

Contents

Non-Technical Summary

Units and Abbreviations
Glossary

1. Introduction

1.1	Introduction	1/2
1.2	SD and ACG Development to Date	1/2
	1.2.1 Shah Deniz Production Sharing Agreement	1/2
	1.2.2 Shah Deniz 1 Gas Export Project	1/3
	1.2.3 ACG Development	1/3
	1.2.4 Existing Export Pipelines	1/3
1.3	Shah Deniz 2 Project	1/4
1.4	SD2 Project Environmental and Socio-Economic Impact Assessment	1/5
	1.4.1 Objectives	1/5
	1.4.2 ESIA Team and Structure	1/6

2. Policy, Regulatory and Administrative Framework

2.1	Introduction	2/2
2.2	The Constitution	2/3
2.3	Production Sharing Agreement	2/3
2.4	International and Regional Environmental Conventions	2/4
2.5	National Environmental Legislation	2/7
	2.5.1 National EIA Guidance	2/11
2.6	Regional Processes	2/12
	2.6.1 European Union	2/12
	2.6.2 Environment for Europe	2/12
2.7	International Petroleum Industry Standards and Practices	2/12
	2.7.1 OSPAR Guidelines	2/13
	2.7.2 Harmonised Mandatory Control System and REACH	2/13
	2.7.3 Harmonised Offshore Chemical Notification Format	2/13
	2.7.4 Ecotoxicological Hazard Assessment	2/14

3. Impact Assessment Methodology

3.1	Introduction	3/2
3.2	ESIA Process	3/2
	3.2.1 Screening and Scoping	3/3
	3.2.2 Project Alternatives and Base Case Design	3/3
	3.2.3 Existing Conditions	3/4
	3.2.4 Impact Significance Assessment	3/5
	3.2.5 Environmental Impacts	3/5
	3.2.6 Socio-Economic Impacts	3/8
3.3	Transboundary and Cumulative Impacts	3/8
3.4	Mitigation and Monitoring	3/9

4. Options Assessed

4.1	Introduction	4/2
4.2	Concept Selection: Multiple Platforms versus Subsea Development	4/3
4.3	Offshore Compression	4/4
4.4	Hydrate Management	4/5
4.5	Power	4/5
	4.5.1 Power from Shore	4/5
	4.5.2 Onshore Power and Heat Generation	4/6

4.5.3	Onshore Heat Integration	4/6
4.5.4	Offshore Power	4/7
4.6	Flare	4/7
4.6.1	Ground versus Elevated Flare	4/7
4.6.2	Offshore Flare Gas Recovery	4/8
4.7	Produced Water	4/9
4.8	Subsea Pipeline Pre-Commissioning	4/9
4.9	Subsea System Decisions	4/10
4.9.1	Hydraulic versus Electrical Control Systems	4/10
4.9.2	Open and Closed Loop Hydraulic Systems	4/10
4.9.3	Open Loop System Control Fluid Selection	4/14
4.10	Drilling	4/16
4.11	Base Case Optimisation	4/17

