

Greater Dublin **Drainage Project**

Environmental Impact Assessment Report

Volume 3 Part A

Main Report for the Proposed Project

Preface

The structure of the Environmental Impact Assessment Report (EIAR) for the proposed Greater Dublin Drainage Project (the Proposed Project) is outlined in the preface at the start of each Volume of the EIAR for clarity. The Proposed Project comprises; a proposed orbital sewer route from Blanchardstown to the proposed Wastewater Treatment Plant (WwTP) at Clonsagh, the proposed outfall pipeline route (land based section) from the proposed WwTP to the R106 Coast Road, the proposed outfall pipeline route (marine section) from the R106 Coast Road to approximately 1km north-east of Ireland's Eye in the Irish Sea, and a site proposed for the Regional Biosolids Storage Facility (RBSF) at Newtown, Dublin 11.

Volume 1 and Volume 2 provide general information on the overall Proposed Project. Volume 3 addresses all proposed elements of the Proposed Project, with the exception of the RBSF element which is addressed in Volume 4. Volume 5 provides drawings and large format images for the Proposed Project. The volumes and sub-section titles are summarised as follows:

Volume 1: Non-Technical Summary

Volume 1 provides a non-technical summary of the information contained in Volumes 2, 3 and 4.

Volume 2: Introduction

Part A: Report

Volume 2 Part A provides a general introduction, outlines the EIA process, describes the scope of the Proposed Project and presents the consideration of alternatives.

Part B: Appendices

Volume 2 Part B supplies data that is supplemental to the information in Volume 2 Part A.

Volume 3: Proposed Project

Part A: Report

Volume 3 Part A describes the environmental impacts specific to the Proposed Project.

Part B: Appendices

Volume 3 Part B supplies data that is supplemental to the information in Volume 3 Part A.

Volume 4: Regional Biosolids Storage Facility

Part A: Report

Volume 4 Part A describes the environmental impacts specific to the RBSF component of the Proposed Project.

Part B: Appendices

Volume 4 Part B supplies data that is supplemental to the information in Volume 4 Part A and is specific to the RBSF.

Volume 5: Drawings

Part A: Proposed Project

Volume 5 Part A illustrates the information detailed in Volume 2 and Volume 3 and is specific to the Proposed Project.

Part B: Regional Biosolids Storage Facility

Volume 5 Part B illustrates the information detailed in Volume 4 and is specific to the RBSF.

Volume 6: Proposed Project Photomontages

Volume 6 contains the photomontages for the Proposed Project.

Section	Title	Chapter	Page Number
Chapter 6 Population and Human Health: Population			
6.	Population and Human Health: Population	Chapter 6	1
6.1	Introduction	Chapter 6	1
6.2	Methodology	Chapter 6	3
6.2.1	Overview	Chapter 6	3
6.2.2	Desktop Research – Principal Data Sources	Chapter 6	3
6.2.3	Consultation	Chapter 6	4
6.2.4	Definition of Study Area	Chapter 6	5
6.2.5	Impact Assessment Criteria	Chapter 6	6
6.3	Baseline Environment	Chapter 6	7
6.3.1	Location	Chapter 6	7
6.3.2	Population	Chapter 6	8
6.3.3	Household Formation	Chapter 6	9
6.3.4	Community and Residential Settlement	Chapter 6	9
6.3.5	Education	Chapter 6	11
6.3.6	Economic Activity	Chapter 6	11
6.3.7	Tourism, Public Amenities and Community Infrastructure	Chapter 6	16
6.4	Impact of the Proposed Project	Chapter 6	18
6.4.1	Construction Phase	Chapter 6	19
6.4.2	Operational Phase	Chapter 6	19
6.5	Proposed Wastewater Treatment Plant: Construction Phase and Operational Phase Impacts	Chapter 6	20
6.5.1	Population	Chapter 6	20
6.5.2	Community and Residential Settlement	Chapter 6	20
6.5.3	Economic Activity	Chapter 6	21
6.5.4	Tourism, Public Amenities and Community Infrastructure	Chapter 6	22
6.6	Proposed Orbital Sewer Route, Abbotstown Pumping Station and Outfall Pipeline Routes: Construction Phase and Operational Phase Impacts	Chapter 6	23
6.6.1	Population	Chapter 6	23
6.6.2	Community and Residential Settlement	Chapter 6	24
6.6.3	Economic Activity	Chapter 6	25
6.6.4	Tourism, Public Amenities and Community Infrastructure	Chapter 6	27
6.6.5	Community Infrastructure	Chapter 6	29
6.6.6	Important Planning Schemes and Forthcoming Developments	Chapter 6	32
6.7	'Do Nothing' Impact	Chapter 6	33
6.8	Mitigation Measures	Chapter 6	33
6.8.1	Construction Phase	Chapter 6	33
6.8.2	Operational Phase	Chapter 6	35
6.9	Residual Impacts	Chapter 6	35
6.10	Difficulties Encountered in Compiling Required Information	Chapter 6	36
6.11	References	Chapter 6	36
Chapter 7 Population and Human Health: Human Health			
7.	Population and Human Health: Human Health	Chapter 7	1

Section	Title	Chapter	Page Number
7.1	Introduction	Chapter 7	1
7.1.1	Relevant Guidelines	Chapter 7	3
7.2	Methodology	Chapter 7	4
7.2.1	Introduction	Chapter 7	4
7.2.2	Health Impact Assessment and Environmental Impact Assessment	Chapter 7	4
7.2.3	Guidance on the Methodology for Assessing Human Health in Environmental Impact Assessment	Chapter 7	5
7.2.4	Health Protection	Chapter 7	6
7.2.5	Health Improvement	Chapter 7	7
7.2.6	General Amenity	Chapter 7	7
7.3	Baseline Environment	Chapter 7	8
7.3.1	Sensitive Receptors	Chapter 7	8
7.3.2	Community Profile	Chapter 7	10
7.3.3	Tourism	Chapter 7	11
7.4	Consultation	Chapter 7	12
7.5	Literature Review	Chapter 7	18
7.6	Significance of Health Impacts	Chapter 7	19
7.7	Impact of the Proposed Project	Chapter 7	19
7.7.1	Construction Phase	Chapter 7	20
7.7.2	Operational Phase	Chapter 7	31
7.8	Mitigation Measures	Chapter 7	37
7.9	Residual Impacts	Chapter 7	42
7.10	Conclusion	Chapter 7	42
7.11	References	Chapter 7	42
Chapter 8 Marine Water Quality			
8.	Marine Water Quality	Chapter 8	1
8.1	Introduction	Chapter 8	1
8.2	Methodology	Chapter 8	7
8.2.1	Evolution of Water Quality Modelling	Chapter 8	7
8.2.2	Model Development	Chapter 8	7
8.2.3	Hydrodynamic Calibration	Chapter 8	10
8.2.4	Solute Transport Calibration	Chapter 8	12
8.2.5	Model Scenarios	Chapter 8	12
8.2.6	Model Inputs	Chapter 8	13
8.3	Baseline Environment	Chapter 8	19
8.3.1	Hydrography	Chapter 8	19
8.3.2	Hydrographic Monitoring	Chapter 8	21
8.3.3	River Catchments	Chapter 8	21
8.3.4	Water Quality	Chapter 8	22
8.4	Impact of the Proposed Project	Chapter 8	24
8.4.1	Construction – Dredging of the Proposed Outfall Pipeline Route (Marine Section) Trench	Chapter 8	24
8.4.2	Proposed Wastewater Treatment Plant – Operational Phase	Chapter 8	32

