

Table of Contents - Volume 2

Section	Title	Page Number
Glossary		
N/A	Glossary of Terminology, Abbreviations and Acronyms	1
Chapter 1: Introduction		
1	Introduction	1
1.1	Introduction	1
1.2	Aim and Objectives	4
1.3	Delivery of Project	4
1.4	Role of the National Transport Authority	5
1.5	EIAR – Process, Screening, Content and Methodology	6
1.5.1	Statutory Requirements	6
1.5.2	Relevant Legislation, Policy and Guidelines	6
1.5.3	EIA Process	7
1.5.4	Screening and the Legislative Requirement for EIA	8
1.5.5	Consideration of the EIAR's Scope	8
1.5.6	Contents of the EIAR	9
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	23
1.6.1	Consultation Objectives	23
1.6.2	Emerging Preferred Route Option Consultation	23
1.6.3	Preferred Route Option Consultations	27
1.7	Consultation with Prescribed Bodies and Other Consultees	30
1.7.1	Prescribed Bodies and Interested Parties	30
1.7.2	Landowners	31
1.8	Difficulties Encountered During the Preparation of the EIAR	32
1.9	References	33
Chapter 2: Need for the Proposed Scheme		
2	Need for the Proposed Scheme	1
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	18
2.3	Policy Context	22
2.3.1	International Policy	23
2.3.2	European Union Law & Policy	24
2.3.3	National Policy	25
2.3.4	Regional Policy	45
2.3.5	Local Policy	57
2.4	The Benefits of the Proposed Scheme	69
2.5	References	74
Chapter 3: Consideration of Reasonable Alternatives		
3	Consideration of Reasonable Alternatives	1
3.1	Environmental Impact Assessment Directive Requirements	1
3.2	Strategic Alternatives	1
3.2.1	Overview of the GDA Transport Strategy 2016 – 2035 and the new GDA Transport Strategy	1

Section	Title	Page Number
3.2.2	GDA Transport Strategy 2016 - 2036	2
3.2.2	'Do Nothing' Alternative	5
3.2.3	Bus Rapid Transit (BRT) Alternative	6
3.2.4	Light Rail Alternative	7
3.2.5	Metro Alternative	7
3.2.6	Heavy Rail Alternative	7
3.2.7	Demand Management Alternative	8
3.2.8	Technological Alternatives	9
3.3	Route Alternatives	10
3.3.1	Initial High Level Route Alternatives	11
3.3.2	Stage 2 – Route Options Assessment	18
3.3.3	Cycling Options	40
3.3.4	Emerging Preferred Route	41
3.4	Design Alternatives	41
3.4.1	Development of the Draft Preferred Route Option	41
3.4.2	Consideration following Preferred Route Option Consultation	53
3.4.3	Further Consideration following Preferred Route Option Consultation	54
3.4.4	Specific Design Alternatives	57
3.5	Conclusion	59
3.6	References	60
Chapter 4: Proposed Scheme Description		
4	Proposed Scheme Description	1
4.1	Introduction	1
4.2	Proposed Scheme Overview	1
4.3	Design Iteration	4
4.4	Design Principles	5
4.5	Description of the Proposed Scheme	6
4.5.1	Section 1: Tallaght Road to Rathfarnham Road	6
4.5.2	Section 2: Nutgrove Avenue to Terenure Road North – Grange Road, Rathfarnham Road	14
4.5.3	Section 3: Terenure Road North to Charleville Road – Terenure Road East, Rathgar Road	24
4.5.4	Section 4: Charleville Road to Dame Street	36
4.6	Key Infrastructure Elements	51
4.6.1	Mainline Cross-section	51
4.6.2	Pedestrian Provision	52
4.6.3	Cycling Provision	53
4.6.4	Bus Priority Provision	55
4.6.5	Accessibility for Mobility Impaired Users	61
4.6.6	Integration	61
4.6.7	Junctions	66
4.6.8	Structures	66
4.6.9	Other Street Infrastructure	67
4.6.10	Pavement	68
4.6.11	Parking and Loading	70
4.6.12	Landscape and Public Realm	70
4.6.13	Lighting	74
4.6.14	Utilities	74
4.6.15	Drainage	75
4.6.16	Maintenance	80
4.6.17	Safety and Security	80

