

**Ballymun / Finglas to  
City Centre Core Bus  
Corridor Scheme**  
September 2022

**Environmental  
Impact  
Assessment  
Report**

**Volume 2**  
**Main Chapters –**  
Table of Contents

**BUS  
CONNECTS**

SUSTAINABLE TRANSPORT FOR A BETTER CITY.

## Table of Contents - Volume 2

Section	Title	Page Number
<b>Glossary</b>		
N/A	Glossary of Terminology, Abbreviations and Acronyms	1
<b>Chapter 1 (Introduction)</b>		
1.1	Introduction	1
1.2	Aim and Objectives	3
1.3	Delivery of the Project	4
1.4	Role of the National Transport Authority	4
1.5	EIAR Process, Screening, Content and Methodology	5
1.5.1	Introduction	5
1.5.2	Relevant Legislation, Policy and Guidelines	5
1.5.3	EIA Process	6
1.5.4	Screening and the Legislative Requirement for EIA	7
1.5.5	Consideration of the EIAR Scope	7
1.5.6	Contents of the EIAR	8
1.5.7	EIAR Structure	10
1.5.8	Assessment Scenarios	12
1.5.9	Assessment Criteria	13
1.5.10	Details of Competent Experts	14
1.6	Consultation	22
1.6.1	Consultation Objectives	22
1.6.2	Emerging Preferred Route Option Consultation	22
1.6.3	Preferred Route Option Consultations	25
1.7	Consultation with Prescribed Bodies and Other Consultees	27
1.7.1	Prescribed Bodies and Interested Parties	27
1.7.2	Landowners	28
1.8	Difficulties Encountered During the Preparation of the EIAR	29
1.9	References	30
<b>Chapter 2 (Need for the Proposed Scheme)</b>		
2.1	Introduction	1
2.2	The Transport Need for the Proposed Scheme	2
2.2.1	The Regional Transport Need	2
2.2.2	The Local Transport Need	13
2.3	Policy Context	18
2.3.1	International Policy	18
2.3.2	European Union Law and Policy	19
2.3.3	National Policy	20
2.3.4	Regional Policy	38
2.3.5	Local Policy Context	47
2.4	The Benefits of the Proposed Scheme	56
2.5	References	61
<b>Chapter 3 (Consideration of Reasonable Alternatives)</b>		
3.1	Environmental Impact Assessment Directive Requirements	1
3.2	Strategic Alternatives	2
3.2.1	Transport Strategy for the Greater Dublin Area 2016 - 2035	2
3.2.2	'Do Nothing' Alternative	4
3.2.3	Bus Rapid Transit Alternative	5
3.2.4	Light Rail Alternative	6

Section	Title	Page Number
3.2.5	Metro Alternatives	6
3.2.6	Heavy Rail Alternative	7
3.2.7	Demand Management Alternative	7
3.2.8	Technological Alternatives	8
3.3	Route Alternatives	9
3.3.1	Initial High Level Route Alternatives	10
3.3.2	Stage 2 – Route Option Assessment	16
3.3.3	Cycling Options	26
3.3.4	Emerging Preferred Route	28
3.4	Design Alternatives	28
3.4.1	Development of the Draft Preferred Route Option	28
3.4.2	Consideration Following Preferred Route Option Consultation (March 2020)	35
3.4.3	Further Consideration Following Preferred Route Option Consultation (November 2020)	35
3.5	Conclusion	36
3.6	References	37
<b>Chapter 4 (Proposed Scheme Description)</b>		
4.1	Introduction	1
4.2	Proposed Scheme Overview	1
4.3	Design Iteration	3
4.4	Design Principles	3
4.5	Description of the Proposed Scheme	4
4.5.1	Section 1 – Ballymun Road from St. Margaret’s Road to Griffith Avenue	4
4.5.2	Section 2 – St. Mobhi Road and Botanic Road from Griffith Avenue to Hart’s Corner	10
4.5.3	Section 3 – Prospect Road, Phibsborough Road from Hart’s Corner to Western Way	17
4.5.4	Section 4 – Constitution Hill and Church Street to Arran Quay	25
4.5.5	Section 5 – Finglas Road from St. Margaret’s Road to Wellmount Road	29
4.5.6	Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road	33
4.5.7	Section 7 – Finglas Road from Ballyboggan Road to Hart’s Corner	37
4.6	Key Infrastructure Elements	41
4.6.1	Mainline Cross-Section	41
4.6.2	Pedestrian Provision	42
4.6.3	Cycling Provision	43
4.6.4	Bus Priority Provision	45
4.6.5	Accessibility for Mobility Impaired Users	50
4.6.6	Integration	50
4.6.7	Junctions	52
4.6.8	Structures	52
4.6.9	Other Street Infrastructure	53
4.6.10	Pavement	54
4.6.11	Parking and Loading	56
4.6.12	Landscape and Urban Realm	56
4.6.13	Lighting	59
4.6.14	Utilities	60
4.6.15	Drainage	61
4.6.16	Maintenance	65
4.6.17	Safety and Security	65
4.6.18	Land Use and Accommodation Works	65
4.7	References	67