Section	Title	Chapter	Page Number
8.5	Mitigation Measures	Chapter 8	77
8.6	Residual Impacts	Chapter 8	77
8.6.1	Environmental Objectives (Surface Waters) Regulations 2009	Chapter 8	77
8.6.2	Water Framework Directive	Chapter 8	77
8.6.3	Bathing Waters Regulations	Chapter 8	77
8.6.4	Shellfish Waters Regulations	Chapter 8	77
8.7	Conclusion	Chapter 8	78
8.8	Difficulties Encountered in Compiling Required Information	Chapter 8	78
8.9	References	Chapter 8	78
Chapter 9 Biodiversity (Marine)			
9.	Biodiversity (Marine)	Chapter 9	1
9.1	Introduction	Chapter 9	2
9.2	Methodology	Chapter 9	4
9.2.1	Desktop Study	Chapter 9	4
9.2.2	Field Surveys	Chapter 9	4
9.2.3	Underwater Noise Modelling	Chapter 9	8
9.2.4	Impact Assessment Methodology	Chapter 9	9
9.2.5	Non-Statutory Consultation	Chapter 9	13
9.3	Baseline Environment	Chapter 9	16
9.3.1	Designated Sites for Nature Conservation	Chapter 9	16
9.3.2	Geomorphology and Seabed Sediments	Chapter 9	17
9.3.3	Sediment Chemistry	Chapter 9	18
9.3.4	Marine Benthos	Chapter 9	22
9.3.5	Water Quality Profiling, Sampling and Plankton	Chapter 9	32
9.3.6	Baldoyle Estuary Walkover	Chapter 9	36
9.3.7	Marine Mammals	Chapter 9	39
9.3.8	Fish and Shellfish	Chapter 9	45
9.3.9	Summary Evaluation (Importance) of Key Marine Ecological Receptors and Habitats	Chapter 9	51
9.4	Impact of the Proposed Project – Construction Phase	Chapter 9	53
9.4.1	Construction of the Microtunnelling Compounds Adjacent to the Baldoyle Estuary and Construction Works Upstream of Marine Environment with Potential for Contaminated Runoff	Chapter 9	54
9.4.2	Tunnelling Underneath Baldoyle Bay and Tunnelling Compounds	Chapter 9	55
9.4.3	Dredging of Proposed Outfall Pipeline Route (Marine Section)	Chapter 9	63
9.4.4	Piling for Tunnel Interface and/or Fibre Optic Cable	Chapter 9	69
9.4.5	Installation of the Proposed Marine Diffuser	Chapter 9	70
9.5	Impact of the Proposed Project – Operational Phase	Chapter 9	72
9.6	'Do Nothing' Impact	Chapter 9	78
9.7	Mitigation Measures	Chapter 9	78
9.7.1	Construction Phase	Chapter 9	78
9.7.2	Operational Phase	Chapter 9	82
9.8	Residual Impacts	Chapter 9	82

Section	Title	Chapter	Page Number
9.9	References	Chapter 9	83
Chapter 10 Biodiversity (Marine Ornithology)			
10.	Biodiversity (Marine Ornithology)	Chapter 10	1
10.1	Introduction	Chapter 10	1
10.2	Methodology	Chapter 10	3
10.2.1	Introduction	Chapter 10	3
10.2.2	Estuarine Ornithological Survey	Chapter 10	3
10.2.3	Coastal and Marine Vantage Point Surveys	Chapter 10	4
10.2.4	Boat Based Assessment of Auk Fledging	Chapter 10	4
10.2.5	Defining Ecological Importance	Chapter 10	4
10.2.6	Defining Ecological Impacts	Chapter 10	5
10.2.7	Determination of Significance	Chapter 10	6
10.2.8	Non-Statutory Consultation	Chapter 10	7
10.3	Baseline Environment	Chapter 10	8
10.3.1	Wintering Birds and the Baldoyle Bay Special Protection Area	Chapter 10	8
10.3.2	Adjacent Special Protection Areas and Designated Sites	Chapter 10	9
10.3.3	Estuarine Ornithological Baseline	Chapter 10	9
10.3.4	Marine Birds and Related Special Protection Areas in the Vicinity of Dublin Bay	Chapter 10	21
10.3.5	Marine Birds Ornithological Baseline	Chapter 10	22
10.3.6	Ecological Value of Estuarine and Marine Birds	Chapter 10	29
10.4	Parameters for Assessment	Chapter 10	31
10.4.1	Overview of the Proposed Project Works and Magnitude of Potential Impacts	Chapter 10	31
10.4.2	Parameters Included in Assessment (Construction Phase)	Chapter 10	31
10.4.3	Parameters Excluded from Assessment (Construction Phase)	Chapter 10	33
10.4.4	Parameters Included in Assessment (Operational Phase)	Chapter 10	34
10.4.5	Parameters Excluded from Assessment (Operational Phase)	Chapter 10	35
10.5	Potential Impacts on Ornithological Receptors	Chapter 10	35
10.5.1	Disturbance and/or Displacement	Chapter 10	35
10.5.2	Indirect Impacts	Chapter 10	37
10.6	Assessment of Significance	Chapter 10	37
10.6.1	Construction Phase	Chapter 10	37
10.6.2	Operational Phase	Chapter 10	49
10.7	'Do Nothing' Impact	Chapter 10	49
10.8	Cumulative Impacts	Chapter 10	49
10.9	Mitigation Measures	Chapter 10	49
10.9.1	Construction Phase – Estuarine Ornithology	Chapter 10	49
10.9.2	Construction Phase – Marine Ornithology	Chapter 10	50
10.9.3	Operational Phase – Estuarine Ornithology	Chapter 10	51
10.9.4	Operational Phase – Marine Ornithology	Chapter 10	52
10.10	Residual Impacts	Chapter 10	52
10.10.1	Estuarine Ornithology	Chapter 10	52