Section	Title	Page Number
4.6.18	Land Use and Accommodation Works	81
4.7	References	82
Chapter 5: Construction		
5	Construction	1
5.1	Introduction	1
5.2	Construction Phasing	3
5.3	Overview of Construction Works	4
5.3.1	Section 1: Tallaght Road to Rathfarnham Road	4
5.3.2	Section 2: Nutgrove Avenue to Terenure Road North – Grange Road, Rathfarnham Road	6
5.3.3	Section 3: Terenure Road North to Charleville Road – Terenure Road East, Rathgar Road	8
5.3.4	Section 4: Charleville Road to Dame Street	8
5.4	Construction Programme	10
5.5	Construction Methodology	11
5.5.1	Pre-Construction Period	11
5.5.2	Preparatory and Site Clearance Works	11
5.5.3	Road and Street Upgrades	13
5.5.4	Structural Works	16
5.5.5	Construction Site Decommissioning	18
5.6	Construction Plant and Equipment	18
5.7	Construction Compounds	20
5.7.1	Construction Compound Locations	20
5.7.2	Construction Compound Activities	25
5.7.3	Construction Compound Services	26
5.8	Construction Traffic Management	27
5.8.1	Pedestrian and Cyclist Provisions	27
5.8.2	Public Transport Provisions	27
5.8.3	General Traffic Provisions	27
5.9	Interface with Other Projects	32
5.10	Construction Environmental Management	33
5.10.1	Construction Environmental Management Plan	34
5.10.2	Mitigation Measures	34
5.10.3	Construction Working Hours	35
5.10.4	Personnel Numbers	35
5.10.5	Construction Health and Safety	35
5.11	Monitoring Measures	36
5.11	References	37
Chapter 6: Traffic & Transport		
6	Traffic & Transport	1
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	7
6.2.3	Proposed Scheme Impact Assessment Modelling Tools	9
6.2.4	Appraisal Method for the Assessment of Impacts	10
6.2.5	Data Collection and Collation	14
6.3	Baseline Environment	18
6.3.1	Overview	18

Section	Title	Page Number
6.3.2	Section 1: Tallaght Road to Rathfarnham Road	18
6.3.3	Section 2: Nutgrove Avenue to Terenure Road North – Grange Road, Rathfarnham Road	29
6.3.4	Section 3: Terenure Road North to Charleville Road – Terenure Road East, Rathgar Road	39
6.3.5	Section 4: Charleville Road to Dame Street	50
6.4	Potential Impacts	68
6.4.1	Characteristics of the Proposed Scheme	68
6.4.2	'Do Nothing' Scenario	68
6.4.3	'Do Minimum' Scenario	68
6.4.4	'Do Something' Scenario	70
6.4.5	Construction Phase	70
6.4.6	Operational Phase	77
6.5	Mitigation and Monitoring Measures	178
6.5.1	Construction Phase	178
6.5.2	Operational Phase	178
6.6	Residual Impacts	179
6.7	References	180
Chapter 7: Air Quality		
7	Air Quality	1
7.1	Introduction	1
7.2	Methodology	2
7.2.1	Study Area	2
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	22
7.3.1	Meteorological Conditions	22
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	45
7.5	Mitigation and Monitoring Measures	60
7.5.1	Construction Phase	60
7.5.2	Operational Phase	60
7.6	Residual Impacts	62
7.6.1	Construction Phase	62
7.6.2	Operational Phase	62
7.7	References	63
Chapter 8: Climate		
8	Climate	1
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	9
8.3.4	Appraisal Method for the Assessment of Impacts	10
8.4	Baseline Environment	15

