacting impacts within each chapter. During the assessment process, co-ordination took place between assessment specialists to ensure that interacting impacts were identified, assessed and, where appropriate, mitigated. Table 18.1 outlines the likely significant interacting impacts and chapters where they have been assessed.

Table 18.1: Interaction of Impacts on the Proposed Scheme

	Air Quality	Cultural Heritage	Ecology & Nature Conservation	Landscape & Visual Effects	Land Use	Noise and Vibration	Pedestrians, Cyclists, Equestrians & Community	Vehicle Travellers	Road Drainage & the Water Environment	Geology & Soils
Air Quality		✓	✓				✓			
Cultural Heritage	✓			✓			✓		✓	✓
Ecology & Nature Conservation	✓			✓	✓	✓			✓	✓
Landscape & Visual Effects		✓	✓		✓		✓	✓		
Land Use			✓	✓			✓			
Noise and Vibration			✓				✓			
Pedestrians, Cyclists, Equestrians & Community	✓	✓		✓	✓	✓				
Vehicle Travellers				✓						
Road Drainage & the Water Environment		✓	✓							✓
Geology & Soils		✓	✓						✓	

18.2.2 *Cumulative impacts from different projects*

Cumulative impacts may arise from the combined effects of a number of different projects, in combination with the project being assessed, on a single receptor/resource. This can include multiple impacts of the same or similar type from a number of projects upon the same receptor/resource.

The DMRB states projects that should be included in the cumulative impact assessment include:

- Development projects with valid planning permissions as granted by DOE Planning, and for which a formal EIA was a requirement or for which non-statutory EIA has been undertaken;
- Trunk road and motorway projects which have been confirmed (i.e., gone through the statutory processes).

18.2.2.1 *Planning Applications*

Information on planning applications within the study area was obtained from DOE Planning and has been assessed as appropriate within the Land Use assessment (Chapter 12) and

where necessary throughout other technical chapters (i.e. Noise & Vibration (Chapter 13) and Landscape & Visual (Chapter 11)).

18.2.2.2 Road Schemes

Table 18.2 shows the relevant road project schemes within 30km of the proposed York Street Interchange scheme. These have been scoped-out of the assessment as there are no likely significant cumulative effects because of the relative distances and the nature of strategic traffic.

Table 18.2: Confirmed road schemes in the vicinity of the Proposed Scheme

Road Schemes	Status
A2 Shore Road Dualling, Greenisland (widen 3.5km of single carriageway to four-lane carriageway between Jordanstown and Seapark)	Due for completion in Summer 2015
A8 Belfast – Larne Road Dualling (upgrade 14km of existing route to dual carriageway between B95 Coleman’s Corner Junction and B100 Ballyrickard Road Junction)	Due for completion in Spring 2015
A55 Knock Road Widening Scheme	The Notice of Intention to Proceed, Direction Order and Stopping-Up Order was published on 26 th September 2012. The scheme is currently in Transport NI’s Preparation Pool for projects that will be taken forward to construction stage, usually within the next five years (subject to available finance).

Whilst these schemes are unlikely to have a tangible effect upon traffic movements within York Street Interchange, there are various issues concerning future traffic growth in and around the York Street area.

Consultation with DOE Planning confirmed that there is considerable uncertainty over both short-term and longer-term traffic flows due to the conflicting nature of proposed developments, the ongoing sustainable transport initiatives within the City, and the effects of an already heavily-trafficked and constrained wider network during peak periods. However, they were not in a position to comment on future traffic levels and suggested that Transport NI could advise accordingly, although it is unlikely that information on overall trends in future traffic would be available as proposed developments are considered by DOE Planning on an individual basis.

It is therefore recognised that there is potential for significant developments in and around the York Street Interchange area, although it is difficult to be absolutely sure if and when some of these developments will actually commence (if at all), the construction period, and the final opening date. It is also necessary to take into account current operating conditions on the existing road network, parts of which are already subject to capacity issues and may struggle to accommodate additional traffic.

As part of sustainable transport initiatives, the Park & Ride/Share car parks around the city appear to be attracting a high number of users. In addition, the Belfast Rapid Transit System is expected to significantly reduce car-based trips into the City Centre in future years. As such, the combined effects of the above are therefore difficult to predict with any degree of certainty. Moreover, although recent trends in traffic flows on the Westlink indicate a higher level of

annual growth, which may in part be due to the effects of traffic re-assignment from the City Centre rather than traffic growth, traffic flows on the M2 have increased at a much lower rate. The combined growth over these two sites which reflects the M1-M2 movements has been generally below central growth.

It is also important to take into account the transport objectives of the Proposed Scheme and the effects that different traffic growth scenarios would have on the development of the scheme. The Expanded SRI Programme identified the necessity to deal with bottlenecks on very highly trafficked routes and identified the provision of a flyover junction carrying the Westlink over York Street, (i.e. 'to provide a grade-separated junction at the last remaining part of Westlink which has a traffic signalled junction'). The Proposed Scheme addresses that requirement and incorporates additional features such as the York Street bus lane, although there is little or no scope for further increasing the capacity of the Proposed Scheme within the constrained site. The traffic forecast scenarios will therefore not change the proposed design but will quantify the extent to which the scheme satisfies the Government's transport planning objectives.

This degree of uncertainty has been reflected by testing the Proposed Scheme against a range of traffic forecasts, with four scenarios developed, namely:

- National Road Traffic Forecasts (NRTF) Low traffic growth – which would reflect the effects of sustainable transport initiatives and the lower growth observed on the M2 corridor;
- NRTF Central traffic growth – which provides a balanced forecast of overall trends in traffic flows over the longer term;
- NRTF High traffic growth – which could better reflect the potential increase in demand if the proposed developments are realised; and
- High demand growth – which included an allowance for additional traffic using the strategic M1-M2 and M1-M3 links following the provision of the Proposed Scheme.

The traffic data used within this assessment is derived from the Traffic & Economic Assessment study for the Proposed Scheme, which is detailed within Section 5 (Traffic and Economic Assessment) of the Engineering, Traffic and Economic Assessment Report which forms Part 2 of the overall Proposed Scheme Report (akin to a Stage 3 Scheme Assessment Report).

If sustainable transport initiatives currently or soon to be implemented reduce private car trips into the city centre and mitigate the effects of additional trips generated by potential/proposed developments in and around the area, then the NRTF Central traffic growth forecast would be a reasonable basis for the assessment of the Proposed Scheme, and has been used for the technical assessments contained within this ES.

For the assessment of cumulative effects, it has been agreed with Transport NI to test the Proposed Scheme against the 'High Demand' traffic growth scenario, which would better reflect the potential increase in demand if the proposed developments are realised (i.e. as a worst case scenario).

18.2.3 Significance of Effects

The cumulative impacts of different projects are assessed against the significance criteria outlined in Table 18.3. These impacts will be determined arising from the potential impacts identified in the individual assessments. Mitigation measures will be identified if needed, and where relevant residual impacts will be assessed.

Table 18.3: Determining Significance of Cumulative Effects

Significance	Effects
Severe	Effects that the decision-maker must take into account as the receptor/resource is irretrievably compromised.
Major	Effects that may become a key decision-making issue.
Moderate	Effects that are unlikely to become issues on whether the project design should be selected, but where future work may be needed to improve on current performance.
Minor	Effects that are locally significant.
Not Significant	Effects that are beyond the current forecasting ability or are within the ability of the resource to absorb such change.

Source: DMRB Volume 11, Section 2, Part 5, Chapter 2, Table 2.6

18.3 Assessment of Cumulative Environmental Effects

18.3.1 Air Quality

For the assessment of cumulative effects, the results from a Local Air Quality assessment based on a high demand traffic growth scenario has been calculated and presented in Appendix 8, Annex B in Volume 2 of this ES. This assessment considered the following:

- High Demand Traffic Growth Do-Minimum Scenario Annual Mean Pollutant concentrations (2021);
- High Demand Traffic Growth Do-Something Scenario Annual Mean Pollutant concentrations (2021);
- Change in Annual Mean Pollutant concentrations for High Demand Traffic Growth Scenario (2021);
- High Demand Traffic Growth Do-Minimum Scenario Annual Mean Pollutant concentrations (2035);
- High Demand Traffic Growth Do-Something Scenario Annual Mean Pollutant concentrations (2035); and
- Change in Annual Mean Pollutant concentrations for High Demand Traffic Growth Scenario (2035).

In the year of Opening (2021) and the Design year (2035), predicted annual mean concentrations of NO₂ and particulate matter (PM₁₀ and PM_{2.5}) would be below national air quality objective values at all assessed sensitive receptors for both the Do-Minimum and Do-Something scenarios. Whilst the combined effects would also result in localised changes in emissions as a result of modification to the existing road layout and associated traffic redistributional effects, the changes in concentrations of nitrogen dioxide or particulate matter (PM₁₀, PM_{2.5}) would generally be of an imperceptible or small magnitude, in terms of both increases and decreases in exposure. On this basis, the effects are not significant as it is within the ability of the predicted environment to absorb such change.

The assessment of combined and interrelated impacts also includes a High Demand Growth Regional Assessment and also concluded that the effects would not be significant.

18.3.2 **Cultural Heritage**

Cumulative impacts can arise from the multiple effects of the same scheme on a single asset, different multiple effects of the scheme and other sources on the same asset, or incremental effects arising from a number of small actions over time. Interactions may arise from activities related to other topics, such as drainage schemes, endangered species relocation, sound attenuation measures or access arrangements, taken together with any cultural heritage impacts. The combined and interrelated impacts have been assessed within Chapter 9 (Cultural Heritage) and are summarised below.

18.3.2.1 **Potential Cumulative Effects on Archaeological Remains**

Potential cumulative impacts on archaeology would affect AR11 (Area of Archaeological Potential, defined by the local authority) and AR13 (buried palaeo-environmental remains) (Figure 9.1) as a result of the proposed development at City Quays (currently under construction). On this basis, the effect is not significant.