Section	Title	Page Number
<b>Chapter 5 (Construction)</b>		
5.1	Introduction	1
5.2	Construction Phasing	2
5.3	Overview of Construction Works	2
5.3.1	Section 1 – Ballymun Road from St. Margaret’s Road to Griffith Avenue	3
5.3.2	Section 2 – St. Mobhi Road and Botanic Road from Griffith Avenue to Hart’s Corner	3
5.3.3	Section 3 – Prospect Road, Phibsborough Road from Hart’s Corner to Western Way	4
5.3.4	Section 4 – Constitution Hill and Church Street to Arran Quay	5
5.3.5	Section 5 – Finglas Road from St. Margaret’s Road to Wellmount Road	6
5.3.6	Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road	6
5.3.7	Section 7 – Finglas Road from Ballyboggan Road to Hart’s Corner	6
5.4	Construction Programme	7
5.5	Construction Methodology	8
5.5.1	Pre-Construction	8
5.5.2	Preparatory and Site Clearance Works	8
5.5.3	Road and Street Upgrades	10
5.5.4	Structural Works	13
5.5.5	Construction Site Decommissioning	17
5.6	Construction Plant and Equipment	17
5.7	Construction Compounds	18
5.7.1	Construction Compound Locations	18
5.7.2	Construction Compound Activities	23
5.7.3	Construction Compound Services	23
5.8	Construction Traffic Management	24
5.8.1	Pedestrian and Cyclist Provisions	24
5.8.2	Public Transport Provisions	24
5.8.3	General Traffic Provisions	25
5.8.4	Road Closures and Diversions	36
5.9	Interface with Other Projects	36
5.10	Construction Environmental Management	37
5.10.1	Construction Environmental Management Plan	37
5.10.2	Mitigation Measures	38
5.10.3	Construction Working Hours	38
5.10.4	Personnel Numbers	38
5.10.5	Construction Health and Safety	38
5.11	Monitoring Measures	38
5.12	References	39
<b>Chapter 6 (Traffic &amp; Transport)</b>		
6.1	Introduction	1
6.1.1	Aim and Objectives of the Proposed Scheme	2
6.1.2	Iterative Design Process and Mitigation by Design	4
6.2	Methodology	5
6.2.1	Study Area	5
6.2.2	Relevant Guidelines, Policy and Legislations	6
6.2.3	Proposed Scheme Impact Assessment Modelling Tools	8
6.2.4	Appraisal Method for the Assessment of Impacts	9
6.2.5	Data Collection and Collation	13
6.3	Baseline Environment	16
6.3.1	Overview	16