Section	Title	Chapter	Page Number
10.10.2	Marine Ornithology	Chapter 10	52
10.11	References	Chapter 10	52
Chapter 11 Biodiversity (Terrestrial and Freshwater Aquatic)			
11.	Biodiversity (Terrestrial and Freshwater Aquatic)	Chapter 11	4
11.1	Introduction	Chapter 11	5
11.1.1	Chapter Structure	Chapter 11	7
11.1.2	Zone of Influence	Chapter 11	8
11.2	Methodology – Terrestrial and Freshwater Aquatic	Chapter 11	8
11.2.1	Desktop Data Sources and Consultation	Chapter 11	8
11.2.2	Local Planning Policy	Chapter 11	10
11.2.3	Field Survey	Chapter 11	12
11.2.4	Valuation and Impact Assessment	Chapter 11	20
11.2.5	Compliance with the Water Framework Directive	Chapter 11	23
11.3	Baseline Environment – Terrestrial Flora and Fauna	Chapter 11	24
11.3.1	Designated Sites	Chapter 11	24
11.3.2	Terrestrial Habitats	Chapter 11	26
11.3.3	Bats	Chapter 11	31
11.3.4	Mammals (Other than Bats)	Chapter 11	38
11.3.5	Farmland Birds	Chapter 11	40
11.3.6	Other Species Groups	Chapter 11	41
11.3.7	Summary Valuation of Terrestrial Biodiversity Features	Chapter 11	42
11.4	Impact of the Proposed Project on Terrestrial Biodiversity – Construction Phase	Chapter 11	42
11.4.1	Designated Sites	Chapter 11	45
11.4.2	Terrestrial Habitats	Chapter 11	46
11.4.3	Bats	Chapter 11	48
11.4.4	Mammals (Other than Bats)	Chapter 11	50
11.4.5	Farmland Birds	Chapter 11	51
11.4.6	Other Species Groups	Chapter 11	51
11.5	Impact of the Proposed Project on Terrestrial Biodiversity – Operational Phase	Chapter 11	52
11.5.1	Designated Sites	Chapter 11	54
11.5.2	Terrestrial Habitats	Chapter 11	55
11.5.3	Bats	Chapter 11	55
11.5.4	Mammals (Other than Bats)	Chapter 11	55
11.5.5	Farmland Birds	Chapter 11	55
11.5.6	Other Species Groups	Chapter 11	56
11.6	'Do Nothing' Impact on Terrestrial Biodiversity	Chapter 11	56
11.7	Mitigation Measures – Terrestrial Biodiversity	Chapter 11	56
11.7.1	Overarching Measures	Chapter 11	56
11.7.2	Designated Sites (All Proposed Projects Elements)	Chapter 11	56
11.7.3	Terrestrial Habitats	Chapter 11	56
11.7.4	Bats	Chapter 11	57

Section	Title	Chapter	Page Number
11.7.5	Mammals (Other than Bats)	Chapter 11	60
11.7.6	Farmland Birds	Chapter 11	60
11.7.7	Other Species Groups	Chapter 11	61
11.8	Residual Impacts – Terrestrial Biodiversity	Chapter 11	61
11.8.1	Difficulties Encountered in Compiling Required Information	Chapter 11	63
11.9	Baseline Environment – Freshwater Aquatic Biodiversity	Chapter 11	63
11.9.1	Field Survey Results	Chapter 11	67
11.10	Impact of the Proposed Project on Freshwater Aquatic Biodiversity – Construction Phase	Chapter 11	77
11.11	Impact of the Proposed Project on Freshwater Aquatic Biodiversity – Operational Phase	Chapter 11	81
11.12	Summary of Potential Impacts in the Absence of Mitigation Measures	Chapter 11	82
11.13	‘Do Nothing’ Impact on Freshwater Aquatic Biodiversity	Chapter 11	84
11.14	Mitigation Measures – Freshwater Aquatic Biodiversity	Chapter 11	84
11.14.1	Construction Phase	Chapter 11	84
11.14.2	Operational Phase	Chapter 11	91
11.15	Residual Impacts – Freshwater Aquatic Biodiversity	Chapter 11	91
11.16	References	Chapter 11	93
Chapter 12 Landscape and Visual			
12.	Landscape and Visual	Chapter 12	
12.1	Introduction	Chapter 12	
12.2	Methodology	Chapter 12	
12.2.1	Relevant Guidance Documents	Chapter 12	
12.2.2	Desk Study and Consultation	Chapter 12	
12.2.3	Study Area	Chapter 12	
12.2.4	Field Studies	Chapter 12	
12.2.5	Assessment Criteria	Chapter 12	
12.3	Baseline Environment	Chapter 12	
12.3.1	Landscape Baseline	Chapter 12	
12.3.2	Landscape Character	Chapter 12	
12.3.3	Landscape Value	Chapter 12	
12.3.4	Landscape Policy Context	Chapter 12	
12.3.5	Visual Baseline	Chapter 12	
12.3.6	Viewshed Reference Points	Chapter 12	
12.4	Impact of the Proposed Project – Construction Phase	Chapter 12	
12.4.1	Landscape Sensitivity	Chapter 12	
12.4.2	Nature of Construction Phase Landscape Impacts	Chapter 12	
12.4.3	Significance of Construction Phase Landscape Effects	Chapter 12	
12.4.4	Nature of Construction Phase Visual Impacts	Chapter 12	
12.4.5	Significance of Construction Phase Visual Effects	Chapter 12	
12.5	Impact of the Proposed Project – Operational Phase	Chapter 12	
12.5.1	Nature of Operational Phase Landscape Effects	Chapter 12	
12.5.2	Significance of Operational Phase Landscape Impacts	Chapter 12	