5. Project Description

5.1	Introduction	5/4
5.2	Project Schedule	5/6
5.3	Logistics and Material Supply	5/8
5.4	MODU Drilling and Completion Activities	5/8
5.4.1	Mobile Drilling Rig Activities	5/8
5.4.2	Drilling Operations and Discharges	5/10
5.4.3	Well Displacement	5/19
5.4.4	Blow Out Preventer (BOP) and Wellhead Brace	5/19
5.4.5	Well Suspension	5/20
5.4.6	Well Re-entry and Completion	5/21
5.4.7	Well Testing	5/21
5.4.8	Well Workover and Intervention Activities	5/21
5.4.9	MODU Drilling and Completion Emissions, Discharges and Waste	5/22
5.5	Onshore Construction and Commissioning of Terminal Facilities	5/24
5.5.1	Introduction	5/24
5.5.2	Terminal Construction and Commissioning Activities	5/25
5.5.3	SD2 Terminal Facilities Construction Utilities and Support	5/29
5.5.4	Terminal Construction Works Emissions, Discharges and Waste	5/30
5.6	Onshore Construction and Commissioning of Offshore and Subsea Facilities	5/32
5.6.1	Introduction	5/32
5.6.2	Yard and Vessel Upgrade Works	5/32
5.6.3	Subsea Facilities and Pipelines	5/33
5.6.4	Jackets and Piles	5/33
5.6.5	Topsides	5/34
5.6.6	Testing and Pre-Commissioning	5/35
5.6.7	Topside Commissioning	5/35
5.6.8	Load Out and Sail-away	5/36
5.6.9	Onshore Construction and Commissioning Emissions, Discharges and Waste	5/38
5.7	Platform Installation, Hook Up and Commissioning	5/40
5.7.1	Pre Installation Survey and Seabed Works	5/40
5.7.2	Jacket	5/40
5.7.3	Topsides	5/41
5.7.4	Bridge	5/41
5.7.5	Topside Hook Up and Commissioning	5/42
5.7.6	Installation, Hook Up and Commissioning Vessels	5/42
5.7.7	Platform Installation, Hook Up and Commissioning – Emissions, Discharges and Waste	5/43
5.8	Installation, Hook Up and Commissioning of Subsea Export and MEG Pipelines	5/45
5.8.1	Introduction	5/45
5.8.2	SD2 Subsea Pipeline Integrity and Design	5/45

5.8.3	Pipeline Installation	5/47
5.8.4	Pipeline Pre Commissioning	5/53
5.8.5	Summary of Pipeline Installation Discharges	5/54
5.8.6	Installation Vessels and Plant	5/55
5.8.7	Installation of Subsea Export and MEG Pipelines Emissions, Discharges and Waste	5/55
5.9	Subsea Infrastructure Installation, Hook Up and Commissioning	5/57
5.9.1	Introduction	5/57
5.9.2	SD2 Subsea Infrastructure Design	5/58
5.9.3	Subsea Infrastructure Installation	5/58
5.9.4	Flowline Pre Commissioning	5/59
5.9.5	Subsea Infrastructure Installation, Hook Up and Commissioning Emissions, Discharges and Waste	5/60
5.10	Offshore Operations and Production	5/62
5.10.1	Overview	5/62
5.10.2	Production and Separation	5/62
5.10.3	Gas Export	5/63
5.10.4	Condensate Export	5/63
5.10.5	Fuel Gas System	5/63
5.10.6	Pressurisation System	5/64
5.10.7	Flare System	5/64
5.10.8	Power Generation	5/65
5.10.9	Sand Separation System	5/66
5.10.10	Platform Utilities	5/66
5.10.11	Pipeline and Flowline Maintenance	5/71
5.10.12	Supply and Logistics	5/71
5.10.13	Offshore Operations Emissions, Discharges and Waste	5/72
5.11	Subsea Operations	5/74
5.11.1	Introduction	5/74
5.11.2	Flow Assurance	5/75
5.11.3	Subsea Control System	5/76
5.11.4	Discharges During Subsea Production System Interventions	5/78
5.11.5	Subsea Operations Emissions, Discharges and Waste	5/78
5.12	Onshore Operations and Production	5/79
5.12.1	Overview	5/79
5.12.2	Gas Processing and Export Facilities	5/80
5.12.3	Condensate Processing, Storage and Export	5/81
5.12.4	SD2 Onshore Utilities	5/82
5.12.5	Onshore Operations Emissions, Discharges and Waste	5/87
5.13	Decommissioning	5/89
5.14	Summary of Emissions and Waste	5/89
5.14.1	SD2 Project Emissions	5/89
5.14.2	SD2 Project Hazardous and Non Hazardous Waste	5/89
5.15	Employment	5/92
5.16	Management of Change Process	5/92
6.	Environmental Description	
6.1	Introduction	6/5
6.2	Data Sources	6/5
6.3	Physical Environment	6/10
6.3.1	Seismicity	6/10
6.3.2	Climate	6/10
6.4	Terrestrial Environment	6/11
6.4.1	Setting	6/11
6.4.2	Hydrology	6/13
6.4.3	Geology and Soils	6/16
6.4.4	Groundwater and Surface Water Quality	6/20
6.4.5	Terrestrial Ecology	6/28
6.4.6	Air Quality	6/37