Section	Title	Page Number
6.3.2	Section 1 – Ballymun Road from St. Margaret’s Road to Griffith Avenue	17
6.3.3	Section 2 – St. Mobhi Road and Botanic Road from Griffith Avenue to Hart’s Corner	27
6.3.4	Section 3 – Prospect Road, Phibsborough Road from Hart’s Corner to Western Way	37
6.3.5	Section 4 – Constitution Hill and Church Street to Arran Quay	44
6.3.6	Section 5 – Finglas Road from St. Margaret’s Road to Wellmount Road	51
6.3.7	Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road	54
6.3.8	Section 7 – Finglas Road from Ballyboggan Road to Hart’s Corner	62
6.4	Potential Impacts	69
6.4.1	Characteristics of the Proposed Scheme	69
6.4.2	‘Do Nothing’ Scenario	69
6.4.3	‘Do Minimum’ Scenario	69
6.4.4	‘Do Something’ Scenario	71
6.4.5	Construction Phase	71
6.4.6	Operational Phase	78
6.5	Mitigation and Monitoring Measures	175
6.5.1	Construction Phase	175
6.5.2	Operational Phase	176
6.6	Residual Impacts	176
6.7	References	177
<b>Chapter 7 (Air Quality)</b>		
7.1	Introduction	1
7.2	Methodology	1
7.2.1	Study Area	1
7.2.2	Relevant Guidelines, Policy and Legislation	3
7.2.3	Data Collection and Collation	7
7.2.4	Appraisal Method for the Assessment of Impacts	8
7.3	Baseline Environment	21
7.3.1	Meteorological Conditions	21
7.3.2	Baseline Ambient Air Quality	22
7.3.3	Existing Modelled Baseline Scenario	28
7.4	Potential Impacts	32
7.4.1	Characteristics of the Proposed Scheme	32
7.4.2	Construction Phase	32
7.4.3	Operational Phase	48
7.5	Mitigation and Monitoring Measures	64
7.5.1	Construction Phase	64
7.5.2	Operational Phase	65
7.6	Residual Impacts	66
7.6.1	Construction Phase	66
7.6.2	Operational Phase	66
7.7	References	67
<b>Chapter 8 (Climate)</b>		
8.1	Introduction	1
8.2	Climate Assessment Considerations	2
8.3	Methodology	3
8.3.1	Study Area	3
8.3.2	Relevant Guidelines, Policy and Legislation	4
8.3.3	Data Collection and Collation	8
8.3.4	Appraisal Method for the Assessment of Impacts	8

Section	Title	Page Number
8.4	Baseline Environment	12
8.4.1	Climate Pollutants	12
8.4.2	Vulnerability of the Proposed Scheme to Climate Change	12
8.4.3	Existing GHG Emissions Baseline	16
8.5	Potential Impacts	18
8.5.1	Construction Phase	18
8.5.2	Operational Phase	21
8.6	Sensitivity Analysis	31
8.6.1	Introduction	31
8.6.2	Sensitivity Test	31
8.7	Mitigation and Monitoring Measures	34
8.7.1	Construction Phase	34
8.7.2	Operational Phase	34
8.8	Residual Impacts	35
8.8.1	Construction Phase	35
8.8.2	Operational Phase	35
8.9	References	36
<b>Chapter 9 (Noise &amp; Vibration)</b>		
9.1	Introduction	1
9.2	Methodology	1
9.2.1	Study Area	2
9.2.2	Relevant Guidelines, Policy and Legislation	3
9.2.3	Data Collection and Collation	4
9.2.4	Appraisal Method for the Assessment of Impacts	9
9.3	Baseline Environment	19
9.3.1	Desk Study of Published Noise Data	19
9.3.2	Baseline Noise Surveys	21
9.3.3	Baseline Vibration Surveys	26
9.4	Potential Impacts	28
9.4.1	Characteristics of the Proposed Scheme	28
9.4.2	'Do Minimum' Scenario	29
9.4.3	Construction Phase	30
9.4.4	Operational Phase	51
9.5	Mitigation and Monitoring Measures	58
9.5.1	Construction Phase	58
9.5.2	Operational Phase	64
9.6	Residual Impacts	65
9.6.1	Construction Phase	65
9.6.2	Operational Phase	66
9.7	References	67
<b>Chapter 10 (Population)</b>		
10.1	Introduction	1
10.2	Methodology	2
10.2.1	Study Area	2
10.2.2	Relevant Guidelines, Policy and Legislation	3
10.2.3	Data Collection and Collation	3
10.2.4	Appraisal Method for the Assessment of Impacts	4
10.3	Baseline Environment	11
10.3.1	Overview	11