Section	Title	Chapter	Page Number
12.5.3	Nature of Operational Phase Visual Impacts (Pre-Mitigation Establishment)	Chapter 12	40
12.6	'Do Nothing' Impact	Chapter 12	43
12.7	Mitigation Measures	Chapter 12	43
12.8	Residual Impacts	Chapter 12	46
12.9	Difficulties Encountered in Compiling Required Information	Chapter 12	48
12.10	References	Chapter 12	48
Chapter 13 Traffic and Transport			
13.	Traffic and Transport	Chapter 13	1
13.1	Introduction	Chapter 13	1
13.2	Methodology	Chapter 13	4
13.2.1	Scoping Process	Chapter 13	4
13.2.3	Methodology	Chapter 13	5
13.2.4	Phasing of the Proposed Project	Chapter 13	6
13.2.5	Further Road Improvements	Chapter 13	9
13.3	Baseline Environment	Chapter 13	9
13.3.1	Traffic Surveys	Chapter 13	9
13.3.2	Description of Existing Junctions	Chapter 13	10
13.3.3	Description of Proposed Access and Egress at the Proposed Wastewater Treatment Plant	Chapter 13	11
13.3.4	Description of Access to the Proposed Abbotstown Pumping Station	Chapter 13	11
13.4	Do Nothing Impact	Chapter 13	11
13.5	Construction Phase Traffic Assessment	Chapter 13	11
13.5.1	Trip Generation for the Construction Phase	Chapter 13	12
13.5.2	Trip Distribution for Construction	Chapter 13	14
13.5.3	Seasonal Adjustment	Chapter 13	17
13.5.4	Traffic Growth	Chapter 13	17
13.5.5	Construction Phase Assessment	Chapter 13	18
13.6	Impact of the Proposed Project – Construction Phase	Chapter 13	18
13.6.1	Conclusion	Chapter 13	26
13.7	Operational Phase Traffic Assessment	Chapter 13	27
13.7.1	Trip Generation for Operational Phase	Chapter 13	27
13.7.2	Trip Distribution for Operational Phase	Chapter 13	27
13.7.3	Seasonal Adjustment	Chapter 13	28
13.7.4	Traffic Growth	Chapter 13	28
13.7.5	Operational Phase Assessment	Chapter 13	28
13.8	Impact of the Proposed Project – Operational Phase	Chapter 13	29
13.8.1	Conclusion	Chapter 13	32
13.9	Do Nothing Scenario	Chapter 13	32
13.10	Assessment of the Significance of Traffic Impacts	Chapter 13	33
13.10.1	Construction Phase	Chapter 13	33
13.10.2	Operational Phase	Chapter 13	34
13.11	Mitigation Measures	Chapter 13	35

Section	Title	Chapter	Page Number
13.11.1	Construction Phase Mitigation Measures	Chapter 13	35
13.11.2	Operational Phase Mitigation Measures	Chapter 13	35
13.11.3	Other Road Issues	Chapter 13	36
13.12	Residual Impacts	Chapter 13	40
13.12.1	Conclusion	Chapter 13	40
13.13	Difficulties Encountered in Compiling Information	Chapter 13	41
13.14	References	Chapter 13	41
Chapter 14 Air Quality, Odour and Climate			
14.	Air Quality, Odour and Climate	Chapter 14	1
14.1	Introduction	Chapter 14	1
14.2	Methodology	Chapter 14	3
14.2.1	Study Areas	Chapter 14	3
14.2.2	Impact Assessment Methodology	Chapter 14	4
14.2.3	Impact Assessment Criteria	Chapter 14	9
14.3	Baseline Environment	Chapter 14	12
14.3.1	Meteorological Conditions	Chapter 14	12
14.3.2	Influences on Ambient Air Quality	Chapter 14	13
14.3.3	Existing Ambient Air Quality	Chapter 14	14
14.4	Air Quality Impact Identification	Chapter 14	20
14.4.1	Existing Activities	Chapter 14	20
14.4.2	Potential Construction Phase Impacts	Chapter 14	20
14.4.3	Potential Operational Phase Impacts	Chapter 14	21
14.4.4	'Do Nothing' Impact	Chapter 14	26
14.5	Impact of the Proposed Project – Construction Phase	Chapter 14	26
14.5.1	Proposed Abbotstown Pumping Station Construction Phase Impact	Chapter 14	26
14.5.2	Proposed Orbital Sewer Route Construction Phase Impact	Chapter 14	28
14.5.3	Proposed Outfall Pipeline Route (Land Based Section and Marine Section) Construction Phase Impact	Chapter 14	30
14.5.4	Proposed Wastewater Treatment Plant Construction Phase Impact	Chapter 14	33
14.5.5	Construction Phase Climate Impact	Chapter 14	35
14.6	Impact of the Proposed Project – Operational Phase	Chapter 14	36
14.6.1	Dispersion Modelling Impact Assessment	Chapter 14	36
14.6.2	Dispersion Modelling Predictions: Proposed Abbotstown Pumping Station	Chapter 14	44
14.6.3	Operational Phase Traffic Impacts	Chapter 14	58
14.6.4	Sensitivity Analyses	Chapter 14	59
14.6.5	Climate Impact Assessment	Chapter 14	61
14.7	'Do Nothing' Impact	Chapter 14	61
14.8	Mitigation Measures and Monitoring	Chapter 14	61
14.9	Residual Impacts	Chapter 14	64
14.10	Difficulties Encountered in Compiling Required Information	Chapter 14	64
14.11	References	Chapter 14	64

