

West Offaly Power Station- Transition to Biomass

ESB

Environmental Impact Assessment Report

QS-0000206-01-R460-007

November 2018

Copyright © ESB International Limited, all rights reserved.

File Reference:	QS-000206-01-R460-007	
Client / Recipient:	ESB	
Project Title:	West Offaly Power Station -Transiti	on to Biomass
Report Title:	Environmental Impact Assessment	Report
Report No.:	QS-000206-01-R460-007	
Volume:	Main EIAR Volume 2	
Prepared by:	Emma Delaney	Date: 22 November 2018
Title:	Senior Environmental Consultant	
Verified by:	Paddy Kavanagh	Date: 23 November 2018
Title:	Senior Consultant, Planning and Environment Team Leader	
Approved by:	Helen O'Keeffe	Date: 23 November 2018
Title:	Senior Planner	

Copyright © ESB International Limited

All rights reserved. No part of this work may be modified, reproduced or copied in any form or by any means - graphic, electronic or mechanical, including photocopying, recording, taping or used for any purpose other than its designated purpose, without the written permission of ESB International Limited.

Template Used: T-020-007-ESBI Report Template

Change History of Report

Date	New Revision	Author	Summary of Change
23/11/2018	Final		Issued

Table of Contents

Chapter 1 Introduction

1.1	General	1-1
1.2	The Development Sites	1-1
1.3	The Proposed Development	1-4
1.4	Objectives of the Project	1-5
1.5	Relevant Legislation	1-6
1.6	The Form and Content of an EIAR	1-8
1.7	The EIAR for the Proposed Development	1-10
1.8	Public Consultation	1-14
1.9	EIAR Methodology	1-16
1.10	Difficulties Encountered	1-23

Chapter 2 The Need for the Proposed Development

2.1	Implementation of ESB's Strategic Commitments	2-1
2.2	Compliance with EU Policies on the Renewable Energy	ау
	Sector	2-3
2.3	Compliance with National Energy Policy to Decarboni	ise the
	Sector	2-5
2.4	Meeting Existing Commitments to Tackle Climate Cha	ange
		2-6
2.5	Minimising the Socio-Economic Impact on the Midlan	ds
	Region	2-10
2.6	Supporting the Development of the Indigenous Bioma	SS
	Industry	2-11
2.7	Improving Energy Security	2-12
2.8	Supporting the ISEM Capacity Auction and Minimising	g Costs
	to the Irish Consumer	2-12
2.9	Implementing National Planning Policy	2-13
2.10	Realising objectives of the Regional Guidance Docum	nents
		2-14
2.11	Delivering on Policies and Objectives set out in Offaly	County
	Development Plan	2-14
2.12	Conclusion	2-15
2.13	References	2-17
		i

Chapter 3 Alternatives Considered

3.1	Introduction	3-1
3.2	Alternative 1 - 'Do Nothing'	3-2
3.3	Alternative 2 - Continued Peat Fuelled Energy Genera	tion
		3-3
3.4	Alternative 3 - Immediate Switching to Biomass only	3-4
3.5	Alternative 4 - Transition to 100% Biomass in 2030	3-6
3.6	Alternative 5 - Firing on Natural Gas	3-7
3.7	Alternative 6 - Solar Photovoltaic Energy Generation	3-8
3.8	Alternative 7 - Energy Storage	3-8
3.9	Alternative 8 - Alternative Landfill Options	3-9
3.10	Alternative 9 - Alternative Fuel Transport Options	3-10
3.11	Alternative 10 - Alternative Design	3-10
3.12	Summary of Alternative Assessment and Environmen	tal
	Considerations	3-11
3.13	Conclusion on Alternatives	3-24
3.14	References	3-29
	pter 4 Description of the Existing and Propose elopment	d
4.1	Description of the Existing Development	4-1
4.2	Description of the Proposed Development	4-5
4.3	Transition to Biomass	4-7
4.4	Proposed Fuel Management and Handling Facilities	
	(Construction and Operation)	4-31

	(Construction and Operation)	4-31
4.5	Proposed Development of Additional Landfill Capacit (Construction and Operation)	ty 4-47
4.6	Construction Material Quantities and Associated Tra for the Proposed Development	ansport 4-50
4.7	General Environmental Controls (Construction)	4-54
4.8	Construction Programme	4-56
4.9	Operational Activities	4-57
4.10	Decommissioning and Reinstatement	4-57