6.4.7	Noise	6/45
6.5	Coastal Environment	6/48
6.5.1	Setting	6/48
6.5.2	Coastal Habitat	6/48
6.5.3	Coastal Birds	6/48
6.6	Nearshore Environment	6/52
6.6.1	Setting	6/52
6.6.2	Nearshore Benthic Flora	6/52
6.6.3	Nearshore Biological, Physical and Chemical Characteristics	6/53
6.6.4	Nearshore Fish and Mammals	6/56
6.7	Offshore Environment	6/59
6.7.1	Bathymetry and Physical Oceanography	6/59
6.7.2	Water Column: Biological Environment	6/66
6.7.3	Water Column: Chemical Environment	6/73
6.8	Offshore Environment Specific to the SD2 Project Locations	6/75
6.8.1	SD2 Subsea Export Pipeline Route	6/75
6.8.2	SDB Platform Complex Location	6/77
6.8.3	WF Location	6/80
6.8.4	NF Location	6/84
6.8.5	WS Location	6/85
6.8.6	ES Location	6/87
6.8.7	EN Location	6/90
6.8.8	Summary	6/91
6.9	Archaeology and Cultural Heritage	6/92
7.	Socio-Economic Description	
7.1	Introduction	7/3
7.2	Data Sources	7/3
7.2.1	Stakeholder and Socio-Economic Survey	7/4
7.3	Geographic Context	7/5
7.4	Socio-Economic Context	7/6
7.5	General Profile of the Local Communities	7/6
7.5.1	Sangachal Town	7/6
7.5.2	Umid	7/7
7.5.3	Azim Kend and Masiv 3	7/7
7.6	Overview of Onshore Socio-Economic Conditions	7/7
7.6.1	Population, Demographic Structure and Ethnicity	7/7
7.6.2	Land Use and Ownership	7/9
7.6.3	Infrastructure	7/10
7.6.4	Local Utilities	7/10
7.6.5	Youth and General Recreational Facilities	7/12
7.6.6	Education and Training	7/12
7.6.7	Health	7/13
7.6.8	Employment, Unemployment and Livelihoods	7/14
7.6.9	Gender Equality	7/19
7.6.10	Living Conditions, Household Income and Expenditure	7/19
7.6.11	Local Perceptions towards Industrial Operations and BP	7/21
7.6.12	Social Organisation and Local Social Issues	7/22
7.7	Vulnerable Groups	7/23
7.7.1	Income-Poor Households	7/23
7.7.2	Female-Headed Households Living Without Remittances from the Husband	7/23
7.7.3	The Elderly and Those Living with Disabilities	7/23
7.7.4	Herders	7/24
7.7.5	IDPs and Refugees	7/24
7.8	Regional Industrial Developments	7/25
7.9	Commercial Fishing Operations	7/26
7.9.1	Regulatory Bodies and Licensing	7/26
7.9.2	Companies and Individuals Involved	7/27