Section	Title	Chapter	Page Number
Chapter 15 Noise and Vibration			
15.	Noise and Vibration	Chapter 15	1
15.1	Introduction	Chapter 15	1
15.2	Methodology	Chapter 15	3
15.2.1	Study Area	Chapter 15	3
15.2.2	Desktop Survey	Chapter 15	3
15.2.3	Field Surveys	Chapter 15	3
15.2.4	Impact Assessment Methodology	Chapter 15	3
15.2.5	Noise Assessment Criteria	Chapter 15	5
15.2.6	Vibration Assessment Criteria	Chapter 15	10
15.2.7	Sources of Noise and Vibration	Chapter 15	12
15.3	Baseline Environment	Chapter 15	14
15.3.1	Introduction	Chapter 15	14
15.3.2	Existing Noise Climate	Chapter 15	15
15.3.3	Existing Vibration Climate	Chapter 15	18
15.4	Impact of the Proposed Project – Construction Phase	Chapter 15	19
15.4.1	Introduction	Chapter 15	19
15.4.2	Construction Phase Noise	Chapter 15	22
15.4.3	Construction Phase Traffic Impacts	Chapter 15	50
15.4.4	Vibration Impacts	Chapter 15	53
15.5	Impact of the Proposed Project – Operational Phase	Chapter 15	58
15.5.1	Introduction	Chapter 15	58
15.5.2	Proposed Wastewater Treatment Plant	Chapter 15	59
15.5.3	Proposed Abbotstown Pumping Station	Chapter 15	63
15.5.4	Proposed Odour Control Unit at Dubber	Chapter 15	65
15.5.5	Traffic Impacts	Chapter 15	68
15.6	'Do Nothing' Impact	Chapter 15	69
15.7	Mitigation Measures	Chapter 15	69
15.7.1	Construction Phase Mitigation Measures	Chapter 15	69
15.7.2	Operational Phase Mitigation Measures	Chapter 15	73
15.8	Residual Impacts	Chapter 15	73
15.8.1	Construction Phase	Chapter 15	73
15.8.2	Operational Phase	Chapter 15	74
15.9	Difficulties Encountered in Compiling Required Information	Chapter 15	74
15.10	References	Chapter 15	74
Chapter 16 Archaeological, Architectural and Cultural Heritage			
16.	Archaeological, Architectural and Cultural Heritage	Chapter 16	1
16.1	Introduction	Chapter 16	2
16.1.1	Consultation	Chapter 16	4
16.2	Methodology	Chapter 16	4
16.2.1	Background	Chapter 16	5

Section	Title	Chapter	Page Number
16.2.2	Paper Survey	Chapter 16	5
16.2.3	Field Inspection	Chapter 16	8
16.2.4	Geophysical Survey	Chapter 16	8
16.2.5	Archaeological Testing	Chapter 16	8
16.2.6	Underwater Archaeological Assessment	Chapter 16	9
16.2.7	Definitions	Chapter 16	9
16.3	Baseline Environment	Chapter 16	9
16.3.1	Archaeological and Historic Background	Chapter 16	9
16.3.2	Recorded Archaeological Heritage Sites	Chapter 16	16
16.3.3	Recorded Shipwrecks	Chapter 16	19
16.3.4	Stray Archaeological Finds	Chapter 16	21
16.3.5	Recorded Built Heritage	Chapter 16	21
16.3.6	Areas of Archaeological Potential	Chapter 16	23
16.3.7	Designed Landscapes	Chapter 16	24
16.3.8	Unrecorded Recorded Built Heritage	Chapter 16	26
16.3.9	Townlands	Chapter 16	27
16.3.10	Previous Archaeological Fieldwork Carried Out Within the Study Area	Chapter 16	29
16.3.11	Summary of Geophysical Survey at Proposed Wastewater Treatment Plant	Chapter 16	32
16.3.12	Summary of Geophysical Survey Within the Proposed Orbital Sewer Route, Outfall Pipeline Route (Land Based Section) and Abbotstown Pumping Station	Chapter 16	33
16.3.13	Summary of Archaeological Testing at the Proposed Wastewater Treatment Plant	Chapter 16	34
16.3.14	Summary of Intertidal Survey	Chapter 16	34
16.3.15	Summary of Marine Archaeological Geophysical Survey	Chapter 16	35
16.3.16	Construction Phase	Chapter 16	36
16.4	Appraisal Method Used for Assessment of Impacts	Chapter 16	36
16.5	Impact of the Proposed Project	Chapter 16	37
16.5.1	Construction Phase	Chapter 16	37
16.5.2	Operational Phase	Chapter 16	46
16.6	Mitigation Measures	Chapter 16	49
16.6.1	Construction Phase	Chapter 16	49
16.6.2	Operational Phase	Chapter 16	51
16.7	Residual Impacts	Chapter 16	52
16.8	Cumulative Impact and Impact Interrelations	Chapter 16	52
16.9	Difficulties Encountered in Compiling Required Information	Chapter 16	52
16.10	References	Chapter 16	52
Chapter 17 Hydrology and Hydrogeology			
17.	Hydrology and Hydrogeology	Chapter 17	1
17.1	Introduction	Chapter 17	2
17.2	Methodology	Chapter 17	3
17.2.1	Desktop Study	Chapter 17	5
17.2.2	Legislation	Chapter 17	6
17.2.3	Stakeholder Consultation	Chapter 17	6

Section	Title	Chapter	Page Number
17.2.4	Groundwater Supplies – Surveys and Questionnaires	Chapter 17	6
17.3	Attributes	Chapter 17	7
17.3.1	Hydrological Attributes	Chapter 17	7
17.3.2	Hydrogeological Attributes	Chapter 17	7
17.4	Baseline Environment	Chapter 17	11
17.4.1	Study Area	Chapter 17	11
17.4.2	General Hydrology	Chapter 17	11
17.4.3	Rivers	Chapter 17	12
17.4.4	Coastal and Estuary Areas	Chapter 17	13
17.4.5	Flood Risk	Chapter 17	13
17.4.6	General Hydrogeology	Chapter 17	15
17.4.7	Aquifer Classification	Chapter 17	15
17.4.8	Aquifer Vulnerability	Chapter 17	15
17.4.9	Groundwater Supplies	Chapter 17	16
17.4.10	Portmarnock Peninsula Irrigation Wells	Chapter 17	17
17.4.11	Groundwater Quality	Chapter 17	18
17.4.12	Groundwater Flow Direction and Water Levels	Chapter 17	18
17.5	Embedded Mitigation	Chapter 17	20
17.5.1	Surface Water Drainage	Chapter 17	20
17.5.2	Prevention of Pollution	Chapter 17	20
17.5.3	Culverting	Chapter 17	20
17.5.4	Proposed Outfall Pipeline Route (Marine Section) – Microtunnelling	Chapter 17	21
17.6	Predicted Impacts	Chapter 17	21
17.6.1	Construction Phase Impacts – Hydrology	Chapter 17	22
17.6.2	Construction Phase Impacts – Hydrogeology	Chapter 17	24
17.6.3	Operational Phase Impacts – Hydrology	Chapter 17	25
17.6.4	Operational Phase Impacts – Hydrogeology	Chapter 17	26
17.7	Mitigation Measures	Chapter 17	26
17.7.1	Mitigation – Hydrology Construction Phase	Chapter 17	27
17.7.2	Mitigation – Hydrology Operational Phase	Chapter 17	27
17.7.3	Mitigation – Hydrogeology Construction Phase	Chapter 17	28
17.7.4	Mitigation – Hydrogeology Operational Phase	Chapter 17	28
17.8	Residual Impacts	Chapter 17	28
17.9	Difficulties Encountered in Compiling Information	Chapter 17	31
17.10	References	Chapter 17	31
Chapter 18 Soils and Geology			
18.	Soils and Geology	Chapter 18	1
18.1	Introduction	Chapter 18	1
18.2	Methodology	Chapter 18	3
18.2.1	Introduction	Chapter 18	3
18.2.2	Guidelines	Chapter 18	3