Section	Title	Page Number
10.3.2	Community Baseline	11
10.3.3	Economic Baseline	14
10.4	Potential Impacts	15
10.4.1	Characteristics of the Proposed Scheme	15
10.4.2	'Do Nothing' Scenario	16
10.4.3	Construction Phase	17
10.4.4	Operational Phase	23
10.5	Mitigation and Monitoring Measures	33
10.6	Residual Impacts	33
10.6.1	Construction Phase	33
10.6.2	Operational Phase	34
10.7	References	38
<b>Chapter 11 (Human Health)</b>		
11.1	Introduction	1
11.2	Methodology	2
11.2.1	Study Area	2
11.2.2	Relevant Guidelines, Policy and Legislation	2
11.2.3	Data Collection and Collation	6
11.2.4	Appraisal Method for the Assessment of Impacts	6
11.3	Baseline Environment	10
11.3.1	General Health	10
11.3.2	Deprivation, Disability and Health Inequalities	13
11.3.3	Air Quality, Noise and Other Pollutants	17
11.3.4	Traffic, Travel Behaviour and Health	19
11.3.5	Access to Healthcare, Employment and Education	21
11.3.6	Communicable Diseases	21
11.3.7	Summary of Key Baseline Health Issues	22
11.4	Potential Impacts	23
11.4.1	Characteristics of the Proposed Scheme	23
11.4.2	'Do Nothing' Scenario	24
11.4.3	Construction Phase	24
11.4.4	Operational Phase	28
11.5	Mitigation and Monitoring Measures	35
11.5.1	Construction Phase	35
11.5.2	Operational Phase	35
11.6	Residual Impacts	36
11.6.1	Construction Phase	36
11.6.2	Operational Phase	36
11.7	References	37
<b>Chapter 12 (Biodiversity)</b>		
12.1	Introduction	1
12.2	Methodology	1
12.2.1	Ecological Survey Study Area	2
12.2.2	Relevant Guidelines, Policy and Legislation	2
12.2.3	Data Collection and Collation	4
12.2.4	Appraisal Method for the Assessment of Impacts	9
12.3	Baseline Environment	11
12.3.1	Zone of Influence (Zol)	12
12.3.2	Desk Study	14