4.11 References 4-61

Chapter 5 Population and Human Health

5.1	Introduction	5-1
5.2	Methodology	5-1
5.3	Study Area	5-3
5.4	Receiving Environment	5-4
5.5	Impacts of the Development	5-20
5.6	Mitigation	5-32
5.7	Difficulties Encountered in Compiling Information	5-35
5.8	Residual Impacts	5-35
5.9	Cumulative Impact	5-35
5.10	References	5-37
Chapter 6 Biodiversity		
6.1	Introduction	6-1
6.2	Methodology	6-3
6.3	Study Area	6-13
6.4	Relevant Characteristics of the Proposed Developme	
		6-14
6.5	Receiving Environment	6-16
6.6	Impacts of the Development	6-55
6.7	Mitigation	6-76
6.8	Difficulties Encountered in Compiling Information	6-82
6.9	Residual Impacts	6-82
6.10	Cumulative Impacts	6-82
6.11	References	6-84

Chapter 7 Land, Soil, Geology and Hydrogeology

7.1	Introduction	7-1
7.2	Methodology	7-2
7.3	Study Area	7-4
7.4	Receiving Environment	7-4
7.5	Impacts of the Development	7-37
7.6	Mitigation	7-45
7.7	Difficulties Encountered in Compiling Information	7-49
7.8	Residual Impacts	7-49

7.9	Cumulative Impacts	7-49
7.10	Water Framework Directive Compliance	7-50
7.11	References	7-51
Cha	pter 8 Water	
8.1	Introduction	8-1
8.2	Methodology	8-2
8.3	Study Area	8-14
8.4	Receiving Environment	8-15
8.5	Impacts of the Development	8-30
8.6	Mitigation	8-39
8.7	Difficulties Encountered in Compiling Information	8-41
8.8	Residual Impacts	8-41
8.9	Cumulative Impact	8-42
8.10	Water Framework Directive Compliance	8-43
8.11	References	8-45

Chapter 9 Noise

9.1	Introduction	9-1
9.2	Methodology	9-1
9.3	Study Area	9-12
9.4	Receiving Environment	9-12
9.5	Impacts of the Development	9-14
9.6	Mitigation	9-20
9.7	Difficulties Encountered in Compiling Information	9-22
9.8	Residual Impacts	9-23
9.9	Cumulative Impact	9-23
9.10	References	9-24

Chapter 10 Climate and Air Quality

10.1	Introduction	10-1
10.2	Methodology	10-1
10.3	Study Area	10-2
10.4	Receiving Environment	10-3
10.5	Impacts of the Development	10-32
10.6	Mitigation	10-56

10.7	Difficulties Encountered in Compiling Information	10-60
10.8	Residual Impacts	10-60
10.9	Cumulative Impact	10-61
10.10	References	10-65

Chapter 11 Material Assets

11.1	Introduction	11-1
11.2	Methodology	11-1
11.3	Study Area	11-2
11.4	Receiving Environment	11-3
11.5	Impacts of the Development	11-4
11.6	Mitigation	11-7
11.7	Difficulties Encountered in Compiling Information	11-7
11.8	Residual Impacts	11-7
11.9	Cumulative Impact	11-7
11.10	References	11-8

Chapter 12 Traffic and Transport

12.1	Introduction	12-1
12.2	Methodology	12-2
12.3	Current Situation	12-3
12.4	Study Area	12-3
12.5	Receiving Environment	12-8
12.6	Impacts of the Development	12-13
12.7	Mitigation	12-19
12.8	Difficulties Encountered in Compiling Information	12-19
12.9	Residual Impacts	12-20
12.10	Cumulative Impact	12-20
12.11	References	12-21

Chapter 13 Cultural Heritage

13.1	Introduction	13-1
13.2	Methodology	13-1
13.3	Study Area	13-3
13.4	Receiving Environment	13-4
13.5	Mitigation	13-31

13.6	Difficulties Encountered in Compiling Information	13-34
13.7	Residual Impacts	13-34
13.8	Cumulative Impact	13-34
13.9	References	13-35

Chapter 14 Landscape and Visual

14.1	Introduction	14-1
14.2	Methodology	14-2
14.3	Study Area	14-8
14.4	Receiving Environment	14-11
14.5	Impacts of the Development	14-23
14.6	Mitigation	14-50
14.7	Difficulties Encountered in Compiling Information	14-51
14.8	Residual Impacts	14-51
14.9	Cumulative Impact	14-51
14.10	References	14-52