7.9.3	Direct Employment with Vessel Owners and Crew	7/28
7.9.4	Commercial Species, Fishing Locations and Seasonal Variation	7/28
7.9.5	Recent Trends in Commercial Fishing Operations	7/30
7.9.6	Indirect Employment from Fish Processing Companies	7/30
7.9.7	Illegal Fishing	7/30
7.9.8	Scientific Research	7/31
7.10	Commercial Shipping Movements	7/33
7.11	Construction Yard Operations	7/33
7.12	Community Investment Programmes	7/34
7.13	Local Content Development Initiatives	7/35
8.	Consultation and Disclosure	
8.1	Introduction	8/2
8.2	Overview of Consultation and Disclosure Process	8/2
8.3	Scoping, Initial Stakeholder Engagement and Consultation	8/3
8.4	Draft ESIA Report Consultation	8/6
8.5	Consultation Under the Espoo Convention	8/7
9.	Drilling and Completion Environmental Impact Assessment, Mitigation and Monitoring	
9.1	Introduction	9/3
9.2	Scoping Assessment	9/3
9.3	Impacts to the Atmosphere	9/6
9.3.1	MODU Power Generation, MODU Flaring and Support Vessel Emissions	9/6
9.4	Impacts to the Marine Environment	9/12
9.4.1	Underwater Noise & Vibration	9/12
9.4.2	Drilling Discharges	9/15
9.4.3	Cement Discharges	9/25
9.4.4	BOP Testing	9/30
9.4.5	Cooling Water Intake and Discharge	9/34
9.4.6	Other Discharges	9/37
9.5	Summary of the SD2 Project Drilling and Completion Activities Residual Environmental Impacts	9/40
10.	Construction, Installation and HUC Environmental Impact Assessment, Mitigation and Monitoring	
10.1	Introduction	10/4
10.2	Scoping Assessment	10/4
10.3	Impacts to the Atmosphere	10/13
10.3.1	Mitigation	10/13
10.3.2	Construction and Commissioning Emissions (Terminal, Onshore Pipelay and Pipeline Drying)	10/13
10.3.3	Construction Yard Emissions	10/18
10.3.4	Vessel Emissions	10/22
10.4	Impacts to the Terrestrial Environment Associated with Onshore Noise	10/23
10.4.1	Mitigation	10/23
10.4.2	Construction and Commissioning Emissions (Terminal, Onshore Pipelay and Pipeline Pre-Commissioning)	10/24
10.4.3	Construction Yard Noise	10/30
10.5	Impacts to the Terrestrial Environment (Ecology)	10/32
10.5.1	Mitigation	10/32
10.5.2	Onshore Pipeline Installation	10/33
10.6	Impacts to the Terrestrial Environment (Soils, Groundwater and Surface Water)	10/35
10.6.1	Mitigation	10/35

10.6.2	Onshore Pipeline Installation and Condensate Tanks Works	10/36
10.7	Impacts to the Terrestrial and Coastal Environment (Cultural Heritage)	10/39
10.7.1	Mitigation	10/39
10.7.2	Piling within the SD2 Expansion Area and Onshore Pipeline Installation	10/40
10.8	Impacts to the Marine Environment (Water Column and Seabed)	10/42
10.8.1	Mitigation	10/42
10.8.2	Construction Yard Cooling Water Discharge	10/44
10.8.3	SD2 Export and MEG Import Pipelines and Subsea Infrastructure HUC Discharges	10/47
10.8.4	Other Discharges	10/54
10.8.5	Underwater Noise and Vibration	10/57
10.9	Impacts to the Nearshore/Coastal Environment	10/60
10.9.1	Mitigation	10/60
10.9.2	Nearshore Pipeline Installation	10/61
10.10	Impacts to the Coastal and Marine Environment (Cultural Heritage)	10/64
10.10.1	Mitigation	10/64
10.10.2	Seabed Disturbance	10/64
10.11	Summary of SD2 Construction, Installation and HUC Residual Environmental Impacts	10/66
11.	Operations Environmental Impact Assessment, Mitigation and Monitoring	
11.1	Introduction	11/3
11.2	Scoping Assessment	11/3
11.3	Impacts to the Atmosphere	11/7
11.3.1	Mitigation	11/7
11.3.2	Offshore Operations	11/7
11.3.3	Onshore Operations	11/13
11.4	Impacts to the Terrestrial Environment – Odour	11/20
11.4.1	Onshore Operations Pond Storage of Produced Water	11/20
11.5	Impacts to the Terrestrial Noise Environment	11/21
11.5.1	Mitigation	11/22
11.5.2	Onshore Operations	11/22
11.6	Impacts to the Marine Environment	11/26
11.6.1	Offshore Operations - Cooling Water Intake and Discharge	11/26
11.6.2	Offshore Operations - Other Discharges	11/30
11.6.3	Subsea Operations: Control Fluid Discharge during Routine and Non Routine Operations	11/33
11.6.4	Subsea Operations: Non Routine Discharges During Subsea System Interventions	11/37
11.7	Summary of the SD2 Project Operations Residual Environmental Impacts	11/39
12.	Socio-Economic Impact Assessment, Mitigation and Monitoring	
12.1	Introduction	12/2
12.2	Assessment of Scoped-Out Activities and Events	12/2
12.2.1	Disruption to Road and Rail Users	12/2
12.2.2	Access Restrictions along the Shoreline	12/3
12.2.3	Community Disturbance from Artificial Lighting used at the Terminal	12/3
12.2.4	Community Disturbance from Construction Yards	12/4
12.2.5	Community Health and Safety from Onshore Pipeline Installation Works	12/4
12.3	Impact Assessment	12/4
12.3.1	Enforcement of Marine Exclusion Zones	12/4
12.3.2	Employment	12/6
12.3.3	Demanning	12/8