Section	Title	Page Number
12.3.3	Biodiversity Areas	14
12.3.4	Designated Areas for Nature Conservation	15
12.3.5	Habitats	25
12.3.6	Rare and Protected Plant Species	34
12.3.7	Non-Native Invasive Plant Species	35
12.3.8	Mammals	35
12.3.9	Birds	40
12.3.10	Reptiles	45
12.3.11	Amphibians	45
12.3.12	Fish	46
12.3.13	Invertebrates	47
12.3.14	Summary Ecological Valuation and Identification of KERs	49
12.4	Potential Impacts	52
12.4.1	Characteristics of the Proposed Scheme	52
12.4.2	'Do Nothing' Scenario	54
12.4.3	Construction Phase	54
12.4.4	Operational Phase	82
12.5	Mitigation and Monitoring Measures	94
12.5.1	Construction Phase	94
12.5.2	Operational Phase	107
12.6	Residual Impacts	112
12.6.1	Construction Phase	112
12.6.2	Operational Phase	115
12.7	References	119
<b>Chapter 13 (Water)</b>		
13.1	Introduction	1
13.2	Methodology	2
13.2.1	Study Area	2
13.2.2	Relevant Guidelines, Policy and Legislation	2
13.2.3	Data Collection and Collation	4
13.2.4	Appraisal Method for the Assessment of Impacts	5
13.3	Baseline Environment	11
13.3.1	WFD Catchment Overview	11
13.3.2	EPA Surface Water Monitoring	11
13.3.3	Surface Water WFD Status	11
13.3.4	Field Survey	12
13.3.5	Designated Sites	15
13.3.6	Drinking Water Supply (Surface Water)	15
13.3.7	Known Pressures	16
13.3.8	Existing Drainage	16
13.3.9	Surface Water Features	17
13.3.10	Flood Risk	20
13.4	Potential Impacts	22
13.4.1	Characteristics of the Proposed Scheme	22
13.4.2	'Do Nothing' Scenario	24
13.4.3	Do Minimum	25
13.4.4	Construction Phase	25
13.4.5	Operational Phase	30
13.5	Mitigation and Monitoring Measures	34



Section	Title	Page Number
13.5.1	Introduction	34
13.5.2	Construction Phase	34
13.5.3	Operational Phase	37
13.6	Residual Impacts	38
13.6.1	Construction Phase	38
13.6.2	Operational Phase	38
13.6.1	Summary of WFD Assessment	38
13.7	References	40
<b>Chapter 14 (Land, Soils, Geology &amp; Hydrogeology)</b>		
14.1	Introduction	1
14.2	Methodology	2
14.2.1	Study Area	2
14.2.2	Relevant Guidelines, Policy and Legislation	2
14.2.3	Data Collection and Collation	3
14.2.4	Appraisal Method for the Assessment of Impacts	5
14.3	Baseline Environment	10
14.3.1	Introduction	10
14.3.2	Regional Overview	10
14.3.3	Site-Specific Environment	17
14.3.4	Summary of Features of Importance	32
14.3.5	Conceptual Site Model	34
14.4	Potential Impacts	39
14.4.1	Characteristics of the Proposed Scheme	39
14.4.2	'Do Nothing' Scenario	40
14.4.3	Construction Phase	40
14.4.4	Operational Phase	47
14.5	Mitigation and Monitoring Measures	47
14.5.1	Construction Phase	47
14.5.2	Operational Phase	52
14.6	Residual Impacts	52
14.6.1	Construction Phase	52
14.6.2	Operational Phase	52
14.7	References	53
<b>Chapter 15 (Archaeological &amp; Cultural Heritage)</b>		
15.1	Introduction	1
15.2	Methodology	1
15.2.1	Introduction	1
15.2.2	Study Area	3
15.2.3	Relevant Guidelines, Policy and Legislation	3
15.2.4	Data Collection and Collation	4
15.2.5	Appraisal Method for the Assessment of Impacts	5
15.3	Baseline Environment	7
15.3.1	Archaeological and Historical Background	7
15.3.2	Archaeological Heritage: Ballymun Road from St. Margaret's Road to Griffith Avenue	32
15.3.3	Archaeological Heritage: St. Mobhi Road from Griffith Avenue to Hart's Corner	34
15.3.4	Archaeological Heritage: Prospect Road, Phibsborough Road from Hart's Corner to Western Way	37
15.3.5	Archaeological Heritage: Constitution Hill and Church Street to Arran Quay	39
15.3.6	Archaeological Heritage: Finglas Road from St. Margaret's Road to Wellmount Road	45
15.3.7	Archaeological Heritage: Finglas Road from Wellmount Road to Ballyboggan Road	47