18.3.2.2 **Potential Cumulative Effects on Historic Buildings**

The development at City Quays Belfast (currently under construction) that is within the vicinity of the Proposed Scheme is likely to result in cumulative impacts upon the setting of a number of historic buildings that are designated – HB3 (Clarendon Dock Buildings, Harbour Estate Belfast), HB4 (Sinclair Seamen's Presbyterian Church, Corporation Square) and HB5 (Harbour Office, Corporation Square). The scale of the proposed City Quays development would impact upon the setting of the listed buildings and its visual association with the area which reinforces the significance of the functional relationship. Combined with the Proposed Scheme, it would further diminish the setting and historic integrity of the historic dock area. In terms of significance, the effects are minor adverse as they are only locally significant.

18.3.2.3 **Potential Cumulative Effects on Historic Landscape**

No such effects have been identified.

18.3.3 **Ecology and Nature Conservation**

In terms of committed development in the vicinity of the Proposed Scheme, the majority of sites to be developed are either hardstanding or vacant brownfield land and are typically of low ecological interest. However, in terms of development proposals, the City Quays Masterplan for example proposes to enhance the ecological value of the site and minimise the potential impact of the proposed development through a number of recommended mitigation measures.

Essentially as PPS2 Natural Heritage (July 2013) sets out the DOE's planning policies for the conservation, protection and enhancement of the natural heritage, it is expected that any development in the area would be required to meet the objectives of this PPS. On this basis, in terms of cumulative impacts from different projects, the significance of effect would be minor beneficial, from an ecology and nature conservation perspective.

18.3.4 **Landscape & Visual Effects**

Future development trends in the vicinity of the Proposed Scheme indicate that committed developments would include more large scale buildings, thus the built form of the area would change, in-combination with the Proposed Scheme. For example, a new building at City Quays and the University of Ulster Greater Belfast Development are currently under construction and a range of other key planning applications within the area have recently received planning approval.

As detailed within Chapter 11 (Landscape and Visual Effects), a committed development assessment has been undertaken to consider in-combination effects. Committed

developments are potential future visual receptors, which may be constructed before completion of the Proposed Scheme, and as a result would alter the baseline conditions. Committed developments have been divided into two groups; those in the “Primary Zone” are within the ground level Zone of Visual Influence, and those in the “Secondary Zone” are immediately outwith this. Committed development visual receptors are detailed in Appendix 11, Annex D of this ES.

Overall, committed developments would alter some existing available views, as they would partially or fully obstruct potential views (from existing receptors and committed development receptors) towards the Proposed Scheme. The extent to which the Primary Zone Committed Developments would give rise to additional visual impact over and above that identified in the baseline visual assessment is summarised in Table 18.4.

Table 18.4: Summary of Visual Impacts on Committed Development in Year 1 (‘assumed’ year of scheme Opening) and Year 15 (‘Design Year’)

Magnitude of Visual Impact	No. of Primary Zone Committed Development Visual Receptors	No. of Primary Zone Committed Development Visual Receptors
	Year 1 (Winter)	Year 15 (Summer)
Major	11	4
Moderate	19	9
Minor	8	17
Negligible	6	14
No Change	3	3
Total	47	47

In terms of significance, the in-combination effects would at worst be minor as even though some receptors would be subject to a major adverse visual impact, the effect would only be locally significant and would not be a key decision making issue.

18.3.5 Land Use

As detailed within Chapter 12, the Land Use assessment has taken account of, as far as practicable, future changes in land use due to new development which would likely occur in the absence of the Proposed Scheme. As noted previously, DRD Transport NI currently owns the majority of private land that would be affected by the Proposed Scheme. Therefore, in terms of intended future usage, the land affected is largely required by the Department for the performance of its present and future responsibilities (i.e. to construct the road). Only four planning applications would be lost in their entirety to accommodate the Proposed Scheme, however as advertisement applications, these are of low value and do not contribute positively to the development of the area. Furthermore, no areas of community land or designations, policies, proposals or zonings for development land within Belfast City Centre, Belfast Harbour Area, or Outer Belfast City (North Belfast) would be adversely affected by the Proposed Scheme.

After the entire scheme opens to traffic, the DRD Transport NI would carry out a review of land vested for construction of the new road; if this exceeds the minimum required by the Department for the performance of its present and future responsibilities, any surplus land may be sold back to the original owner or others at the then market value. There are four areas which may be made available to future development as part of surplus land disposal.

The potential development of this land would be a significant benefit to the area, as this land would remain to be underutilised until post scheme completion.

On this basis, the cumulative effect upon future land uses as a result of in-combination effects is not significant.

18.3.6 **Noise and Vibration**

For the assessment of cumulative effects, the results from an assessment based on a high demand traffic growth scenario have also been calculated and are presented in Appendix 13, Annex B of this ES.

The high demand growth scenario includes other significant developments that are not included in the central growth scenario, with an allowance for additional traffic using the strategic Westlink-M2 and Westlink-M3 links following the provision of the Proposed Scheme. Figures are also included for this high demand traffic scenario within A13.1 to A13.3 of Appendix 13, Annex B. The DMRB tables for high traffic demand are included within Appendix 13, Annex B.

As with central traffic growth, all residential properties are predicted to experience a negligible increase in traffic noise levels from 2021 to 2035, under the Do-Minimum scenario. Approximately 85% of residential properties are predicted to experience a negligible increase, approximately 5% are predicted to experience a minor increase, approximately 10% are predicted to experience no change, and approximately 3% experience a negligible or minor decrease in short-term noise levels. For non-residential sensitive receptors, approximately 79% would experience a negligible increase, approximately 14% would experience a minor increase, and approximately 7% would experience no change in short-term noise levels.

In terms of the long-term change between the Do-Minimum 2021 and Do-Something 2035 scenarios, approximately 98% of residential properties are predicted to experience a negligible increase and approximately 2% are predicted to experience no change or a negligible decrease in long-term traffic noise levels. For non-residential sensitive receptors, all are predicted to experience a negligible increase in long-term traffic noise levels. Long-term changes in night-time noise levels show a similar pattern to the daytime changes, albeit with significantly fewer properties included in the assessment.

In terms of changes in nuisance, for the Do-Minimum scenario, all residential properties would experience an increase in nuisance. For the Do-Something scenario, the situation is similar, with 99% of residential properties experiencing an increase in nuisance or no change, and a small number with a <10% decrease.

On this basis, the effects are not significant as they are within the ability of the predicted noise environment to absorb such change.

18.3.7 **Pedestrians, Cyclists, Equestrians and Community Effects**

A number of committed developments within the study area (i.e. City Quays, University of Ulster and a number of substantial residential developments with a particular focus on student accommodation) are likely to bring a significant influx of Non-Motorised Users (NMUs) into the study area.

The new University of Ulster Belfast Campus for example, will accommodate approximately 11,292 Full Time Equivalent (FTE) students and approximately 1,280 FTE staff with the majority of those staff and students relocating from the existing Jordanstown campus. Parking provision will be limited to 350 spaces within the DSD 'Mixed Use Regeneration Scheme' on Frederick Street. On this basis, there would be a significant influx of NMUs into the study area, which would put significantly increased demand on the footway, cycleway and bus lanes which have been incorporated into the Proposed Scheme design.

Accordingly, a NMU Audit report has been prepared and considered the effects of these in-combination impacts for a range of committed developments within the study area. Generally, York Street would be the most heavily utilised NMU route, particularly to the proposed University and the provision of a 3m wide footway along its length between Great Patrick Street and Dock Street (as much as is feasibly possible), is considered adequate to accommodate this demand. Further to this, the provision of a dedicated cycle lane northbound, and a bus/cycle lane southbound is also considered sufficient to accommodate this increased demand. Overall, the cumulative effects have been assessed to be not significant.

18.3.8 *Vehicle Travellers*

For the assessment of cumulative effects, the results from an assessment based on a high demand traffic growth scenario have also been calculated and are presented in Appendix 15, Annex B of this ES.

In terms of a comparison of Central Growth and High Demand Growth scenarios for the Do-Minimum scenario in the Design Year (2035), the analysis showed that four links on the existing road network would change in terms of driver stress. As shown in Figure 15.2, levels of stress would be 'High' on the strategic road network and North Queen Street, and generally 'Moderate' on the remainder of the local city road network with the Central Growth scenario. The High Demand Growth scenario displays similar trends, with four links (Link 106 (Clifton Street), Link 224 (Nelson Street), Link 272 (Duncrue Street) and Link 362 (Dunbar Link)) increasing in stress, from 'Moderate' to 'High', compared with the Central Growth scenario (Appendix 15, Annex B, Figure 15.B1). Each of these links increase in stress due to increased flows per lane, however there are no significant rises in speed, keeping each of these links in the <50kph threshold. As key strategic links are already at a 'High' stress level, the increase in traffic flows in the area would not exacerbate stress levels further.

In terms of a comparison of the Central Growth and High Demand Growth scenarios for the Do-Something scenario in the Design Year (2035), the analysis showed that eight links on the proposed road network would change in terms of driver stress. As shown in Figure 15.3, levels of stress would again be 'High' on the strategic road network and North Queen Street, and generally 'Moderate' on the remainder of the local city road network with the Central Growth scenario. The High Demand Growth scenario displays similar trends, but with eight links increasing in stress, from 'Moderate' to 'High'. Each of these links increase in stress due to increased flows per lane, however there are no significant rises in speed, keeping each of these links in the lowest speed threshold. These are; Links 104 & 106 on Clifton Street, Link 332 on North Queen Street, Links 131 & 362 on Dunbar Link, Link 412 on York Street (northbound), Link 463 Nelson Street, and Link 426 from the M2 to Westlink.

There are no links predicted to have 'Low' stress with either the 'Do-Minimum' or 'Do-Something' scenario, with either Central or High Demand Growth.

Future development trends in the vicinity of the Proposed Scheme indicate that committed developments would include more large scale buildings, thus views from the road would change, in-combination with the Proposed Scheme. For example, the City Quays and University of Ulster Greater Belfast developments would be viewable constituents from many locations on the proposed road network.

18.3.9 *Road Drainage and the Water Environment*

The road drainage for the Proposed Scheme has been developed in such a manner as to:

- address road safety issues pertaining to the accumulation of surface water as defined in DMRB;

- provide an effective system, using normally available and readily maintained components, for conveying surface water arising from the Proposed Scheme to the receiving watercourses, water bodies or drainage systems;
- incorporate facilities to inhibit discharge of sediments and significant volumes of hydrocarbons, prior to discharge to receiving water bodies or drainage systems; and
- provide facilities to isolate the drainage system from the receiving watercourses, water bodies or drainage systems in the event of significant spillages of contaminants.