Chapter 15 Major Accidents and Interaction of Impacts

15.1	Major Accidents and Natural Disasters	15-1
15.2	Interaction of Impacts	15-10

Chapter 16 Mitigation and Monitoring

16.1	Introduction	16-1

List of Figures

- Figure 1-1 Location of WOP Station & ADF
- Figure 2-1 System Electricity Demand and Wind Energy Generation
- Figure 4-1 Biomass, Maximum Peat and Maximum CO2 Profile
- Figure 4-2 WOP Peat Supply Bogs
- Figure 4-3 ESB Biomass Supply Evaluation
- Figure 4-4 Forecast to total new realisable volume, All Ireland Roundwood Production Forecast 2016-2035, COFORD, 2016
- Figure 4-5 Typical Indigenous Biomass Sources and Likely Import Ports
- Figure 4-6 WOP Station Proposed Layout Plan
- Figure 4-7 Biomass Storage Slab A
- Figure 4-8 Ground view of Biomass Storage Slab A
- Figure 4-9 Approximate footprint of Biomass Storage Slab A
- Figure 4-10 Biomass Storage Area B
- Figure 4-11 Proposed location of Biomass Storage Slab B
- Figure 4-12 Existing tree stands at proposed location of Storage Slab B
- Figure 4-13 WOP site access
- Figure 4-14 Potential Construction site laydown areas
- Figure 4-15 ADF Site Layout
- Figure 6-1 Habitat Map for WOP Station
- Figure 6-2 SACs, SPAs, NHAs & pNHAs within 15 km of WOP Station/ADF
- Figure 6-3 Habitat Map for ADF
- Figure 6-4 NHAs & pNHAs within 15 km of WOP Supply Bogs
- Figure 6-5 SACs and SPAs within 15 km of WOP Peat Supply Bogs
- Figure 7-1 Bedrock geology at WOP and ADF
- Figure 7-2 GSI Soils map
- Figure 7-3 GSI Subsoil mapping
- Figure 7-4 GSI Groundwater Resource, Aquifer type, Karst Features and GSI Groundwater Wells and Springs
- Figure 7-5 Aquifer Vulnerability
- Figure 7-6 Location of Boreholes, Trial Pits and Groundwater Monitoring at WOP

- Figure 7-7 Borehole, Trial Pit and Groundwater Monitoring Locations at ADF
- Figure 7-8Peat supply bogs and groundwater bodies
- Figure 7-9 Peat supply bogs and groundwater vulnerability
- Figure 7-10 Peat supply bogs and extractive industry pressure
- Figure 7-11 Peat supply bogs and groundwater status
- Figure 8-1 WOP Station & ADF Hydrological Catchments/ Subcatchments & Environmental Pressures
- Figure 8-2 WOP Station Surface Water Quality Monitoring and Discharge Locations and Watercourses
- Figure 8-3 WOP ADF Surface Water Quality Monitoring and Discharge Locations and Watercourses
- Figure 8-4 Thermal Plume Model Extent
- Figure 8-5 BnM Supply Bogs and waterbodies
- Figure 9-1 Noise Sensitive Locations
- Figure 10-1 Ireland Greenhouse Gas Emission 2016*
- Figure 10-2 GHG Emission Projections 2017-2035 (with existing measures)
- Figure 10-3 GHG Emission Projections 2017-2030 (with additional measures)
- Figure 10-4 Air Quality Zones in Ireland
- Figure 10-5 Biomass, Peat and CO₂ Profile
- Figure 10-6 Cumulative Greenhouse Gas emissions 1990 201625F25F
- Figure 12-1 Access roads to WOP Station
- Figure 12-2 Local access to WOP Station
- Figure 12-3 Bord na Móna peat supply bogs and rail network
- Figure 12-4 Supply Routes in Local Area
- Figure 12-5 Key Roads in Receiving Environment
- Figure 12-6 Access arrangements to WOP
- Figure 12-7 R357 in Shannonbridge
- Figure 12-8 Shannonbridge bridge crossing
 - Figure 12-9 Main entrance junction to WOP
- Figure 12-10 R357 south of WOP
- Figure 12-11 BnM Works Access Junction
- Figure 12-12 New signalised junction in Cloghan