Section	Title	Page Number
8.4.1	Climate Pollutants	15
8.4.2	Vulnerability of the Proposed Scheme to Climate Change	15
8.4.3	Existing GHG Emissions Baseline	19
8.5	Potential Impacts	21
8.5.1	Construction Phase	21
8.5.2	Operational Phase	24
8.6	Sensitivity Analysis	33
8.6.1	Introduction	33
8.6.2	Sensitivity Tests	34
8.7	Mitigation and Monitoring Measures	36
8.7.1	Construction Phase	36
8.7.2	Operational Phase	37
8.8	Residual Impacts	38
8.8.1	Construction Phase	38
8.8.2	Operational Phase	38
8.9	References	39
Chapter 9: Noise & Vibration		
9.	Noise & Vibration	1
9.1	Introduction	1
9.2	Methodology	2
9.2.1	Study Area	2
9.2.2	Relevant Guidelines, Policy and Legislation	3
9.2.3	Data Collection and Collation	5
9.2.4	Appraisal Method for the Assessment of Impacts	8
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	25
9.4	Potential Impacts	27
9.4.1	Characteristics of the Proposed Scheme	27
9.4.2	'Do Minimum' Scenario	28
9.4.3	Construction Phase	28
9.4.4	Operational Phase	43
9.5	Mitigation and Monitoring Measures	51
9.5.1	Construction Phase	51
9.5.2	Operational Phase	56
9.6	Residual Impacts	57
9.6.1	Construction Phase	57
9.6.2	Operational Phase	57
9.7	References	59
Chapter 10: Population		
10	Population	1
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	4
10.2.4	Appraisal Method for the Assessment of Impacts	4
10.3	Baseline Environment	11

Section	Title	Page Number
10.3.1	Overview	11
10.3.2	Community Baseline	11
10.3.3	Economic Baseline	13
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	16
10.4.4	Operational Phase	22
10.5	Mitigation and Monitoring Measures	28
10.6	Residual Impacts	28
10.6.1	Construction Phase	28
10.6.2	Operational Phase	28
10.7	References	31
Chapter 11: Human Health		
11	Human Health	1
11.1	Introduction	1
11.2	Methodology	2
11.2.1	Study Area	2
11.2.2	Relevant Guidelines, Policy and Legislation	6
11.2.3	Data Collection and Collation	6
11.2.4	Appraisal Method for the Assessment of Impacts	6
11.3	Baseline Environment	11
11.3.1	General Health	11
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	22
11.3.7	Summary of Key Baseline Health Issues	23
11.4	Potential Impacts	24
11.4.1	Characteristics of the Proposed Scheme	24
11.4.2	'Do Nothing' Scenario	25
11.4.3	Construction Phase	25
11.4.4	Operational Phase	29
11.5	Mitigation and Monitoring Measures	36
11.5.1	Construction Phase	36
11.5.2	Operational Phase	36
11.6	Residual Impacts	37
11.6.1	Construction Phase	37
11.6.2	Operational Phase	37
11.7	References	38
Chapter 12: Biodiversity		
12	Biodiversity	1
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	10

Section	Title	Page Number
12.3	Baseline Environment	12
12.3.1	Zone of Influence (Zoi)	13
12.3.2	Desk Study	15
12.3.3	Local Biodiversity Areas	15
12.3.4	Designated Areas for Nature Conservation	16
12.3.5	Habitats	26
12.3.6	Rare and Protected Plant Species	33
12.3.7	Non-Native Invasive Plant Species	33
12.3.8	Mammals	35
12.3.9	Birds	42
12.3.10	Reptiles	49
12.3.11	Amphibians	49
12.3.12	Fish	49
12.3.13	Invertebrates	52
12.3.14	Summary Ecological Valuation and Identification of KERs	53
12.4	Potential Impacts	56
12.4.1	Characteristics of the Proposed Scheme	56
12.4.2	'Do Nothing' Scenario	64
12.4.3	Construction Phase	65
12.4.4	Operational Phase	95
12.5	Mitigation and Monitoring Measures	107
12.5.1	Construction Phase	107
12.5.2	Operational Phase	119
12.6	Residual Impacts	122
12.6.1	Construction Phase	122
12.6.2	Operational Phase	126
12.7	References	130
Chapter 13: Water		
13	Water	1
13.1	Introduction	1
13.2	Methodology	2
13.2.4	Appraisal Method for Assessment of Impacts	6
13.3	Baseline Environment	11
13.3.1	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)	16
13.3.7	Known Pressures	16
13.3.8	Existing Drainage	16
13.3.9	Surface Water Features	17
13.3.10	Summary of Baseline Receptor Importance	19
13.3.11	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' Scenario	25
13.4.4	Construction Phase	26