In terms of in-combination effects with committed developments, cumulative impacts upon the water environment would be negligible as the surface water management measures associated with these developments have been designed in-line with current best practice. For example, the City Quays development would include petrol interceptors within its car parks and the University of Ulster Greater Belfast Development has incorporated a Sustainable Drainage Strategy (SuDS). Measures such as SuDS and petrol interceptors will reduce the level of pollutants which are discharged to Belfast Harbour. On this basis, the cumulative effect would not be significant.

18.3.10 Geology & Soils

From a geology and soils perspective, there would be relatively few cumulative effects. There would be no significant impacts on solid or drift geology, or on soils of the region expected from any of the committed developments within the study area; thus the cumulative effect is likely to be not significant.

As all committed developments would affect brownfield land or existing development, potential areas of contaminated land may be encountered. Whether or not the Proposed Scheme or any other developments encounters contaminated land, further investigation will be necessary, including a contaminated land risk assessment to assess the appropriate remediation / mitigation measures. As such, the cumulative effect would be neutral, if not slightly beneficial as a consequence of remediation resulting in improved land quality and reduction in risk to human health and the wider environment. It has been assessed that the potential cumulative effects upon geology and soils are not significant.

18.4 Summary of Environmental Effects

Table 18.5 provides a collective summary of the environmental effects described throughout each of the previous technical Chapters (8-17), taking into account the effectiveness of measures (where appropriate) to mitigate adverse impacts, thus allowing for the overall significance of effect to be rated. It also provides comments on what would be the equivalent environmental effect if the Proposed Scheme was not to be constructed. Specifically, the following have been tabulated:

- Description of Predicted Impact (with the proposed scheme);
- Mitigation Objective and Commitment;
- Sensitivity / Value of Receptor;
- Duration of Impact (Short / Long-Term);
- Magnitude of Impact with Mitigation;
- Significance of Impact with Mitigation; and
- Description of Likely Effects (without the proposed scheme).

As Table 18.5 only provides a brief summary of the overall environmental effects, reference should be made to individual chapters of this ES for further explanation and understanding.

Table 18.5: Summary of Environmental Effects

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
Air Quality (Chapter 8)							
8.1	Increases in NO ₂ and PM ₁₀ levels at selected receptor site locations over Do-Minimum conditions. Impacts would generally be of an imperceptible to small magnitude.	None proposed as assessed NO ₂ and PM ₁₀ levels would be well below NAQS limit values.	Sensitive	Long-Term	N/A	Negligible effect in both Opening and Design Year	NO ₂ and PM ₁₀ levels expected to reduce over time and would also be well below NAQS limit values.
8.2	Decreases in NO ₂ and PM ₁₀ levels at selected receptor site locations over Do-Minimum conditions. Impacts would generally be of an imperceptible to small magnitude.		Sensitive	Long-Term	N/A	Negligible effect in both Opening and Design Year	
8.3	Regional air quality - decrease in all pollutants (with the exception of oxides of nitrogen) predicted between the 2021 Do-Minimum and Do-Something scenarios. Impact would be Negligible.	None proposed	N/A	Long-Term	N/A	Beneficial but not Significant	Decrease in all pollutants (with the exception of total hydrocarbons) predicted between the Base Year 2013 and 2021 Do-Minimum scenarios
8.4	Potential for nuisance, and health & safety impacts associated with generation of excessive dust, emissions and odour during construction.	Comprehensive measures to reduce dust, emissions and odour impacts to be included and implemented as part of the CEMP.	Sensitive	Short Term	Imperceptible / Small Adverse	Not Significant (local concern only)	N/A

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
Cultural Heritage (Chapter 9)							
9.1	The Proposed Scheme would have a Minor impact on two assets of Medium value (Area of Archaeological Potential & buried palaeo-environmental remains), a Major impact on a Low value asset and Minor impact on a Low value asset.	Appropriate archaeological mitigation (preservation by record / preservation by design), and sensitive engineering of earthworks would minimise the adverse effects of Scheme construction.	Low to Medium	Long-Term	Minor to Major Adverse	Slight Adverse effect on the two assets of Medium value and Slight Adverse effect on two assets of Low value.	
9.2	The Proposed Scheme would impact on the setting of ten historic building assets (four high value and six medium value). In all cases, these would be either Negligible or Minor Adverse.	No specific mitigation for setting has been proposed, as appropriate mitigation such as landscaping and landscape planting is already outlined in Chapter 11 (Landscape and Visual Effects).	Medium to High	Long-Term	Negligible to Minor Adverse	Slight Adverse effect on the assets of high and medium value	Some of these sites may be directly or indirectly affected in the long-term as a result of other non-infrastructure development in this urban location which would take place in the absence of the scheme.
9.3	The Proposed Scheme would impact 15 historic landscape elements (setting impacts and impacts to buried and upstanding remains), which includes two high value, nine low value and four negligible value assets. Impacts would range from Negligible to Major Adverse.	No specific mitigation for the setting of ten of the historic landscape assets has been proposed. However, for four of the assets archaeological trial trench evaluation, followed by detailed excavation would be undertaken, if appropriate. It is acknowledged that careful consultation with the local community would be required in connection with the treatment of the memorial façade to McGurk's Bar bombing currently in place.	Low to High	Short-Term & Long-Term	Negligible to Major Adverse	Slight Adverse effect on the assets of high value. Slight Adverse to Neutral effect on all Low value assets, except McGurk's Bar memorial. Slight Adverse effect on the assets of Negligible value.	

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
Ecology & Nature Conservation (Chapter 10)							
10.1	Disturbance to receiving water at Belfast Harbour, resulting in stirring-up of existing contaminated sediments; Pollution incident; Disturbance to existing contaminants in Scheme footprint; Cumulative effects of disturbance or contaminants from this Proposed Scheme acting in combination with others; Pollution from construction traffic and accidental spillage; Run-off from borrow and fill sites. Predicted impact would be Slight to Large Adverse.	Control of flow velocity entering Belfast Harbour; Construction method using full cut-off diaphragm walls; Pollution emergency control valves.	International	Short-term	Negligible Adverse	Negligible	No change from existing conditions.
10.2	Loss of woodland / trees and damage to woodland / trees during construction. Predicted impact would Slight to Large Adverse.	Over 3ha of extensive planting and landscaping with native species, including large trees; Care during construction to retain trees and woodland where possible; Habitat Management Plan to be prepared and implemented.	Local / Parish	Short-Term & Long-Term	Negligible to Slight Adverse	Negligible	No change from existing conditions.
10.3	Loss of habitat and damage to remaining habitat. Predicted impact would be Moderate to Large	Brownfield habitat would be retained on completion of construction works;	Local / Parish	Short-Term & Long-Term	Negligible Adverse	Negligible	No change from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
	Adverse.	Care taken to retain brownfield habitats, where possible; Habitat Management Plan to be prepared and implemented.					
10.4	Risk of spread of invasive species. Predicted impact would be Moderate Adverse.	Invasive Species Management Plan followed and ECoW to advise on any work within the contaminated zones.	Zone of Influence	Short-Term & Long-Term	Negligible Adverse	Negligible	Risk of spread of invasive species.
10.5	Loss of foraging habitats, commuting routes for bats and disturbance during construction. Predicted impact would be Slight to Moderate Adverse.	Two bat roosting boxes provided at North Queen Street Bridge & proposed new Dock Street Bridge; Large-scale landscaping; Tree-lined road links; Introduction of new habitats; Planting of bat 'hop-over' vegetation adjacent to the new road links; Bats considered in lighting plan; Vegetation clearance would be temporary and last for a relatively short duration.	Regional / County	Short-Term & Long-Term	Negligible to Slight Adverse	Minor Adverse	No change from existing conditions.
10.6	Loss of nesting habitats, foraging habitats for breeding bird assemblage. Disturbance to birds during construction. Predicted impact would be Slight to Moderate Adverse.	Extensive planting and landscaping with native species, including plantation woodland; Bird boxes would be erected throughout the scheme footprint; Vegetation clearance to be carried out during the winter months or supervised by the ECoW.	Local / Parish	Short-Term & Long-Term	Slight Adverse	Negligible	No change from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
Landscape and Visual Effects (Chapter 11)							
11.1	<p>Cityscape Character Area 1 Transport Infrastructure Node</p> <p>The additional elevated roads and the underpasses would increase the mass of transport infrastructure. An existing path and existing vegetation would be removed.</p>	Proposed mitigation could improve the appearance of site boundaries and replace some areas of removed vegetation.	Low	Long-Term	Moderate Adverse	Slight Adverse	No change from existing conditions.
11.2	<p>Cityscape Character Area 1 McGurk's memorial</p> <p>In local landscape character terms, the removal of McGurk's memorial would cause the loss of this locally characteristic feature, which is directly associated with this location.</p>	No noticeable permanent change if memorial would be replaced, if progressed separately to this scheme.	High	Long-Term	Major Adverse	Very Large Adverse	No change from existing conditions.
11.3	<p>Cityscape Character Area 1 Bridges Urban Sports Park</p> <p>The character of the context is dominated by the Dargan and Lagan bridges overhead and this would not be noticeably altered by the development.</p>	None specifically proposed other than what is illustrated on the Landscape Mitigation drawings (Figure 11.7, Sheets 1 to 7) and also shown in the photomontages (Figure 11.6, Sheets 1 to 7).	Low	Long-Term	Negligible Adverse	Neutral	No change from existing conditions.
11.4	<p>Cityscape Character Area 2 Northern Residential</p> <p>The removal of vegetation on the edge of this character type would alter the character at localised</p>	Proposed mitigation could improve the appearance of site boundaries and replace some areas of removed vegetation.	Moderate	Long-Term	Minor Adverse	Slight Adverse	No change from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
	positions. The southern edge of this area would be influenced by elements of the Proposed Scheme, particularly the acoustic barriers at Links 1, 2, 5 and 11.						
11.5	<p>Cityscape Character Area 2 BT 101 Local Landscape Policy Area Clifton 2</p> <p>This area is relatively enclosed, but some of the elevated elements, such as road lights and signs, may add further uncharacteristic elements to its wider setting.</p>	None specifically proposed other than what is illustrated on the Landscape Mitigation drawings (Figure 11.7, Sheets 1 to 7) and also shown in the photomontages (Figure 11.6, Sheets 1 to 7).	High	Long-Term	Negligible Adverse	Slight Adverse	No change from existing conditions.
11.6	<p>Cityscape Character Area 3 Cityside Retail Park and Environs</p> <p>In the long-term, the Proposed Scheme would blend in with the existing transport infrastructure located adjacent to this character area.</p>	Proposed planting would act to replace removed vegetation	Low	Long-Term	Negligible Adverse	Neutral	No change from existing conditions.
11.7	<p>Cityscape Character Area 4 Harbour Estate and Industrial Area</p> <p>The development would not significantly impact the existing industrial character of this cityscape.</p>	Proposed planting would act to replace removed vegetation.	Low	Long-Term	Negligible Adverse	Neutral	No change from existing conditions.
11.8	<p>Cityscape Character Area 5 Clarendon Dock Environs and Titanic Quarter</p> <p>The development would alter the</p>	The appearance of Corporation Street would be softened by proposed tree planting.	Moderate	Long-Term	Moderate Adverse	Moderate Adverse	No change from existing conditions