	12.3.4 Community Disturbance from the Visual Impact of the Elevated Flare	12/9
12.4	Indirect Socio-Economic Impacts	12/10
	12.4.1 Anti-Social Behaviour	12/10
	12.4.2 Increased Economic Flows	12/11
	12.4.3 Social Conflict	12/11
13.	Cumulative and Transboundary Impacts and Accidental Events	
13.1	Introduction	13/3
13.2	Cumulative and Transboundary Impacts	13/3
	13.2.1 Cumulative Impact Between Separate Project Impacts	13/3
	13.2.2 Cumulative Impact With Other Projects	13/3
13.3	Approach to the Cumulative Assessment	13/5
13.4	Terrestrial Environment: Cumulative Impacts	13/6
	13.4.1 Cumulative Impact Between Separate Project Impacts	13/6
	13.4.2 Cumulative Impact With Other Projects	13/6
13.5	Marine Environment: Cumulative Impacts	13/9
	13.5.1 Cumulative Impact Between Separate Project Impacts	13/9
	13.5.2 Cumulative Impact With Other Projects	13/10
	13.5.3 Mitigation and Monitoring	13/11
13.6	Socio-Economic Environment: Cumulative Impacts	13/11
	13.6.1 Cumulative Impact Between Separate Project Impacts	13/11
	13.6.2 Cumulative Impact With Other Projects	13/12
13.7	Non-Greenhouse Gas Atmospheric Emissions: Cumulative Impacts	13/14
	13.7.1 Cumulative Impact Between Separate Project Impacts	13/15
	13.7.2 Cumulative Impact With Other Projects	13/15
13.8	Non-Greenhouse Gas Atmospheric Emissions: Transboundary Impacts	13/17
13.9	Greenhouse Gas Atmospheric Emissions: Cumulative and Transboundary Impacts	13/17
	13.9.1 Conclusion	13/19
13.10	Accidental Events	13/20
	13.10.1 Overview	13/20
	13.10.2 Blowout Condensate Release Scenarios	13/20
	13.10.3 Flowline Rupture Condensate Scenarios	13/21
	13.10.4 Condensate Export Pipeline Rupture Scenarios	13/22
	13.10.5 Platform Diesel Inventory Loss	13/22
	13.10.6 Modelling Results	13/23
	13.10.7 Impact of Condensate and Diesel Releases	13/35
	13.10.8 Spill Prevention and Response Planning	13/39
	13.10.9 Reporting	13/40
14.	Environmental and Social Management	
14.1	Introduction	14/2
14.2	Construction Phase Roles and Responsibilities	14/3
	14.2.1 BP	14/3
	14.2.2 Main Construction and installation Contractors	14/3
14.3	Construction Phase ESMSs	14/4
	14.3.1 Introduction	14/4
	14.3.2 BP's ESMS Framework	14/4
	14.3.3 Plan	14/4
	14.3.4 Do	14/5
	14.3.5 Check	14/7
	14.3.6 Act	14/7
14.4	Operations Phase ESMS	14/8
14.5	MODU Management System	14/8
	14.5.1 Approach	14/8
	14.5.2 Monitoring and Reporting	14/9