Section	Title	Chapter	Page Number
18.2.3	Application of Methodology	Chapter 18	3
18.2.4	Study Area	Chapter 18	4
18.2.5	Baseline Data Collection	Chapter 18	5
18.2.6	Technical Limitations	Chapter 18	9
18.3	Baseline Environment	Chapter 18	9
18.3.1	Introduction	Chapter 18	9
18.3.2	Regional Overview	Chapter 18	10
18.3.3	Site Specific Information	Chapter 18	11
18.3.4	Conceptual Site Model	Chapter 18	23
18.4	Characteristics of the Proposed Project	Chapter 18	25
18.4.1	Activities/Environment Matrix	Chapter 18	25
18.5	Impact of the Proposed Project – Construction Phase	Chapter 18	25
18.5.1	Proposed Abbotstown Pumping Station and the Proposed Wastewater Treatment Plant	Chapter 18	26
18.5.2	Construction Phase Impacts for the Proposed Pipeline Routes (Terrestrial)	Chapter 18	28
18.5.3	Proposed Outfall Pipeline Route (Marine Section) and Microtunnelled and Dredge Section	Chapter 18	30
18.6	Impact of the Proposed Project – Operational Phase	Chapter 18	33
18.7	Mitigation Measures	Chapter 18	33
18.7.1	Introduction	Chapter 18	33
18.7.2	Construction Phase	Chapter 18	33
18.7.3	Operational Phase	Chapter 18	38
18.7.4	Summary of Residual Impacts	Chapter 18	38
18.8	Monitoring	Chapter 18	41
18.9	Reinstatement	Chapter 18	41
18.10	Difficulties Encountered in Compiling Required Information	Chapter 18	41
18.11	References	Chapter 18	41
Chapter 19 Agronomy			
19.	Agronomy	Chapter 19	1
19.1	Introduction	Chapter 19	1
19.1.1	Study Area	Chapter 19	3
19.2	Methodology	Chapter 19	4
19.2.1	Desktop Study	Chapter 19	5
19.2.2	Farm Visits	Chapter 19	5
19.2.3	Impact Assessment Methodology	Chapter 19	6
19.2.4	Impact Assessment Criteria	Chapter 19	7
19.3	Baseline Environment	Chapter 19	9
19.3.1	Baseline Agricultural Environment	Chapter 19	9
19.3.2	Soils Within the Study Area	Chapter 19	10
19.4	Potential Impacts of the Proposed Project	Chapter 19	10
19.4.1	Construction Phase	Chapter 19	11
19.4.2	Operational Phase	Chapter 19	13
19.4.3	Scale of Predicted Impact Assessment	Chapter 19	14

Section	Title	Chapter	Page Number
19.4.4	Assessment of Impacts on Agriculture at a National Level	Chapter 19	15
19.4.5	Assessment of Impacts on Agriculture at a Local Level	Chapter 19	15
19.4.6	Assessment of Impacts on Agriculture at an Individual Farm Level	Chapter 19	16
19.5	'Do Nothing' Impact	Chapter 19	17
19.6	Mitigation Measures	Chapter 19	17
19.7	Residual Impacts	Chapter 19	20
19.7.1	Residual Impacts at a National and Local Level	Chapter 19	20
19.7.2	Residual Impacts at Individual Farm Level at the Proposed Wastewater Treatment Plant	Chapter 19	20
19.7.3	Residual Impacts at Individual Farm Level along the Proposed Orbital Sewer Route, Abbotstown Pumping Station, North Fringe Sewer Diversion Sewer and Outfall Pipeline Route (Land Based Section)	Chapter 19	21
19.8	Difficulties Encountered in Compiling Required Information	Chapter 19	21
19.9	References	Chapter 19	21
Chapter 20 Waste			
20.	Waste	Chapter 20	1
20.1	Introduction	Chapter 20	2
20.2	Methodology	Chapter 20	4
20.2.1	Legislation, Policy and Best Practice Guidelines	Chapter 20	4
20.2.2	Establishing the Baseline Environment and the Proposed Project Description	Chapter 20	5
20.2.3	Impact Assessment Criteria	Chapter 20	5
20.2.4	Criteria for Selection of Mitigation Measures	Chapter 20	7
20.3	Baseline Environment	Chapter 20	9
20.3.1	Current Waste Disposal/Recovery Routes	Chapter 20	9
20.4	Impact of the Proposed Project – Construction Phase	Chapter 20	12
20.4.1	Sources and Types of Waste	Chapter 20	12
20.4.2	General Construction Waste	Chapter 20	13
20.4.3	Summary of Construction Phase Impacts	Chapter 20	16
20.4.4	Predicted Impacts	Chapter 20	17
20.5	Impact of the Proposed Project – Operational Phase	Chapter 20	18
20.5.1	Sources of Waste	Chapter 20	18
20.5.2	Predicted Impacts	Chapter 20	19
20.6	Mitigation Measures	Chapter 20	19
20.6.1	Construction Phase Mitigation Measures	Chapter 20	20
20.6.2	Operational Phase Mitigation Measures	Chapter 20	23
20.7	Residual Impacts	Chapter 20	23
20.8	Difficulties Encountered in Compiling Required Information	Chapter 20	24
20.9	References	Chapter 20	24
Chapter 21 Material Assets			
21.	Material Assets	Chapter 21	1
21.1	Introduction	Chapter 21	2
21.2	Major Utilities and Natural Features	Chapter 21	4
21.2.1	Introduction	Chapter 21	4