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
	appearance of the area immediately west of Corporation Street and Garmoyle Street, which would impact on these streetscapes, located on the boundary of this area.						
11.9	Cityscape Character Area 6 Northern City Centre	The elevated portion of Link 11 would be at variance with the cityscape and detract from the sense of place at the edge of this area. The narrowing of Link 7 would improve the appearance of Great George's Street, at the edge of this area. The two York Street corner properties proposed for demolition do not contribute positively to the streetscape, but the site would require a good quality treatment.	Moderate	Long-Term	Minor	Slight Adverse	No change from existing conditions
11.10	Visual Effect has been assessed at each receptor location by analysis of the degree of visibility, and magnitude of visual impact of the Proposed Scheme in Year 1 (Winter).	None specifically proposed other than what is illustrated on the Landscape Mitigation drawings (Figure 11.7, Sheets 1 to 7) and also shown in the photomontages (Figure 11.6, Sheets 1 to 7).	High	Long-Term	Variable	Neutral (301 receptors) Slight Adverse (320 receptors) Moderate Adverse (54 receptors) Large Adverse (16 receptors) Very Large Adverse (36 receptors)	New developments in the area would alter existing views

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
11.11	Visual Effect has been assessed at each receptor location by analysis of the degree of visibility, and magnitude of visual impact of the Proposed Scheme in Year 15 (Summer).	None specifically proposed other than what is illustrated on the Landscape Mitigation drawings (Figure 11.7, Sheets 1 to 7) and also shown in the photomontages (Figure 11.6, Sheets 1 to 7).	High	Long-Term	Variable	Neutral (317 receptors) Slight Adverse (342 receptors) Moderate Adverse (57 receptors) Large Adverse (10 receptors) Very Large Adverse (1 receptor)	New developments in the area would alter existing views
Land Use (Chapter 12)							
12.1	A total of six properties (two government, three commercial and one community) would be demolished (including associated landtake).	None proposed. All demolished property would be vested and compensation made in accordance with statutory requirements for land acquired by compulsory purchase.	Low to High	Long-Term	Major	Large to Very Large Adverse	No change from existing conditions.
12.2	A total of thirteen plots would be subject to private land loss impacts in order to accommodate various permanent elements of the Proposed Scheme. Furthermore, it is expected that three plots would also be subject to private land loss impacts as a result of temporary works during the construction phase.	All land lost would be vested and compensation made in accordance with statutory requirements for land acquired by compulsory purchase and mitigation measures agreed as part of the accommodation works.	Low to High	Long-Term	Negligible to Major	Neutral (7 plots) Moderate Adverse (2 plots) Large Adverse (1 plot) Very Large Adverse (3 plot)	No change from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
12.3	Only four planning applications would be lost in their entirety to accommodate the Proposed Scheme. Five planning applications would be subject to direct and indirect impacts, however these would not preclude the future development of these sites.	All land lost would be vested and compensation made in accordance with statutory requirements for land acquired by compulsory purchase and mitigation measures agreed as part of the accommodation works.	Low to High	Long-Term	Negligible to Major	Neutral (2 applications) Slight Adverse (1 application) Large Adverse (4 applications) Large Beneficial (2 applications)	Sites with developer interest and planning approval may have been constructed without modification to site layout, access arrangements etc.
12.4	No areas of community land or designations, policies, proposals or zonings for development land within Belfast City Centre, Belfast Harbour Area or Outer Belfast City (North Belfast) would be adversely affected by the Proposed Scheme. The majority of land that would be affected by the Proposed Scheme has been left un-zoned as 'white land'.	None Proposed	Medium	Long-Term	Negligible	Neutral	Un-zoned 'white land' would be available for future development subject to conditions made by DOE Planning / Belfast City Council.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
12.5	Four areas of land may be made available to future development as part of surplus land disposal.	The development of surplus land would be subject to conditions made by the Department (i.e. wayleaves etc. to ensure that various utility companies and Transport NI have access for the purposes of maintaining the underlying service corridors) and conditions set as part of any planning application (i.e. usage, access, massing etc.) if approved by DOE Planning.	Medium	Long-Term	N/A	Moderate Beneficial	No change from existing conditions.
Noise & Vibration (Chapter 13)							
13.1	The majority of residential properties undergo a Negligible (0.1 - 2.9 dB) increase in the $L_{A10,18h}$ noise level in the long-term.	<p>Noise barriers have been specified to provide mitigation to groups of properties fronting on to the Westlink:</p> <ul style="list-style-type: none"> Noise barrier to northbound carriageway of Westlink: approximate height 1.5m, length 240m; and Noise barrier to southbound carriageway of Westlink: approximate height 1.5m, length 285m. <p>Low noise road surfacing, would also be provided on Interchange links between Westlink, M2 and M3 and the slip roads from these to the local road network.</p>	High	Long-Term	Negligible	Not significant	Noise levels would increase over existing conditions with expected traffic volume increases. Noise level changes would be in the region of 0.1 – 2.9 dB.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
13.2	Certain construction activities would result in increases in noise levels (particularly in the vicinity of structures and major earthworks)	Contractor to adopt good working practice on site as described in BS5228 (1997 and 2009), ' <i>Noise and Vibration Control on Construction and Open Sites</i> '.	High	Short-Term	Variable	Not significant	N/A
Pedestrians, Cyclists, Equestrians & Community Effects (Chapter 14)							
14.1	Strategic and local traffic interaction would occur through a much improved highway environment, with flows becoming more regulated and the safety of the highway environment would improve. Some roads would not be subject to physical alteration; however they would be subject to traffic redistributive effects as a result of proposed changes to other parts of the existing road network.	None proposed	Variable	Long-Term	Variable	Significantly beneficial for strategic road users, however the effect associated with traffic redistribution and changes to routes taken would be both beneficial and adverse, depending upon the nature of changes experienced.	Strategic and local vehicle movements would not experience the benefits associated with the improved highway, however other local routes would not experience traffic redistributive effects as a result of the changes