14.5.3	Audit and Review	14/10
14.6	Environmental Monitoring Programme	14/10
14.7	Waste Management	14/11
14.7.1	Waste Management Processes and Procedures	14/11
14.7.2	Waste Segregation and Transfer	14/12

15. Residual Impacts and Conclusion

15.1	Introduction	15/2
15.2	Design, Construction, Installation, HUC and Operation	15/2
15.3	Environmental Impacts	15/2
15.3.1	Drilling and Completion Activities	15/2
15.3.2	Construction, Installation and HUC Activities	15/4
15.3.3	Offshore, Onshore and Subsea Operations	15/8
15.4	Socio-Economic Impacts	15/11
15.5	Cumulative, Transboundary and Accidental Events	15/12
15.6	Environmental and Social Management	15/14
15.7	Conclusions	15/14

List of Figures

Figure 1.1	Location of Shah Deniz (SD) Contract Area and Existing SD and ACG Oil and Gas Offshore Facilities	1/2
Figure 1.2	Scope of the SD2 Project	1/4
Figure 2.1	Azerbaijan Legal Hierarchy	2/2
Figure 3.1	The ESIA Process	3/2
Figure 4.1	BP Capital Value Process	4/2
Figure 4.2	Cross-Section Through SD Crest Structure	4/3
Figure 4.3	Typical Open Loop and Closed Loop Hydraulic Systems	4/11
Figure 4.4	Indicative Valve Closure and Pressure Changes in an Open Loop System	4/12
Figure 4.5	Indicative Valve Closure and Pressure Changes in a Closed Loop System	4/12
Figure 4.6	Well Testing Assurance Process	4/17
Figure 5.1	Overview of SD2 Project	5/5
Figure 5.2	Estimated SD2 Project Production Profiles Across the PSA Period	5/6
Figure 5.3	Indicative SD2 Project Schedule	5/7
Figure 5.4	Summary of Drilling Activities and Discharges	5/11
Figure 5.5	Generic Casing Design	5/12
Figure 5.6	Geotechnical Seabed Frame	5/13
Figure 5.7	Suspended Well	5/20
Figure 5.8	Scope of SD2 Early Infrastructure Works	5/24
Figure 5.9	Expected SD2 Terminal Construction Works Schedule	5/25
Figure 5.10	Jacket Fabrication Process	5/34
Figure 5.11	Topside Construction Process (SDB-QU Topside)	5/35
Figure 5.12	DWG-DUQ Jacket During Loadout	5/37
Figure 5.13	EA Platform Topside Onboard STB-01 Barge	5/37
Figure 5.14	Jacket Installation	5/40
Figure 5.15	Topside "Float-Over" Installation Method	5/41
Figure 5.16	Routing of Proposed SD2 Export Pipelines and MEG Import Pipeline	5/46
Figure 5.17	S Lay Configuration	5/47
Figure 5.18	Proposed Nearshore Pipeline Trenching	5/49
Figure 5.19	Summary of Nearshore Pipeline Installation Activities	5/51
Figure 5.20	Layout of SD2 Infield Subsea Infrastructure	5/57
Figure 5.21	Approximate Flowline Lengths and Associated Seabed Profiles	5/58
Figure 5.22	SDB-PR and SDB-QU Process and Utilities Systems	5/62
Figure 5.23	HP and LP Flare System	5/65
Figure 5.24	SDB-QU and SDB-PR Platform Open Drains Systems	5/69