Section	Title	Page Number
13.4.5	Operational Phase	29
13.5	Mitigation and Monitoring Measures	33
13.5.1	Introduction	33
13.5.2	Construction Phase	33
13.5.3	Operational Phase	33
13.6	Residual Impacts	34
13.6.1	Construction Phase	34
13.6.2	Operational Phase	34
13.6.1	Summary of WFD Assessment	35
13.7	References	37
Chapter 14: Land, Soils, Geology & Hydrogeology		
14	Land, Soils, Geology & Hydrogeology	1
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	2
14.2.4	Appraisal Method for the Assessment of Impacts	5
14.3	Baseline Environment	9
14.3.1	Introduction	9
14.3.2	Regional Overview	9
14.3.3	Site Specific Environment	15
14.3.4	Summary of Features of Importance	26
14.3.5	Conceptual Site Model	30
14.4	Potential Impacts	36
14.4.1	Characteristics of the Proposed Scheme	36
14.4.2	'Do Nothing' Scenario	37
14.4.3	Construction Phase	37
14.4.4	Operational Phase	44
14.5	Mitigation and Monitoring Measures	45
14.5.1	Construction Phase	45
14.5.2	Operational Phase	46
14.6	Residual Impacts	47
14.6.1	Construction Phase	47
14.6.2	Operational Phase	56
14.7	References	57
Chapter 15: Archaeology & Cultural Heritage		
15	Archaeological & Cultural Heritage	1
15.1	Introduction	1
15.2	Methodology	2
15.2.1	Introduction	2
15.2.2	Study Area	3
15.2.3	Relevant Guidelines, Policy and Legislation	4
15.2.4	Data Collection and Collation	4
15.2.5	Appraisal Method for the Assessment of Impacts	5
15.3	Baseline Environment	8
15.3.1	Archaeological and Historical Background	8
15.3.2	Archaeological Heritage: Tallaght Road to Rathfarnham Road	29
15.3.3	Archaeological Heritage: Nutgrove Avenue to Terenure Road North	34

Section	Title	Page Number
15.3.4	Archaeological Heritage: Terenure Road North to Charleville Road	40
15.3.5	Archaeological Heritage: Charleville Road to Dame Street	42
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	52
15.4.4	Operational Phase	61
15.5	Mitigation and Monitoring Measures	62
15.5.1	Construction Phase	62
15.5.2	Operational Phase	68
15.6	Residual Impacts	69
15.6.1	Construction Phase	69
15.6.2	Operational Phase	69
15.7	References	70
15.7.1	Relevant Guidelines, Policy and Legislation	74
Chapter 16: Architectural Heritage		
16	Architectural Heritage	1
16.1	Introduction	1
16.2	Methodology	2
16.2.1	Definitions	2
16.2.2	Approach	4
16.2.3	Study Area	5
16.2.4	Relevant Guidelines, Policy and Legislation	5
16.2.5	Data Collection and Collation	7
16.2.6	Assessment Methodology	7
16.2.7	Appraisal Method for the Assessment of Sensitivity	8
16.3	Baseline Environment	15
16.3.1	Results and Analysis	17
16.4	Potential Impacts	41
16.4.1	Characteristics of the Proposed Scheme	41
16.4.2	'Do Nothing' Scenario	41
16.4.3	Construction Phase	41
16.4.4	Operational Phase	50
16.5	Mitigation and Monitoring Measures	53
16.5.1	Construction Phase	53
16.5.2	Operational Phase	64
16.6	Residual Impacts	65
16.6.1	Construction Phase	65
16.6.2	Operational Phase	65
16.7	References	66
16.7.1	Policy and Guidelines	74
Chapter 17: Landscape (Townscape) & Visual		
17	Landscape (Townscape) & Visual	1
17.1	Introduction	1
17.2	Methodology	2
17.2.1	Study Area	2
17.2.2	Relevant Guidelines, Policy and Legislation	2
17.2.3	Data Collection and Collation	4
17.2.4	Appraisal Method for the Assessment of Impacts	5