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
14.2	Six community facilities (Pathways Project Building on York Street, McGurk's Bar Bombing Memorial and mock-up mural/sculpture, Jack Kirk Automobile Engineer workshop, Northside Park & Ride and Great George's Street and Corporation Street car parks). A number of community facilities would also experience direct land loss or access impacts, however their continued usage during the operational phase is unlikely to be significantly affected.	Where necessary, specific mitigation measures to negate adverse impacts upon community facilities are described within sub-section 14.6.1.6. Whilst it would not be possible to eliminate adverse impacts at all community facilities, in the majority of cases, the proposed mitigation measures would significantly reduce impacts.	Variable	Long-Term	Variable	Large Adverse to Neutral	No change from existing conditions. Northside Park & Ride was targeted to cease operation at this site as part of DRD Transportation Policy Division's strategic review of Park & Ride services, however may have been retained for short-stay parking.
14.3	The reduction in strategic traffic interaction, resultant freer flowing traffic conditions, and inclusion of a southbound bus lane on York Street would be of benefit to (especially in terms of journey ambience, frequency and reliability) and help improve the quality of public transport services. However, a number of bus services would be adversely affected by the traffic redistributive effects associated with changes to the existing road network.	<p>A new bus lane is proposed between a new signalised junction at Galway House and the junction of York Street and Great Patrick Street. All other existing bus lanes within the scheme would be maintained.</p> <p>In consultation with Translink, any lost serviced bus stops would be appropriately relocated to new routes where feasible.</p>	Variable	Long-Term	Variable	The effect of replacing lost bus stops would be predominantly Neutral; however the provision of the bus lane would be Large Beneficial.	With no change to the existing highway environment, no improvements in efficiency of public bus services would be experienced.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
14.4	In terms of amenity and relief from existing severance, the benefits associated with grade-separation of strategic links between the Westlink and M2/M3 (beneath York Street overbridge) would be significant, as pedestrians would no longer be in direct interaction with strategic through traffic within the interchange via signalised junction arrangements. However, some Pedestrian routes would be adversely affected in terms of routes taken and distance travelled.	Footways are provided on all surface streets, with existing widths maintained and where possible (within the constraints of the site), enhanced.	Medium	Long-Term	Variable	Overall Large Beneficial, however some pedestrian routes would be adversely affected by the Proposed Scheme.	Existing pedestrian provision would remain unchanged.
14.5	With the proposed changes to York Street, the new cycling provision would be an enhancement over existing conditions and the improvements to the junction and surrounding road layout (particularly in relation to the separation of strategic and local traffic) would result in significant safety benefits, reduction in severance, and improvements in journey time and ambience for cyclists.	An additional with-flow cycle lane of 1.5m width is proposed for cyclists heading northbound along York Street, with the provision of Advanced Stop Lines at signalised junctions. In the southbound direction on York Street, a 1.5m wide with-flow cycle lane is proposed between signalised junctions at Dock Street and at Galway House. The new bus lane between Galway House and the junction of York Street and Great Patrick Street would be made accessible to cyclists. All other existing bus lanes, accessible by cyclists, within the scheme would be maintained.	N/A	Long-Term	Variable	Overall Moderate Beneficial	Existing cycling provision would remain unchanged; however volume of passing strategic traffic would increase from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
14.6	Construction phase would potentially result in temporary impacts on local vehicle movements. Construction activities may also affect community facilities and local businesses with regards to accessibility and severance or disruption to routes used by pedestrians, cyclists and equestrians.	Careful traffic management to reduce delays, rat running, safe passage of pedestrian, cyclists and equestrians. Also measures to reduce dust, emissions and odour impacts and adoption of good working practice on site as described in BS5228 (1997 and 2009), 'Noise and Vibration Control on Construction and Open Sites'.	Variable	Short-Term	Variable	Minor / Moderate Adverse	N/A
Vehicle Travellers (Chapter 15)							
15.1	Negative changes in visual amenity associated with major earthworks / structures and changes within interchange area.	Where appropriate, mitigation would include open parapets on overbridges to allow views from the road and to reduce the mass of the structure and planting design which should be sensitive to the interaction between retaining views from the road and screening.	N/A	Short to Long-Term	Negligible to Minor	Neutral to Slight Adverse	No change from existing conditions.
15.2	Positive changes in visual amenity associated with major earthworks and structures with the introduction of new and interesting views.	None proposed, as views from the road would be enhanced.	N/A	Long-Term	Negligible to Minor	Neutral to Slight Beneficial	No change from existing conditions.
15.3	Slightly reduced stress levels resulting from grade-separation of strategic traffic from local routes, following implementation of the Proposed Scheme.	None proposed	N/A	Long-Term	Moderate to High	Neutral to Slight Beneficial	No perceptible change from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
15.4	During the construction phase, a heightened sense of driver stress would be experienced, however these effects would be transient.	Ensuring construction traffic uses specific routes would control adverse impacts on driver stress and adequate warning would be provided to road users (i.e. media, signage). Careful attention to traffic management would minimise overall level of disruption.	N/A	Short-Term	Minor to Moderate	Slight Adverse	N/A
Road Drainage & the Water Environment (Chapter 16)							
16.1	Provide storm water separation in line with PPS 15 Annex C10, which seeks to achieve improved water quality by reducing volumes within the combined piped sewerage systems.	The design proposals are to separate out or remove certain areas which currently drain to the existing combined sewerage network and instead discharge storm water to Belfast Harbour coastal water body.	Low	Long-Term	Minor	Slight Beneficial	No change from existing conditions.
16.2	The Mile Water culvert would experience no direct morphological impacts and it would receive minimal increases in volume of routine runoff discharging unattenuated from the Proposed Scheme.	None proposed due to the minimal changes proposed and the vast dilution and dispersal potential of Pollock Dock, which this culvert outfalls to.	Low	Long-Term	Negligible	Neutral	No change from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
16.3	Proposed Scheme would result in an increase of approximately 6.3ha of drainage catchment area outfalling direct to Belfast Harbour. However no modification of the existing outfall point through the quay wall would be required; the capacity to dilute soluble pollutants and achieve sediment dispersal within Belfast Harbour would be extensive; and the potential effects on disturbance of contaminated bed sediments due to turbulence caused by storm water discharge from the Proposed Scheme, is expected to be negligible.	The design flow and flow velocity of storm water drainage discharges on the receiving water environment must be reflective of the hydraulic calculations contained with Table 16.9 in order to minimise the potential for disturbance of existing contaminants within the bed sediments.	Low	Long-Term	Negligible	Neutral	No change from existing conditions.
16.4	Measures to avoid an acute pollution incident occurring within Belfast Harbour in the event of an accidental spillage.	A manual shutdown facility is to be provided as part of the control system for operation of the pumping station. This shutdown system could be operated from a location which is remote from the Proposed Scheme (i.e. at the maintaining authority headquarters) enabling swift action to be taken in the event of a spillage occurring within the extents of the underpasses and pumping station catchment area.	Low	Long-Term	Negligible	Neutral	No change from existing conditions.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
16.5	There would be no overall risk to groundwater quality, as no discharges of road runoff to the ground are proposed with the drainage design. However, the Proposed Scheme may lead to a change in the local hydrogeological regime, potentially affecting groundwater flow in the fluvial deposits, leading to changes in the hydraulic gradient and increased hydraulic heads that may be transmitted to the overlying deposits. At present, however, it is not possible to quantify this further.	As part of the detailed design development, further routine groundwater level gauging, in-situ hydraulic testing of wells and numerical groundwater modelling to test the effects of deep foundation structures on the groundwater flow regime and to quantify the potential implications of head changes in the fluvial deposits on groundwater levels in the estuarine alluvium is required.	Low	Long-Term	Minor	Neutral (To be confirmed through further investigation, however any changes in the hydraulic gradient and increased hydraulic heads are likely to be mitigated (i.e. additional drainage at shallow depth)).	No change from existing conditions.
16.6	Exclusion of direct flood waters emanating from Belfast Harbour flowing above ground into the site area from the north and east, from impacting on the strategic road network and from entering the underpass links associated with the Proposed Scheme.	Incorporate flood retaining walls and sufficiently raised ramp approaches to prevent flood water ingress to underpasses; temporary flood barriers between the M3 to Westlink (Link 4), Nelson Street (south) (Link 12) and M3 to York Street (Link 7); and specifically-designed non back flow drainage and utilities infrastructure and a storm water Pumping Station incorporated with resilience measures and protection to minimise risk of failure during a future flood event.	High	Long-Term	Negligible	Neutral	No change from existing.

Impact Item no.	Description of Predicted Impact	Mitigation Objective and Commitment	Sensitivity / Value of Receptor	Duration of Impact (Short/Long-Term)	Magnitude of Impact (with Mitigation)	Significance of Effect (with Mitigation)	Do-Minimum Description of Likely Effects
16.7	Uncontrolled sediment erosion and contaminated silty runoff discharging to surface waters during construction.	CEMP must include an Erosion Prevention and Sediment Control Plan (submitted to NIEA – PP) prior to commencement of any works.	Low	Short-Term	Negligible	Neutral	N/A
16.8	Risk of pollution due to accidental spillage from construction activities carried out within or near a watercourse.	Measures would be taken and procedures put in place to minimise the risk and potential effects of spillage incidents.	Low	Short-Term	Negligible	Neutral	N/A
16.9	Litter and debris pollution within surface waters.	The Contractor shall be required to maintain a tidy site as far as practicable and will be required to dispose of materials in a controlled and responsible manner.	Low	Short-Term	Negligible	Neutral	N/A
Geology & Soils (Chapter 17)							
17.1	No designated or non-designated sites of geological or geomorphological interest would be directly affected.	None proposed.	N/A	N/A	N/A	Neutral	No change from existing.
17.2	There would be no significant impacts on solid or drift geology, or on soils of the region.	None proposed.	Variable	Long-Term	Negligible / Minor	Neutral / Slight Adverse	No change from existing.
17.3	Potential areas of contaminated land may be encountered within the Proposed Scheme area	Where contaminated land is encountered, further investigation will be necessary, including a contaminated land risk assessment to assess the appropriate remediation / mitigation measures.	N/A	Short-Term	Minor	Slight / Moderate Beneficial	No change from existing.

18.5 Schedule of Environmental Commitments

As described throughout each of the previous chapters, there are instances where the environmental effects associated with the Proposed Scheme may be of such a magnitude as to warrant mitigation measures. These measures are deemed necessary to minimise environmental impacts during the operation, construction and/or maintenance phases of the Proposed Scheme.

This Schedule of Environmental Commitments (Table 18.6) provides a collective summary of the proposed mitigation measures to ensure compliance during and beyond the construction contract period. As a prescriptive part of the construction and maintenance contract requirements, this schedule sets out responsibilities to ensure that measures are not only implemented, but monitored and inspected to ensure effective implementation on site and that all measures are correctly adhered to. Specifically, the following have been tabulated:

- Mitigation measure item number;
- Approximate location of mitigation measure;
- Mitigation objective and commitment;
- Potential mitigation measure;
- Potential timing of the mitigation measure;
- Potential monitoring requirements; and
- Potential additional consultation proposed.

As described in the schedule, there may be a requirement for additional consultation to be carried out during the contract period (i.e. with statutory bodies and other interested parties). Consequently there would be potential for revision to the proposed mitigation measures described in Table 18.6 and throughout each of the technical chapters as the design proceeds; however these would be in agreement between Transport NI, the Contractor and the interested/affected party.

Table 18.6 only provides a brief summary of the overall committed mitigation measures. Reference should be made to individual Chapters of the ES for more detail and further explanation. This table also forms the Register of Environmental Actions and Commitments (REAC) contained within the outline Environmental Management Plan (EMP) for the Proposed Scheme, which is included in Appendix 4 of this ES.

As detailed within Interim Advice Note (IAN) 183/14 of the Highways Agency, the identification of Environmental Actions and population of a REAC is critical to the success of an EMP and subsequently the environmental performance of a project. Depending on the scale of the project, there may be many sources of information from which Environmental Actions must be identified, such as an ES or Environmental Assessment Report, Ecological Surveys, Heritage or Tree Reports, Contaminated Land or Flood Risk Assessments, Public Inquiry Commitments, or standard requirements such as Statutory Authority consents.

The REAC should be in a tabular format with headings allowing for:

- clear and specific description of the Action;
- the objective of the Action;
- how the Action is to be implemented/achieved;

- the source of the Action, including references for source documentation;
- naming of the person responsible for the Action i.e. Principal Contractor or Environmental Manager;
- achievement criteria and reporting requirements;
- the project stage or date of implementation and/or achievement;
- details of any monitoring required, what should be monitored and how results should be used to effect necessary action; and
- date and signature for completion of Action.

Where it is required that an Action must be monitored to determine success, the details of monitoring, success criteria, reporting requirements and trigger level for remedial works should be clearly defined.