Section	Title	Chapter	Page Number
21.2.2	Methodology	Chapter 21	4
21.2.3	Impact Assessment Criteria	Chapter 21	5
21.2.4	Baseline Environment	Chapter 21	8
21.2.5	Predicted Potential Impacts	Chapter 21	41
21.2.6	Mitigation Measures	Chapter 21	15
21.2.7	Residual Impacts	Chapter 21	19
21.3	Raw Materials	Chapter 21	19
21.3.1	Introduction	Chapter 21	19
21.3.2	Methodology	Chapter 21	20
21.3.3	Baseline Environment	Chapter 21	20
21.3.4	Predicted Potential Impacts	Chapter 21	21
21.3.5	Mitigation Measures	Chapter 21	22
21.3.6	Residual Impacts	Chapter 21	22
21.4	Difficulties Encountered in Compiling Required Information	Chapter 21	22
21.5	References	Chapter 21	22
Chapter 22 Risk of Major Accidents and/or Disasters			
22.	Risk of Major Accidents and/or Disasters	Chapter 22	1
22.1	Introduction	Chapter 22	1
22.2	Risk of Major Accidents and/or Disasters	Chapter 22	3
22.3	Methodology	Chapter 22	3
22.3.1	Scope and Context	Chapter 22	3
22.3.2	Guidelines and Reference Material	Chapter 22	4
22.3.3	Risk Assessment Methodology	Chapter 22	5
22.4	Predicted Impacts	Chapter 22	7
22.5	Mitigation Measures	Chapter 22	11
22.5.1	Mitigation Measures Embedded in the Proposed Project Design	Chapter 22	12
22.5.2	Traffic Management Plans	Chapter 22	13
22.5.3	Environmental Incident Response Plan	Chapter 22	13
22.5.4	Odour Management Plan	Chapter 22	14
22.5.5	Surface Water Management Plan	Chapter 22	14
22.5.6	Vessel Management Plan	Chapter 22	14
22.6	Residual Impacts	Chapter 22	14
22.7	Monitoring	Chapter 22	14
22.8	Conclusion	Chapter 22	14
22.9	References	Chapter 22	15
Chapter 23 Cumulative Impacts and Environmental Interactions			
23.	Cumulative Impacts and Environmental Interactions	Chapter 23	1
23.1	Introduction	Chapter 23	1
23.2	Methodology and Impact Assessment	Chapter 23	1
23.2.1	Stage 1 – Identification of 'Other Developments'	Chapter 23	2
23.2.2	Stage 2 – Shortlisting	Chapter 23	2

Section	Title	Chapter	Page Number
23.2.3	Stage 3 – Information Gathering	Chapter 23	8
23.2.4	Stage 4 – Assessment	Chapter 23	8
23.3	Summary of Cumulative Impacts	Chapter 23	20
23.4	Mitigation Measures	Chapter 23	20
23.5	Residual Impacts	Chapter 23	20
23.6	Environmental Interactions	Chapter 23	20
23.7	Difficulties Encountered in Compiling Required Information	Chapter 23	21
23.8	References	Chapter 23	27
Chapter 24 Summary of Mitigation Measures			
24.	Summary of Mitigation Measures	Chapter 24	1
24.1	Introduction	Chapter 24	1
24.2	Mitigation Schedules	Chapter 24	1
24.3	General Mitigation Requirements	Chapter 24	2
24.4	Population and Human Health: Population	Chapter 24	2
24.5	Population and Human Health: Human Health	Chapter 24	5
24.6	Marine Water Quality	Chapter 24	10
24.7	Biodiversity (Marine)	Chapter 24	11
24.8	Biodiversity (Marine Ornithology)	Chapter 24	15
24.9	Biodiversity (Terrestrial and Freshwater Aquatic)	Chapter 24	17
24.10	Landscape and Visual	Chapter 24	30
24.11	Traffic and Transport	Chapter 24	33
24.12	Air Quality, Odour and Climate	Chapter 24	37
24.13	Noise and Vibration	Chapter 24	40
24.14	Archaeological, Architectural and Cultural Heritage	Chapter 24	45
24.15	Hydrology and Hydrogeology	Chapter 24	47
24.16	Soils and Geology	Chapter 24	50
24.17	Agronomy	Chapter 24	52
24.18	Waste	Chapter 24	56
24.19	Material Assets	Chapter 24	60
24.20	Difficulties Encountered in Compiling Required Information	Chapter 24	64
Chapter 25 Summary of Residual Impacts			
25.	Summary of Residual Impacts	Chapter 25	1

Page left intentionally blank

Glossary of Terms	
AA	Appropriate Assessment
AAP	Areas of Archaeological Potential
ABP	An Bord Pleanála
ACA	Architectural Conservation Area
ADCO	Archaeological Dive Company
ADWF	Average Dry Weather Flow
AEP	Annual Exceedance Probability
AER	Annual Environmental Reports
AFC	Athletic Football Club
AGI	Above Ground Installation
AGS	Aerobic Granular Sludge
AH	Archaeological Heritage
ALO	Agricultural Liaison Officer
AmmN	Ammoniacal Nitrogen
ASA	Alternative Site Assessment
ASP	Activated Sludge Plant
B&B	Bed and Breakfast
BGS	British Geological Survey
BH	Built Heritage
BH	Boreholes
BH	Built Heritage
BIM	Bord Iascaigh Mhara
BOD	Biochemical Oxygen Demand
BPS	Basic Payment Scheme
BRT	Bus Rapid Transport
BSL	Below Seabed Level

Glossary of Terms	
BTO	British Trust for Ornithology
C&D	Construction and Demolition
CDP	County Development Plan
CEMP	Construction Environmental Management Plan
CFRAMS	Catchment Flood Risk Assessment and Management Study
CFU	Colony Forming Units
CGS	County Geological Sites
CHP	Combined Heat and Power
CIEEM	Chartered Institute of Ecology and Environmental Management
CIFA	Chartered Institute for Archaeologists
CIRIA	Construction Industry Research and Information Association
CLO	Community Liaison Officer
COD	Chemical Oxygen Demand
COLI	Escherichia Coliforms
cSAC	Candidate Special Area of Conservation
CSM	Conceptual Site Model
CSO	Central Statistics Office
CSOs	Combined Sewer Overflows
CTMP	Construction Traffic Management Plan
DAU	Development Applications Unit
DB	Design Build
DBO	Design, Build, Operate
DCC	Dublin City Council
DIN	Dissolved Inorganic Nitrogen
DL	Designed Landscape
DLRCC	Dún Laoghaire-Rathdown County Council