Section	Title	Page Number
17.3	Baseline Environment	16
17.3.1	City Context	16
17.3.2	Overview of Route of the Proposed Scheme	16
17.3.3	Landscape, Townscape and Visual Planning Policy	16
17.3.4	Townscape / Streetscape Character	19
17.4	Potential Impacts	23
17.4.1	Characteristics of the Proposed Scheme	23
17.4.2	'Do Nothing' Scenario	30
17.4.3	Construction Phase	30
17.4.4	Operational Phase	37
17.5	Mitigation and Monitoring Measures	46
17.5.1	Construction Phase	46
17.5.2	Operational Phase	49
17.6	Residual Impacts	56
17.6.1	Construction Phase	56
17.6.2	Operational Phase	58
17.7	Conclusion	59
17.8	References	61
Chapter 18: Waste & Resources		
18	Waste & Resources	1
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	12
18.5	Potential Impacts	14
18.5.1	Characteristics of the 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	20
18.6.1	Construction Phase	20
18.6.2	Operational Phase	21
18.7	Residual Impacts	23
18.7.1	Construction Phase	23
18.7.2	Operational Phase	23
18.8	References	24
Chapter 19: Material Assets		
19	Material Assets	1
19.1	Introduction	1
19.2	Methodology	2

Section	Title	Page Number
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	6
19.3.1	Major Infrastructure and Existing Utilities	6
19.3.2	Imported Material	7
19.4	Potential Impacts	8
19.4.1	Characteristics of the Proposed Scheme	8
19.4.2	'Do Nothing' Scenario	8
19.4.3	Construction Phase	8
19.4.4	Operational Phase	14
19.5	Mitigation and Monitoring Measures	17
19.5.1	Construction Phase	17
19.5.2	Operational Phase	18
19.6	Residual Impacts	19
19.6.1	Construction Phase	19
19.6.2	Operational Phase	20
19.7	References	20
Chapter 20: Risk of Major Accidents and / or Disasters		
20	Risk of Major Accidents and / or Disasters	1
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	8
20.4.1	'Do Nothing' Scenario	8
20.4.2	Risk Evaluation	8
20.4.3	Seveso Sites	15
20.5	Mitigation and Monitoring Measures	16
20.5.1	Inherent Design	16
20.5.2	Plans and Procedures	16
20.6	Residual Impacts	20
20.7	References	21
Chapter 21: Cumulative Impacts & Environmental Interactions		
21	Cumulative Impacts and Environmental Interactions	1
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

Section	Title	Page Number
21.2.6	Traffic Related Cumulative Impacts: Construction Scenarios for Assessment	8
21.2.7	Operational Scenario for Assessment	9
21.2.8	Summary of Assessment Methodology for CEA	10
21.3	Assessment of Cumulative Impacts and Environmental Interactions	10
21.3.1	Construction Impacts	11
21.3.2	Operational Impacts	35
21.4	Environmental Interactions	60
21.5	Mitigation	67
21.5.1	Construction Phase	67
21.5.2	Operational Phase	67
21.6	Summary of Residual Cumulative Impacts and Environmental Interactions	67
21.6.1	Construction Phase	67
21.6.2	Operational Phase	68
21.6.3	Environmental Interactions	69
21.7	References	70
Chapter 22: Summary of Mitigation & Monitoring Measures		
22	Summary of Mitigation & Monitoring Measures	1
22.1	Introduction	1
22.2	Mitigation and Monitoring Schedules	1
22.3	General Mitigation Requirements	2
22.4	Traffic and Transport	3
22.5	Air Quality	4
22.6	Climate	5
22.7	Noise and Vibration	6
22.8	Population	9
22.9	Human Health	9
22.1	Biodiversity	10
22.11	Water	22
22.12	Land, Soils, Geology and Hydrogeology	23
22.13	Archaeological and Cultural Heritage	26
22.14	Architectural Heritage	30
22.15	Landscape (Townscape) and Visual	37
22.16	Waste and Resources	39
22.17	Material Assets	41
22.18	Risk of Major Accidents and Disasters	43
22.19	Cumulative Impacts & Environmental Interactions	43
22.20	References	44
Chapter 23: Summary of Significant Residual Impacts		
23	Summary of Significant Residual Impacts	1
23.1	References	13