Table 18.6: Schedule of Environmental Commitments

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
Air Quality (Chapter 8)						
AQ1	Within & beyond proposed works	To minimise dust blow from site, site traffic, stockpiles and road network	Dust Minimisation Plan to be prepared as part of the CEMP to include dampening of haul roads and stockpiles; keeping roads clean and using covers over construction lorry trailer units; location of stockpiles and dust generating activities away from sensitive receptors (this list is not exhaustive).	In advance of and concurrent with construction	Monitoring of works to ensure compliance with requirements and standards.	Belfast City Council
AQ2	Within & beyond proposed works	To minimise emissions and odour from site	Air Quality Management Plan to be prepared as part of the CEMP, to include (where reasonable) selection of plant and vehicles to minimise exhaust emission levels and be well maintained. Traffic movements to be minimised throughout the site, limiting the use of public roads to essential movements only. Location of construction plant away from site boundaries, which are close to sensitive receptors. Effective waste management to avoid potential odour nuisance (this list is not exhaustive).			
Cultural Heritage (Chapter 9)						
CH1	In vicinity of proposed works	Archaeological trial trench and test pit evaluation of archaeological remains	A sample-based mechanical or hand-excavated trench or test pit based investigation to record the character of archaeological remains within the landtake required for the Proposed Scheme, including within the limits of the vesting boundary. Targeted investigations may also be appropriate where remains have been identified through non-intrusive survey (such as walkover survey) or where there is the potential for archaeological remains to be discovered. The results of these intrusive trenching or test pit works would inform decision making on further mitigation recording that may be appropriate.	In advance of construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Archaeologist, NIEA-Built Heritage

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
CH2	In vicinity of proposed works	Detailed excavation (to include trench mitigation) of archaeological remains	Detailed excavation would be undertaken where significant archaeological remains are either known previously or discovered during the course of the works. This may be targeted at specific area locations, or a sample range of locations (e.g. test pits or specific investigation trenches).	In advance of and concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Archaeologist, NIEA-Built Heritage
CH3	In vicinity of proposed works	Geoarchaeological investigation of archaeological remains	A programme of sample recovery and analysis undertaken to investigate palaeo-environmental conditions and soil sediment development that may be relevant to the research of archaeological remains recovered within the vicinity. Achieved through trial pit excavations or other geotechnical soil sample retrieval methods (such as soil cores or boreholes).	In advance of and concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Archaeologist, NIEA-Built Heritage
CH4	In vicinity of proposed works	Targeted Watching Brief	A programme of observation, investigation and recording of archaeological remains during or alongside construction earthwork activities, in specific areas where the presence of moderate potential remains has been demonstrated, but where detailed investigation prior to the main construction programme is unjustified, unfeasible due to safety or logistical considerations, or undesirable due to environmental or engineering constraints. Under Targeted Watching Brief, as opposed to General Watching Brief, the contractor's preferred method of working would be controlled as necessary to allow archaeological recording to take place to the required standard.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Archaeologist, NIEA-Built Heritage
CH5	In vicinity of proposed works	General Watching Brief	A programme of observation, investigation and recording during construction activities where remains have not been identified by assessment and evaluation studies, but where there remains a residual risk of archaeological discoveries. In this case, the contractor's preferred method of working would not be controlled for archaeological purposes, but access for recording any discovered archaeology would be provided.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards.	Consultant Archaeologist, NIEA-Built Heritage

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
Ecology & Nature Conservation (Chapter 10)						
ENC1	In vicinity of proposed works	To monitor and mitigate ecological and nature conservation impacts where required	The Contractor should appoint an Ecological Clerk of Works (ECoW). A Habitat Management Plan should also be prepared as part of the CEMP outlining how natural habitats would be managed through the construction and operation phases of the Proposed Scheme.	In advance of construction	-	Consultant Ecologist, NIEA-Natural Heritage
ENC2	In vicinity of proposed works	Verify presence of, and whether new species and habitats have moved into the site	ECoW should ensure that a suite of pre-construction ecological surveys is undertaken in the appropriate field season immediately prior to scheme construction.	In advance of construction	-	Consultant Ecologist, NIEA-Natural Heritage
ENC3	In vicinity of proposed works	To avoid adverse impacts on bats and birds.	All vegetation clearance works should take place ideally during the winter months (September to February) to avoid key breeding periods. Any vegetation clearance work undertaken between March and August should have the specific approval of the ECoW to ensure that no ecological constraints exist.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Ecologist, NIEA-Natural Heritage
ENC4	In vicinity of proposed works	To reduce risk of water pollution and ensure water quality/habitats and species not detrimentally affected.	Construction methods (e.g. using full cut-off diaphragm walls) to prevent lateral movement of groundwater towards Belfast Harbour and prevent any leaching of dissolved contaminants reaching Belfast Lough through newly established pathways. Pollution Incident Response Plan will also need to be put in place.	Concurrent with construction	Monitoring of construction site water management measures	NIEA - WMU, DOE Marine Team and NIEA - Natural Heritage
ENC5	In vicinity of proposed works	To reduce risk of water pollution and ensure water quality/habitats and species not	A CEMP to be produced by the contractor, which would address likely sources of pollution and sedimentation which could potentially reach Belfast Harbour and onward into Belfast Lough.	In advance of and concurrent with construction	Monitoring of construction site water management	NIEA - WMU, DOE Marine Team and NIEA - Natural

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
		detrimentally affected.			measures	Heritage
ENC6	In vicinity of proposed works	Mitigate and compensate for the mosaic of semi-natural and artificial habitats	The overall landscape planting objectives should attempt to mitigate and compensate for the mosaic of semi-natural and artificial habitats to be lost as part of the development (i.e. incorporate existing trees where possible, especially where mature specimens occur; enhance the ecological interest through the creation of natural habitat with new planted areas and screen planting comprising trees and shrubs between link roads; maximise the number of native tree, shrub and plant species in new planted areas; provide food for insects, birds and animals (these would include nectar-rich, berry-bearing and seed-bearing plants), incorporate street trees into design of appropriate streetscapes).	Concurrent with construction	Regular monitoring of landscape planting during construction	Consultant Landscape Architect, Consultant Ecologist, NIEA-Natural Heritage
ENC7	In vicinity of proposed works	Prevent and control the spread of invasive species	The ECoW should undertake further pre-construction surveys to identify locations of any non-native invasive species, ensure that mitigation measures are carried out where required, and an Invasive Species Management Plan is developed. Great care should be taken when working close to the identified area of invasive species to prevent the spread of live plants or viable seeds. To enhance specific areas of the site, invasive species (in this case, Japanese knotweed) should be treated and managed. This would encourage the natural flora to flourish.	In advance of and concurrent with construction	Regular monitoring of site for invasive species	Consultant Ecologist, NIEA-Natural Heritage
ENC8	In vicinity of proposed works	Provision for bats	<p>ECoW should undertake pre-construction surveys on any semi-mature / mature trees to be felled and assess them for the likelihood of bat presence.</p> <p>Bat boxes suitable for roosting pipistrelle bats should be provided at a suitable location around North Queen Street Bridge and the new Dock Street Overbridge.</p> <p>Planting to encourage insects should be used to create suitable</p>	In advance of and concurrent with construction	To be detailed in Method Statement	Consultant Ecologist, NIEA-Natural Heritage

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
			<p>feeding areas for bats throughout the site, especially in planted areas and linear planting features.</p> <p>The Interchange lighting plan will use modern lighting to concentrate brightest light on the road areas and away from vegetation as far as possible. However, safety requirements dictate that the area will stay well lit.</p>			
ENC9	In vicinity of proposed works	Provision for birds	<p>Areas to be landscaped should consider birds in their design, providing plentiful food in the form of seeds and berries.</p> <p>Species in planted areas should be chosen to provide places for birds to roost and nest.</p> <p>A variety of bird boxes should be provided around the site, in any relatively quiet areas. A suitably experienced ecologist should advise on the exact type and positioning of the boxes.</p> <p>Planted areas should be used to replace the large areas of bare ground and brownfield, to provide locations for birds to forage.</p>	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Ecologist, NIEA-Natural Heritage
ENC10	In vicinity of proposed works	Provision for insects	<p>The Proposed Scheme should incorporate the provision of nectar-rich plants to provide food for bees and other insects.</p> <p>Other insect friendly features should be considered, and incorporated where feasible, such as log piles and insect boxes.</p>	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Ecologist, NIEA-Natural Heritage
Landscape and Visual Effects (Chapter 11)						
LV1	Within footprint of the proposed works	Reduce landscape and visual impact of the Proposed Scheme by use of Planting/Screening	<p>The embankments behind the back gardens of North Queen Street and Little George's Street properties which back onto the Proposed Scheme would be potentially re-planted (where feasible). The small pocket of open space at Molyneux Street would also be re-planted.</p> <p>Generally, planting would be replaced on the embankments and road edges, creating several new blocks of mixed tree and shrub</p>	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Consultant Landscape Architect, DOE Planning, Belfast City Council, Affected

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
			<p>planting, and acting to partially screen the development; it may also assist wildlife habitat creation and the softscape would offer an informal drainage sink. The potential extent of planting may be limited by required service strips.</p> <p>Corporation Street and Garmoyle Street would be potentially planted with street trees on a grass verge, to the west of the existing pedestrian path.</p> <p>Great George's Street (eastern portion) would be potentially planted with street trees on both sides. The development would narrow the road and widen the southern path to facilitate improved public realm.</p> <p>Appropriate screening would be provided where possible (i.e. where road links would have a visual impact on adjacent properties or views). In selected locations where the visual impact is significant, immediate temporary screening would be required (if feasible).</p>			Landowner
LV2	North Queen Street Bridge	Reduce landscape and visual impact of acoustic barriers	Proposed acoustic barriers along Westlink in the vicinity of North Queen Street Bridge should be sensitively located (if feasible) and designed to limit any potential visual and landscape impact and reduce potential for over-shadowing on residential receptors.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Landscape Architect, Acoustic Consultant, DOE Planning, Belfast City Council, Affected Party
LV3	Within footprint of the proposed works – Boundary Locations	Reduce landscape and visual impact of boundary treatments	The boundary treatments for the development should be sensitive to the character of the area; this is particularly important in the case of proposed retaining walls.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Landscape Architect, DOE Planning