Figure 5.25	Typical Subsea Production System Layout of Each Cluster	5/74
Figure 5.26	Typical Umbilical Cross Section	5/77
Figure 5.27	Layout of SD2 Onshore Facilities and Utilities	5/79
Figure 5.28	SD2 Onshore Process Schematic	5/80
Figure 5.29	SD2 Open Drains System	5/86
Figure 5.30	Estimated Manpower Associated with SD2 Onshore Terminal Construction Works	5/92
Figure 6.1	Key Onshore and Offshore Locations Associated with the SD2 Project	6/9
Figure 6.2	Annual Wind Rose (Baku Airport), 2007	6/11
Figure 6.3	Scope of the SD2 EIW as Assessed within the SD2 Infrastructure ESIA	6/13
Figure 6.4	Main Drainage Catchment Areas in the Vicinity of the Terminal	6/14
Figure 6.5	Relative Contributions of Sub-Catchment Areas to 100 Year Flood Volume	6/15
Figure 6.6	Soil and Groundwater Monitoring Locations	6/17
Figure 6.7	Superficial Geological Conditions in the Vicinity of the Terminal	6/18
Figure 6.8	Wetland Sample Locations and Contamination Observations 2011 and 2012	6/24
Figure 6.9	Approximate Distributions of Plant Community Types (Habitats) Around the Terminal	6/28
Figure 6.10	Bird Monitoring Locations Around the Terminal	6/34
Figure 6.11	Ambient Air Quality (2008 to 2011) and Odour Monitoring Locations (2010)	6/38
Figure 6.12	Annual Average Measured NO ₂ Concentrations, 2008-2011	6/39
Figure 6.13	Annual Average Measured SO ₂ Concentrations, 2008-2011	6/40
Figure 6.14	Annual Average Measured Concentrations of Benzene, 2008-2011	6/41
Figure 6.15	annual Average Measured Concentrations of VOC, 2008-2011	6/42
Figure 6.16	Average %AAC of Dust Recorded at Terminal, Background and Receptor Locations, 12 March 2012 – 12 January 2013	6/44
Figure 6.17	Noise Survey Locations 2010 and 2011	6/46
Figure 6.18	Important Ornithological Sites Located on the Southwest Caspian Coast and Migration Routes	6/50
Figure 6.19	Sangachal Bay Sediment Sampling Locations, 2010 and 2011	6/53
Figure 6.20	Fish Monitoring Locations in Sangachal Bay	6/57
Figure 6.21	Slope Areas and Major Mud Volcano Locations within the SD Contract Area	6/59
Figure 6.22	Summary of Trends in Sediment Hydrocarbon Content, SD Regional Survey 2009	6/63
Figure 6.23	Macrofaunal Trends across SD Contract Area, 2009	6/65
Figure 6.24	Plankton Sampling Locations, SD Regional Survey 2009	6/66
Figure 6.25	Herring, Mullet and Sturgeon Migration Routes	6/69
Figure 6.26	Kilka and Beluga Migration Routes	6/69
Figure 6.27	Caspian Seal Migration Routes	6/72
Figure 6.28	Survey Sample Locations in the Vicinity of the Proposed SD2 Subsea Export Pipeline Route	6/75
Figure 6.29	Survey Sample Locations in the Vicinity of SDB Platform Complex and SD2 Manifold Locations	6/78
Figure 6.30	WF Location Sediment Survey Results	6/82
Figure 6.31	Archaeological Survey Finds/Cultural Heritage Sites, 2001	6/93
Figure 6.32	Archaeological Sites Identified South of the Terminal and Near the Pipeline Landfall Area	6/95
Figure 6.33	Sand Cave Adjacent to the Proposed SD2 Pipeline Landfall Area	6/95
Figure 7.1	Garadagh District, the Terminal and Surrounding Communities	7/5
Figure 7.2	Land Use within Vicinity of the Terminal	7/9
Figure 7.3	BP Projects Construction Workforce, 2002 to 2007	7/14
Figure 7.4	Type of Employment within the Garadagh District	7/16
Figure 7.5	Unemployment Status of Each Community	7/17
Figure 7.6	Photos of Herder Settlements	7/18