Section	Title	Page Number
15.3.8	Archaeological Heritage: Finglas Road from Ballyboggan Road to Hart's Corner	49
15.3.9	Proposed Construction Compounds	50
15.4	Potential Impacts	52
15.4.1	Characteristics of the Proposed Scheme	52
15.4.2	'Do Nothing' Scenario	52
15.4.3	Construction Phase	53
15.4.4	Operational Phase	70
15.5	Mitigation and Monitoring Measures	70
15.5.1	Construction Phase	70
15.5.2	Operational Phase	79
15.6	Residual Impacts	79
15.6.1	Construction Phase	79
15.6.2	Operational Phase	80
15.7	References	81
<b>Chapter 16 (Architectural Heritage)</b>		
16.1	Introduction	1
16.2	Methodology	1
16.2.1	Definitions	1
16.2.2	Approach	3
16.2.3	Study Area	4
16.2.4	Relevant Guidelines, Policy and Legislation	4
16.2.5	Data Collection and Collation	6
16.2.6	Assessment Methodology	7
16.2.7	Appraisal Method for the Assessment of Sensitivity	7
16.3	Baseline Environment	12
16.3.1	Results and Analysis	14
16.4	Potential Impacts	40
16.4.1	Characteristics of the Proposed Scheme	40
16.4.2	'Do Nothing' Scenario	40
16.4.3	Construction Phase	40
16.4.4	Operational Phase	47
16.5	Mitigation and Monitoring Measures	53
16.5.1	Construction Phase	53
16.5.2	Operational Phase	60
16.6	Residual Impacts	60
16.6.1	Construction Phase	60
16.6.2	Operational Phase	60
16.7	References	61
<b>Chapter 17 (Landscape (Townscape) &amp; Visual)</b>		
17.1	Introduction	1
17.2	Methodology	1
17.2.1	Study Area	1
17.2.2	Relevant Guidelines, Policy and Legislation	2
17.2.3	Data Collection and Collation	3
17.2.4	Appraisal Method for the Assessment of Impacts	4
17.3	Baseline Environment	13
17.3.1	City Context	13
17.3.2	Overview of Route of the Proposed Scheme	14
17.3.3	Landscape, Townscape and Visual Planning Policy	14

Section	Title	Page Number
17.3.4	Townscape / Streetscape Character	16
17.4	Potential Impacts	21
17.4.1	Characteristics of the Proposed Scheme	21
17.4.2	'Do Nothing' Scenario	28
17.4.3	Construction Phase	28
17.4.4	Operational Phase	42
17.5	Mitigation and Monitoring Measures	52
17.5.1	Construction Phase	52
17.5.2	Operational Phase	57
17.6	Residual Impacts	68
17.6.1	Construction Phase	68
17.6.2	Operational Phase	70
17.7	Conclusion	72
17.8	References	73
<b>Chapter 18 (Waste &amp; Resources)</b>		
18.1	Introduction	1
18.2	Sustainable Resource and Waste Management Principles	2
18.2.1	Circular Economy	2
18.2.2	The Waste Hierarchy	3
18.3	Methodology	4
18.3.1	Study Area	4
18.3.2	Relevant Guidelines, Policy and Legislation	4
18.3.3	Appraisal Method for the Assessment of Impacts	5
18.3.4	Data Collection and Collation	6
18.3.5	Waste Management Principles	8
18.4	Baseline Environment	10
18.4.1	Construction Waste	10
18.4.2	Municipal Waste	13
18.5	Potential Impacts	14
18.5.1	Characteristics of the Proposed Scheme	14
18.5.2	'Do Nothing' Scenario	14
18.5.3	Construction Phase	14
18.5.4	Operational Phase	18
18.6	Mitigation and Monitoring Measures	19
18.6.1	Construction Phase	19
18.6.2	Operational Phase	21
18.7	Residual Impacts	21
18.7.1	Construction Phase	21
18.7.2	Operational Phase	21
18.8	References	22
<b>Chapter 19 (Material Assets)</b>		
19.1	Introduction	1
19.2	Methodology	2
19.2.1	Study Area	2
19.2.2	Relevant Guidelines, Policy and Legislation	2
19.2.3	Data Collection and Collation	3
19.2.4	Appraisal Method for the Assessment of Impacts	3
19.3	Baseline Environment	5
19.3.1	Major Infrastructure and Existing Utilities	5