Glossary of Terms	
DoAFM	Department of Agriculture, Food and the Marine
DoAHG	Department of Arts, Heritage and the Gaeltacht
DoAHGI	Department of Arts, Heritage, Gaeltacht and Islands
DoCCAIE	Department of Communications, Climate Action and Environment
DoCHG	Department of Culture, Heritage and the Gaeltacht
DoECLG	Department of the Environment, Communications and Local Government
DoEHLG	Department of Environment, Heritage and Local Government
DoHPLG	Department of Housing, Planning and Local Government
DOS	Degree of Saturation
DRA	Dublin Regional Authority
DWF	Dry Weather Flow
EBZ	Ecological Buffer Zones
EC	European Communities
ED	Electoral Division
EEC	European Economic Community
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIRP	Environmental Incident Response Plan
EIS	Environmental Impact Statement
EMWRO	Eastern Midlands Waste Regional Office
EnPi	Energy Performance Indicator
EPA	Environmental Protection Agency
ERBD	Eastern River Basin District
ERP	Emergency Response Plan
ESB	Electricity Supply Board
EU	European Union

Glossary of Terms	
FAI	Football Association of Ireland
FCC	Fingal County Council
FEM FRAMS	<i>Fingal East Meath Flood Risk Assessment and Management Study</i>
FEM-FRMP	<i>Fingal East Meath Flood Risk Management Plan</i>
FFT	Flow to Full Treatment
FLO	Fisheries Liaison Officer
FRA	Flood Risk Assessment
FRM	<i>Flood Risk Management</i>
FSAI	Food Safety Authority of Ireland
FWR	Foundation for Water Research
G	Domestic per Capita Design Flow
GAA	Gaelic Athletic Association
GB	Greenbelt
GCS	Grand Canal Sewer
GDA	Greater Dublin Area
GDD	Greater Dublin Drainage
GDSDS	Greater Dublin Strategic Drainage Study
GFA	Gross Floor Area
GHA	Geological Heritage Area
GHG	Greenhouse Gas
GI	Ground Investigation
GIS	Geographic Information System
GNI	Gas Networks Ireland
GSI	Geological Survey of Ireland
ha	hectare
HGV	Heavy Goods Vehicle

Glossary of Terms	
HSE	Health Services Executive
HT	High Technology
IAA	Irish Aviation Authority
IAC	Irish Archaeological Consultancy
IEL	Industrial Emissions Licenses
IEMA	Institute of Environmental Management and Assessment
IFAS	Integrated Fixed Film Activated Sludge Processes
IFI	Inland Fisheries Ireland
Fdooc	Institute of Geologists of Ireland
IPPC	Integrated Pollution Prevention Control
IRFU	Irish Rugby Federation Union
ISA	Irish Sailing Association
IWDG	Irish Whale and Dolphin Group
JTC	Junction Turning Count
KCC	Kildare County Council
KCI	Potassium Chloride
kg	Kilograms
kV	Kilovolts
L	Locally Important
LA	Local Authority
LAP	Local Area Plan
LAT	Lowest Astronomical Tide
LBAP	Local Biodiversity Area Plan
LGV	Light Goods Vehicles
LIA	Landscape Impact Assessment
LLLD	Long Length Large Diameter

Glossary of Terms	
LLO	Landowner Liaison Officer
M&V	Measurement and Verification
MAND's	Major Accidents and Natural Disasters
MASW	Multichannel Analysis of Surface Waves
MASW	Multi-Channel Analysis of Surface Waves
Mbgl	Metres below ground level
MCC	Meath County Council
mOD	Metres above Ordnance Datum
MRP	Molybdate Reactive Phosphorus
MS	Method Statement
N	Ammonia
NAC	National Aquatic Centre
NCT	National Car Test
NDDS	North Dublin Drainage Scheme
NFS	North Fringe Sewer
NIAH	National Inventory of Architectural Heritage
NIEA	Northern Ireland Environment Agency
NIS	Natura Impact Statement
NMI	National Museum of Ireland
NMS	National Monument Service
NPF	National Planning Framework
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
NSC	National Sports Campus
NSS	National Soil Survey
NTA	National Transport Authority

Glossary of Terms	
NVMP	Noise & Vibration Management Plan
NWSMP	National Wastewater Sludge Management Plan
OCU	Odour Control Unit
OHL	Overhead Line
OPW	Office of Public Works
OS	Open Space
OS	Ordnance Survey
OSI	Ordnance Survey of Ireland
P	Poor Aquifers
PCP	Pollution Control Plan
PCU	Passenger Car Units
PE	population equivalent
PFRA	Preliminary Flood Risk Assessment
PO	Preservation Order
PO	Preservation Orders
PPV	Peak Particle Velocity
PRF	Potential Roost Features
PSRA	Property Services Regulatory Authority
R	Regionally Important
RBD	River Basin District
RBMP	River Basin Management Plan
RBSF	Regional Biosolids Storage Facility
RFC	Ratio of Flow to Capacity Value
RFC	Ratio of Flow to Capacity Value
RMP	Record of Monuments and Places
RMS	Root Mean Square

Glossary of Terms	
RPA	Railway Procurement Agency
RPG	Regional Planning Guidelines
RPS	Register of Protected Structures
RSA	Road Safety Authority
S.I.	Statutory Instrument
SAC	Special Areas of Conservation
SBR	Sequencing Batch Reactor
SCADA	Supervisory Control and Data Acquisition
SDCC	South Dublin County Council
SDZ	Strategic Development Zone
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland
SECP	Sediment and Erosion Control Plan
SFPA	Sea Fisheries Protection Authority
SHC	Sludge Hub Centre
SID	Strategic Infrastructure Development
SMP	Sludge Management Plan
SMR	Sites and Monuments Record
SNR	Statutory Nature Reserve
SPA	Special Protection Areas
SUDS	Sustainable Drainage Systems
t	Total
TB	Townland Boundary
TBM	Tunnel Boring Machine
TCD	Trinity College Dublin
TDS	Tonnes of Dry Solids

Glossary of Terms	
TII	Transport Infrastructure Ireland
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorus
TP	Trial Pit
TRL	Transport Research Laboratory
TSHD	Trailer Suction Hopper Dredger
TSS	Total Suspended Solids
UBH	Undesignated Built Heritage
UGC	Underground Cable
UHO	Underwater Heritage Order
UK	United Kingdom
UWWT	Urban Wastewater Treatment
VFP	Viewshed Reference Points
VMP	Vessel Management Plan
VP	Vantage Point
WeBS	Wetland Bird Survey
WFD	Water Framework Directive
WHO	World Health Organization
WMP	Waste Management Plan
WSP	Water Supply Project
WSSP	Water Services Strategic Plan
WWDA	Wastewater Discharge Authorisation
WWDL	Wastewater Discharge License
WwTP	Wastewater Treatment Plant
WwTW	Wastewater Treatment Works
ZTV	Zone of Theoretical Visibility