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
LV4	Structure locations	Reduce landscape and visual impact of structures	Integration of parapets into the structure of overbridges and other structures to create the impression of one simple structure. The overbridges should be designed to allow the road corridors and cityscape to flow under the structures, in order to minimise its visual prominence (i.e. consideration should be given in the detailed design to minimise and strategically-locate the bridge piers).	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Landscape Architect, DOE Planning
LV5	Underbridge structures	Enhance landscape and visual impact of structures	Proposed enhancement lighting to the underbridges.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Landscape Architect, DOE Planning
LV6	Within footprint of the proposed works – Development areas	Enhance landscape and visual impact of potential development areas	The Proposed Scheme would create four main potential future development areas, which could potentially improve the appearance of the cityscape.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Landscape Architect, DOE Planning
LV7	In vicinity of the proposed works	Potential future landscape and visual enhancement to benefit the appearance and usability of the cityscape around the Proposed Scheme.	<p>The potential future enhancements measures listed below are only potential opportunities and would be subject to further consideration as part of a Strategic Advisory Group.</p> <ul style="list-style-type: none"> • creation of a feature entrance area, including pedestrian steps and ramp access, to link York Street and Henry Street; • creation of large-scale land art, sculpture and landform around road network; • addition of suitably designed parapets with enhanced aesthetics on York Street overbridges. The proposed bridge may become a positive landmark in the cityscape; 	In advance of and concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Landscape Architect, SAG, DOE Planning, Belfast City Council, Transport NI

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
			<ul style="list-style-type: none"> feature boundary treatments and feature decorative finishes to retaining walls and structures; improved public realm treatments to key streetscapes, such as York Street. This would be ideally designed as a coherent masterplan, considering Belfast City strategic design issues, feature lighting and decoration of underpasses, especially pedestrian underpasses; and temporary enhancements and feature boundary treatments, to the potential future development areas. 			
LV8	Within footprint of the proposed works	Minimise landscape and visual impact during construction	<p>Sensitive location of construction compounds and stockpile locations in relation to adjacent and nearby properties, to reduce the extent of adverse visual impacts.</p> <p>Construction compounds should be fully reinstated and secured with appropriate boundary treatments following completion of the works.</p>	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Landscape Architect
Land Use (Chapter 12)						
LU1	Within footprint of proposed works	Minimise landtake	With a greater understanding of underlying ground conditions at the detailed design stage, landtake from and inconvenience to affected landowners should be minimised as much as feasibly possible.	In advance of and concurrent with construction	-	Affected Party
LU2	Within footprint of proposed works	Alleviate negative landtake impacts	Suitable accommodation works have been considered for each land plot affected by the Proposed Scheme. These are subject to discussions and if possible agreed with the affected landowner. A comprehensive schedule of accommodation works and mitigation measures would be developed through dialogue as necessary.	In advance of and concurrent with construction	-	Affected Party

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LU3	In vicinity of proposed works	Minimise impacts upon surrounding land uses	Construction compounds to be located in areas that would cause the least disturbance to existing land uses, and to be fully reinstated post construction. Any land used for construction works, and outside the area to be developed for the road, is also to be fully reinstated at a minimum.	Concurrent with / post construction	On-site observation and inspection	Adjacent Party
LU4	In vicinity of proposed works	Minimise impacts upon surrounding land uses	Land uses adjacent to the site should be able to continue with minimal disruption and inconvenience. A CEMP shall be prepared in advance of construction to mitigate potential impacts and maintain continued access to and operation of land as necessary.	In advance of and concurrent with construction	On-site observation and inspection	Adjacent Party
LU5	In vicinity of proposed works	Disposal of surplus land	DRD Transport NI to carry out a review of land vested for construction. If this exceeds the minimum required for the performance of DRD's present and future responsibilities, any surplus land may be sold back to the original owner or others at the then market value.	Post construction	-	Previous Landowner or Other Interested Parties
Noise & Vibration (Chapter 13)						
NV1	Interchange links between Westlink, M2 and M3 and the slip roads from these to the local road network	To reduce noise levels generated from road traffic	Thin Surface Course Systems (TSCS), otherwise known as low noise road surfacing to be provided on Interchange links between Westlink, M2 and M3 and the slip roads from these to the local road network.	Concurrent with construction	Additional noise surveys may be required in accordance with the Noise Insulation Regulations (Northern Ireland) 1995 or at the discretion of Transport NI	Belfast City Council
NV2	North and south side of Westlink (either side of North Queen Street Bridge)	To provide noise mitigation to groups of properties fronting/backing on to the Westlink	Noise barrier adjacent to northbound carriageway of Westlink: approximate height 1.5m, approximate length 240m; and Noise barrier adjacent to southbound carriageway of Westlink: approximate height 1.5m, approximate length 285m.	Concurrent with construction		Belfast City Council

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NV3	In vicinity of proposed works	To monitor and mitigate construction noise impacts where required	The Contractor should appoint or delegate a 'responsible person' to be present on site who should be willing to answer and act upon queries from the public.	Concurrent with construction		Belfast City Council, Affected Party
NV4	In vicinity of proposed works	Limiting construction vibration nuisance and potential impact to noise sensitive locations	Several mitigation measures are considered appropriate, and of good working practice for all construction contracts, as detailed in BS5228 (1997 & 2009), ' <i>Noise and Vibration Control on Construction and Open Sites</i> '. Typical measures would include positioning of static plant as far away from receptors as possible, using well-maintained plant, temporary screening, enclosures, restricting works (where feasible) to daytime and staggering high vibration activities such as piling and jack hammering. These would be defined within a CEMP.	Concurrent with construction	Monitoring to be undertaken Pre & During construction, targeting areas where major earthworks and structures are close to receptors.	Belfast City Council
Pedestrians, Cyclists, Equestrians & Community Effects (Chapter 14)						
COM1	In vicinity of proposed works	Reduce impacts on potential future usage of community facilities	Where necessary, specific mitigation measures to negate adverse impacts upon community facilities are described within sub-section 14.6.1.6. Whilst it would not be possible to eliminate adverse impacts at all community facilities, in the majority of cases, the proposed mitigation measures would significantly reduce impacts.	Concurrent with construction	-	Affected Community Facility
COM2	South-east wingwall of North Queen Street Bridge	Treatment of the McGurk's Bar Memorial	Careful consultation with the local community would be required. In such instances, arrangements would normally be made to carefully remove the memorial and make it available for owners to resite. Although not proposed as part of the scheme, potential relocation of the memorial would be a matter for future consultation with victims' representatives and Transport NI.	In advance of construction	On-site observation and inspection	Affected Owners, Victims' Representatives and Transport NI

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
COM3	Proposed Scheme	Provision of a dedicated bus lane on York Street and replacement of lost bus stops	<p>A new bus lane is proposed between a new signalised junction at Galway House and the junction of York Street and Great Patrick Street. All other existing bus lanes within the scheme would be maintained.</p> <p>In consultation with Translink, any lost serviced bus stops would be appropriately relocated to new routes where feasible.</p>	In advance of and concurrent with construction	-	Translink, Transport NI
COM4	Proposed Scheme	Replace, maintain and/or improve pedestrian/cyclist facilities/access.	<p>Footways are provided on all surface streets, with existing widths maintained and where possible (within the constraints of the site), enhanced. An additional with-flow cycle lane of 1.5m width is proposed for cyclists heading northbound along York Street, with the provision of Advanced Stop Lines at signalised junctions. In the southbound direction on York Street, a 1.5m wide with-flow cycle lane is proposed between signalised junctions at Dock Street and at Galway House. The new bus lane between Galway House and the junction of York Street and Great Patrick Street would be made accessible to cyclists. All other existing bus lanes, accessible by cyclists, within the scheme would be maintained.</p> <p>At all junctions, provision would be made for non-motorised users in accordance with Department for Transport Local Transport Notes and Traffic Advisory Leaflets. Accordingly, dropped kerbs and tactile paving is proposed at all controlled and uncontrolled crossing points, with pedestrian guardrail provided where considered necessary to control movements. At proposed signalised junctions, puffin crossings would be implemented in line with DMRB guidance. The Proposed Scheme layout would also include the provision of a new, modern road lighting system for the safety of motorised and non-motorised road users. The provision, or replacement of existing lighting systems has been considered as part of this process and the provision of additional lighting under proposed bridge structures would continue to be considered as part of future design development.</p>	Concurrent with / post construction	-	DRD Cycling Unit, Strategic Advisory Group, Transport NI

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
COM5	Proposed Works	To minimise disruption and ensure safe passage of pedestrians and cyclists.	Careful traffic management to facilitate safe passage for pedestrians and others. This would typically include barriers defining the footpaths and safety zones to prevent construction vehicles encroaching on pedestrian areas. Where appropriate, segregated pedestrian routes would be provided. Traffic management would be closely monitored on site to ensure safe operation.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	-
COM6	Proposed Works	To minimise disruption to traffic.	Contractor to ensure delays to local and strategic traffic are kept to a minimum and full use is made of the available carriageway and works space. Mitigation measures may include: Advanced publicity outlining the traffic management proposals and duration, and giving advance warning of specific traffic management measures; Reducing lane widths; Efficient phasing of contraflow operations; and adequate advance signing of the works. Contractor required to maintain at least two-way traffic around the junction during weekday am and pm periods of peak traffic flow.	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	-
Vehicle Travellers (Chapter 15)						
VT1	Proposed Scheme	Retaining / enhancing views experienced by the vehicle traveller.	Where appropriate, mitigation would include open parapets on overbridges to allow views from the road and to reduce the mass of the structure and planting design which should be sensitive to the interaction between retaining views from the road and screening	Concurrent with construction	-	Landscape Architect