Section	Title	Page Number
19.3.2	Imported Material	7
19.4	Potential Impacts	7
19.4.1	Characteristics of the Proposed Scheme	7
19.4.2	'Do Nothing' Scenario	8
19.4.3	Construction Phase	8
19.4.4	Operational Phase	13
19.5	Mitigation and Monitoring Measures	16
19.5.1	Construction Phase	16
19.5.2	Operational Phase	17
19.6	Residual Impacts	18
19.6.1	Construction Phase	18
19.6.2	Operational Phase	18
19.7	References	19
<b>Chapter 20 (Risk of Major Accidents and / or Disasters)</b>		
20.1	Introduction	1
20.2	Risk of Major Accidents and / or Disasters	1
20.2.1	Definitions	2
20.3	Methodology	3
20.3.1	Scope and Context	3
20.3.2	Legislation, Guidelines and Reference Material	3
20.3.3	Risk Assessment Methodology	4
20.4	Potential Impacts	7
20.4.1	'Do Nothing' Scenario	7
20.4.2	Risk Evaluation	7
20.4.3	Seveso Sites	12
20.5	Mitigation and Monitoring Measures	13
20.5.1	Inherent Design	13
20.5.2	Plans and Procedures	13
20.6	Residual Impacts	16
20.7	References	17
<b>Chapter 21 (Cumulative Impacts &amp; Environmental Interactions)</b>		
21.1	Introduction	1
21.1.1	Cumulative Impacts	1
21.1.2	Environmental Interactions	1
21.1.3	Guidance	2
21.2	Methodology for Cumulative Impacts Assessment	2
21.2.1	Introduction	2
21.2.2	Stage 1: Establishing the Long List of 'Other Projects'	2
21.2.3	Stage 2: Establishing the Shortlist of 'Other Projects'	6
21.2.4	Stage 3: Information Gathering for the Shortlist of 'Other Projects'	7
21.2.5	Stage 4: Assessment	7
21.2.6	Traffic Related Cumulative Effects: Construction Scenarios for Assessment	8
21.2.7	Operational Scenario for Assessment	9
21.2.8	Summary of Assessment Methodology for Cumulative Impacts Assessment	10
21.3	Assessment of Cumulative Impacts and Environmental Interactions	10
21.3.1	Construction Impacts	10
21.3.2	Operational Impacts	34
21.4	Environmental Interactions	56
21.5	Mitigation	63

Section	Title	Page Number
21.5.1	Construction Phase	63
21.5.2	Operational Phase	63
21.6	Summary of Residual Cumulative Impacts and Environmental Interactions	64
21.6.1	Construction Phase	64
21.6.2	Operational Phase	64
21.6.3	Environmental Interactions	65
21.7	References	67
<b>Chapter 22 (Summary of Mitigation &amp; Monitoring Measures)</b>		
22.1	Introduction	1
22.2	Mitigation and Monitoring Schedules	1
22.3	General Mitigation Requirements	2
22.4	Traffic and Transport	2
22.5	Air Quality	3
22.6	Climate	3
22.7	Noise and Vibration	4
22.8	Population	6
22.9	Human Health	7
22.1	Biodiversity	8
22.11	Water	25
22.12	Land, Soils, Geology and Hydrogeology	27
22.13	Archaeological and Cultural Heritage	30
22.14	Architectural Heritage	36
22.15	Landscape (Townscape) and Visual	40
22.16	Waste and Resources	43
22.17	Material Assets	45
22.18	Risk of Major Accidents and Disasters	46
22.19	Cumulative Impacts	47
22.20	References	48
<b>Chapter 23 (Summary of Significant Residual Impacts)</b>		
23	Summary of Significant Residual Impacts	1