Figure 13-1 Extract from Taylor & Skinner's Maps of the Roads of Ireland, Surveyed 1777 Military Works at Shannonbridge - 1810 Figure 13.2 Figure 13.3 Shannonbridge Fortifications (Site CH-5) – axonometric view (From Kerrigan, 1995, 226) Figure 13.4 Extract from O.S. 6-inch map of 1838 - Offaly Sheet 13 (Shannonbridge and Environs) Figure 13.5 1838 O.S. Map superimposed on Modern Aerial Photograph showing extent of Generating Facility Figure 13.6 1912 O.S. Map superimposed on Modern Aerial Photograph showing extent of Generating Facility Figure 13.7 1838 O.S. Map superimposed on Modern Aerial Photograph showing extent of existing ADF Site Figure 13.8 1912 O.S. Map superimposed on Modern Aerial Photograph showing extent of existing ADF Site Figure 13.9 Locations of Archaeological Monuments and Architectural Heritage Structures – WOP Site Study Area Figure 13.10 Locations of Archaeological Monuments – ADF Site Figure 14-1 Study area for WOP Station Figure 14-2 Study area for WOP ADF Figure 14-3 Drainage patterns of study areas, extract from Historic Map 6 Inch 1837-1842 Figure 14-4 The Shannon River north of Shannonbridge Figure 14-5 Mongan Bog, located between R444 and the Pilgrim Road Figure 14-6 Shannonbridge is a small settlement of less than 700 inhabitants Figure 14-7 Alignment of Esker Riada (i.e. brown coloured marking) Figure 14-8 Areas of High Amenity in West Offaly Figure 14-9 Offaly County Council sensitivity ratings in West Offaly Figure 14-10 Designated views and prospects in northwest Offaly - extract from County Development Plan map 7.18. Note: the only view or prospect relevant to the study areas is V03 Figure 14-11 Designated scenic amenity route in northwest Offaly. Note: the only one in the study areas is R357 Blueball to Shannonbridge, as shown above in purple and navy marking Figure 14-12 The only designated viewpoint listed in the Roscommon CDP that is of potential relevance to the proposed development

- Figure 14-13 View of the West Offaly Power station from across the Shannon
- Figure 14-14 Ground view of the ADF (graphic supplied by ESBI) record in October 2016. Note: the digger is undertaking cell construction
- Figure 14-15 Aerial drone capture of ADF (graphic supplied by ESBI)
- Figure 14-16 ADF viewpoint location map
- Figure 14-17 WOP viewpoint location map
- Figure 16-1 Schedule of Environmental Commitments with respect to mitigation and monitoring

List of Appendices

Appendix 1-1	Screening and Scoping Cover Letter
Appendix 1-2	Public Consultation Newspaper Notice
Appendix 4-1	Delivery Scenarios
Appendix 4-2	Construction Methodology
Appendix 5-1	Socio Economic Assessment
Appendix 6-1	Appropriate Assessment
Appendix 6-2	West Offaly Power, Thermal Plume Synthesis Report (ESB, 2018)
Appendix 6-3	Terrestrial Ecological Baseline Evaluation
Appendix 6-4	Summary Table of Designated Sites
Appendix 7-1	Causeway Site Investigation Factual and Interpretative Report
Appendix 7-2	Risk Assessment Report
Appendix 7-3	Site Investigation Report
Appendix 7-4	Details of the Supply Bogs
Appendix 7-5	EPA IPC Conditions
Appendix 8-1	Thermal Plume Modelling Report
Appendix 8-2	Flood Risk Assessments
Appendix 8-3	WFD Details for Waterbodies adjacent to the Bord na Móna Peat Supply Bogs
Appendix 8-4	EPA IPC Conditions
Appendix 8-5	Drainage Report
Appendix 9-1	Baseline Survey Report
Appendix 9-2	Noise Prediction Methodology
Appendix 9-3	Detailed Construction Noise Predictions
Appendix 9-4	Noise Measurements
Appendix 9-5	Predicted Noise Levels
Appendix 10-1	WOP Air Disperision Model
Appendix 10-2	GHG Savings

- Appendix 12-1 Bord na Móna Maps
- Appendix 12-2 Traffic and Transport Assessment
- Appendix 12-3 Delivery Management Plan
- Appendix 13-1 Classification of Archaeological Monuments
- Appendix 13-2 Descriptions of Archaeological Monuments
- Appendix 13-3 Descriptions of Architectural Heritage Sites