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VT2	In vicinity of proposed works	To maintain road safety and reduce driver stress	As part of the Traffic Management Plan, temporary warning and variable message signs would be erected as appropriate to draw attention to particular hazards including site accesses and temporary traffic management measures. Local & wider community should be notified of major works (i.e. road closures, diversions, etc) in advance in the local press, community facilities, radio, internet etc.	During construction	On-site observation	Local & Wider Community Transport NI
Road Drainage & the Water Environment (Chapter 16)						
RDWE1	Proposed scheme	<p>Quick removal of surface water to improve safety and minimal nuisance.</p> <p>Provide effective sub-surface drainage to maximise longevity of the pavement and its associated earthworks.</p> <p>Minimise impact of runoff on the receiving water environment.</p>	<p>A centrally located storm water pumping station is proposed to collect surface water drainage and convey water to an appropriate outlet. Surface water run-off collection for the Proposed Scheme would be achieved through a combination of road drainage gullies and combined kerb and drainage (CKD) systems, discharging to longitudinal collector pipes.</p> <p>In the outline design, CKD unit chambers would be provided at regular intervals and at locations further downstream on carrier drainage pipes, catch pit chambers would be provided with sump units to collect silt/sediment which would be subject to routine highway maintenance.</p> <p>The pumping station wet well plan dimensions within the outline design are 11.8 x 7m. The 0.6m deep operational depth which the sump would deliver would incorporate significant storage volume, provided beneath the lowest pump operating stop levels. The mixing effect arising from the large storage volume would provide further dilution of dissolved contaminants prior to entry into the pumping system and some settlement within the sump. The pumping infrastructure mechanism proposed would ensure regular discharge of flows (i.e. low flow pumps to be provided, assisted by high flow pumps which would operate during extreme rainfall events).</p>	Concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	NI Water / NIEA – WMU / DOE Marine Team

Mitigation Item No.	Location	Mitigation Objective and Commitment	Potential Mitigation Measure	Potential Timing of Mitigation Measure	Potential Monitoring Requirements	Potential Additional Consultation Proposed
			This drainage design option also facilitates 'storm water separation', which would assist in reducing the frequency of flow surcharge experienced in the NIW sewerage network and would also reduce effluent volumes requiring treatment at Duncrue Street Wastewater Treatment Works.			
RDWE2	In the vicinity of the quay wall outfall point from the abandoned Gamble Street NI Water CSO culvert.	Avoiding adverse effects upon water quality as a result of disturbing contaminated bed sediments within Belfast Harbour.	The design flow and flow velocity of storm water drainage discharges on the receiving water environment must be reflective of the hydraulic calculations contained with Table 16.9 in order to minimise the potential for disturbance of contaminants within the bed sediments.	Concurrent with / post construction	Monitoring of works to ensure compliance with requirements and standards	NI Water / NIEA – WMU / DOE Marine Team
RDWE3	Pumping Station catchment area	Measures to avoid an acute pollution incident occurring within Belfast Harbour in the event of an accidental spillage.	A manual shutdown facility is to be provided as part of the control system for operation of the pumping system. This shutdown system could be operated from a location which is remote from the Proposed Scheme (i.e. at the maintaining authority headquarters) enabling swift action to be taken in the event of a spillage occurring within the extents of the underpasses and pumping station catchment area.	Concurrent with construction	-	-
RDWE4	Proposed Scheme underpasses	Avoid drainage of groundwater and prevent flotation or seepage ingress from groundwater (which could potentially be contaminated)	Underpasses would be designed as sealed structures with sufficient load bearing capacity and flexural strength. This approach to the structural design of the underpasses would mean that within their structural formation between the finished road surface and the top of propping slab level, there would be no requirement to collect and dispose of significant quantities of groundwater.	Concurrent with construction	-	-

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RDWE5	In the vicinity of the Proposed Scheme	Avoid ponding or accumulation of standing water within the Proposed Scheme footprint	Further drainage measures including surface water drainage solutions would be required in isolated areas adjacent to the site. These include the central scheme areas which may be landscaped and would, for example, be included in the pumping station catchment area, areas where the adjacent ground slopes towards the scheme, areas of proposed or existing engineered/earthworks slopes, footways or finally, paved areas within the site where storm water could potentially pond or accumulate.	Concurrent with construction	-	-
RDWE6	In the vicinity of the Proposed Scheme	Consideration of changes in the local hydrogeological regime, which may potentially affect groundwater flow in the fluvial deposits, leading to changes in the hydraulic gradient and increased hydraulic heads that may be transmitted to overlying deposits.	To quantify this issue further, the following additional information is required as part of the detailed design development: <ul style="list-style-type: none"> • Further routine groundwater level gauging of boreholes (i.e. weekly monitoring be undertaken over several weeks); • In-situ hydraulic testing of wells installed in the three hydrogeological units (i.e. the bedrock, the fluvial deposits and the estuarine alluvium); and • Numerical groundwater modelling to test the effects of deep foundation structures on the groundwater flow regime and to quantify the potential implications of head changes in the fluvial deposits on groundwater levels in the estuarine alluvium. 	In advance of construction	-	-
RDWE7	Proposed Scheme	Reduce the risk of coastal flood water ingress to underpasses.	It is proposed that scheme flood retaining walls would be provided and ramp approaches would be sufficiently raised to reduce the risk of coastal flood water ingress to underpasses.	Concurrent with construction	-	Rivers Agency
RDWE8	M3 to Westlink Underpass / Nelson Street	Reduce the risk of flood water ingress to underpasses.	A temporary flood barrier is to be incorporated into the Proposed Scheme to provide protection and remove the potential flood entry point. In addition, as part of the temporary flood barrier proposal, a Flood Risk Management Plan should be developed, the purpose of	Concurrent with construction	-	Rivers Agency

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			which would be to outline flood warning procedures, provide a safe work plan for erecting the temporary flood barrier, detail ownership and responsibility for the flood barrier, as well as methods for safe storage, and outline procedures for closing Nelson Street.			
RDWE9	Proposed Scheme	Reduce the risk of flood water ingress to underpasses via drainage infrastructure	<p>New drainage infrastructure would be designed in such a way so as to prevent back flow routes occurring into underpasses during flood events. The storm water pumping station would be designed with resilience measures and protection to reduce risk of failure.</p> <p>To this extent, the drainage design is being progressed on the basis that the continual operation of the pumping station would be achieved through provision of adequate infrastructure, standby generator with permanent fuel storage and that the base level, of the pump controls and telemetry would be located above the 0.5%AEP flood level plus 600mm.</p>	In advance of construction / concurrent with construction	-	Rivers Agency
RDWE10	Proposed Works	To minimise impact and avoid contamination of watercourses and ensure compliance with the Water Framework Directive	Any works in, near or liable to impact a waterway (including measures to mitigate adverse impacts) 'must' gain the approval of NIEA – WMU Pollution Prevention (PP), DOE Marine Team and DARD Rivers Agency, a minimum of two months prior to commencement of such works. Works require Method Statements to be agreed prior to the commencement to demonstrate how they would be completed with minimum disturbance and would describe the specific procedures to be put in place to control sediment mobilisation and spillages. Measures established through dialogue with the NIEA WMU Major Client Interface Group and stakeholders engaged through the consultation process would be included within the Method Statements (where appropriate and technically feasible). An Environmental Liaison Group also to be set-up to ensure that potential for significant impact upon the water environment is addressed and appropriate measures to mitigate effects are employed for sensitive activities.	In advance of construction / concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	Rivers Agency / NIEA – WMU / DOE Marine Team

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RDWE11	Proposed Works	Protection of the water environment in accordance with best practice guidelines	<p>The Contractor shall be required to comply with the Pollution Prevention Guidelines (PPGs) regarding pollution of watercourses and CIRIA manuals C532 (“Control of Water Pollution from Construction Sites”), C648 (“Control of Water Pollution from Linear Construction Projects”) and SP156 ‘Control of water pollution from construction sites – guide to good practice’.</p> <p>An Emergency Response Plan shall be prepared to minimise the risk and potential effects of any spillage incidents.</p>	In advance of construction / concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	NIEA – WMU / DOE Marine Team
RDWE12	Proposed Works	Control sediment erosion and contaminated silty runoff	<p>In principle it has been agreed that temporary discharges from the works area (with appropriate settlement and filtration measures to ensure treatment of runoff and settling out of sediments before discharge), would be possible to the existing NI Water sewerage network, subject to consultations and submission of design proposals to NI Water</p> <p>On this basis, the CEMP should include an Erosion Prevention and Sediment Control Plan prior to commencement of any works.</p>	In advance of construction / concurrent with construction	Monitoring of works to ensure compliance with requirements and standards	NIEA – WMU / DOE Marine Team
Geology & Soils (Chapter 17)						
GS1	Proposed Works	Minimise adverse effects on the geology and soils	Employment of high standards of soil / deposit handling and management during the construction, and avoiding creation of bare areas of permanently exposed deposits that would be vulnerable to erosion.	During Construction	-	-
GS2	Proposed Works	Remediate any areas of contaminated land which may be encountered	Measures to remediate contaminated land may include additional targeted testing and risk assessments if no existing ground investigation data is available, and then assess whether there is a need for containment or disposal of the material. The re-use of this material would need careful consideration to demonstrate that unacceptable risks are not posed to health or environmental receptors;	During Construction	-	NIEA – Waste Management Unit / Belfast City Council

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			<p>The Contractor would produce a CEMP, which would provide details of environmental control measures to deal with any contaminated land encountered during the site operations.</p> <p>Management of all materials onto and off the site should be suitably authorised through the Waste Management Regulations (NI) 2006 and/or the Water Order (NI) 1999. This should be demonstrated through a Site Waste Management Plan (SWMP).</p>			
GS3	Proposed Works	Re-use of road construction materials, such as surfacing planings for capping materials, should be adopted where possible	<p>If material cannot be reused elsewhere for approved agricultural improvements or as fill, its disposal would be at suitable licensed tips where it would be subject to landfill tax. There are strict legal controls preventing illegal dumping of surplus fill, including a requirement for a waste disposal license to be obtained and a Duty of Care on the Contractor. The Contractor would be required to make every effort to reuse as much of the material as possible within the area of the construction site. Any material to be reused, which is wet, should be stockpiled to allow it to dry out. Stockpiling should be well away from any sensitive areas of ecological or archaeological interest, or watercourses where pollution could occur.</p> <p>ADEPT and MPA guidance on managing reclaimed road materials (ADEPT and MPA 'Guidance on Managing Reclaimed Asphalt – Highways and Pavements', July 2013) and the NIEA publication on bitumen road planings (NIEA 'Guidance on the production of fully recovered asphalt road planings') should be followed in the identification and management of road planings.</p>	During Construction	-	NIEA – Waste Management Unit / Belfast City Council