Figure 7.7	Level of Satisfaction Associated with Living Standards	7/20
Figure 7.8	Frequency of Perceived Environmental Impacts from Industrial Operations	7/22
Figure 7.9	Locations of Favoured Fishing Grounds and Locations of Landing Ports and Harbours	7/29
Figure 7.10	Locations of Scientific Research Trawl Sampling Locations	7/32
Figure 7.11	Shipping Routes in the Vicinity of the SD Contract Area	7/33
Figure 8.1	SD2 Project ESIA Engagement, Consultation and Disclosure Process	8/3
Figure 9.1	Expected MODU Activities Within the SD Contract Area (2013 – 2027)	9/6
Figure 9.2	Estimated Volume of NO ₂ Emissions per Source During SD2 Project Drilling, Completion and Intervention Activities	9/7
Figure 9.3	Predicted Increase in Long Term NO ₂ Concentrations Due to MODU Power Generation	9/8
Figure 9.4	Predicted Increase in Short Term NO ₂ Concentrations Due to MODU Clean Up Flaring	9/9
Figure 9.5	Summary of Effect of Underwater Drilling and Vessel Noise Relative to Audiological Injury and Behavioural Thresholds	9/13
Figure 9.6	Deposition Thickness from MODU Drilling Discharge in NF Location (1 Well)	9/18
Figure 9.7	Deposition Thickness from MODU Drilling Discharge in NF Location (6 Wells)	9/19
Figure 9.8	Deposition Thickness from MODU Drilling Discharge in ES Location (1 Well)	9/19
Figure 9.9	Deposition Thickness from MODU Drilling Discharge in ES Location (6 Wells)	9/20
Figure 9.10a	Plan View of Cement Dispersion Plume 2 Hours after Start of Discharge	9/27
Figure 9.10b	Elevation View of Cement Dispersion Plume 2 Hours after Start of Discharge	9/27
Figure 9.11	Upper Annular Discharge at Near-Stagnant (0.01m/s) Current Velocity	9/32
Figure 10.1	Estimated Volume of NO ₂ Emissions per Source During SD2 Projection Construction and Commissioning Activities (Terminal Vicinity)	10/14
Figure 10.2	Increase in i) Long Term and ii) Short Term NO ₂ Concentrations Due to Construction Plant and Vehicles (Terminal Vicinity)	10/15
Figure 10.3	Predicted Increase in Long Term NO ₂ Concentrations Due to Construction Plant and Vehicles (Terminal Vicinity)	10/15
Figure 10.4	Estimated Volume of NO ₂ Emissions per Construction Yard Activity	10/18
Figure 10.5	Increase in Short Term NO _x Concentrations From Construction Yard Plant (15m/s Wind Speed)	10/20
Figure 10.6	Predicted Construction Noise Levels at Receptors in the Vicinity of the Sangachal Terminal	10/25
Figure 10.7	Predicted Cooling Water Plume Temperature Above Ambient at Distance from Discharge (50°C Temperature Difference Scenario)	10/45
Figure 10.8	Snapshot of Plume at End of Discharge Period, Scenario 1	10/49
Figure 10.9	Snapshot of Plume at End of Discharge Period, Scenario 6	10/49
Figure 10.10a	Snapshot of Plume at End of Discharge Period, Scenario 11 (summer)	10/50
Figure 10.10b	Snapshot of Plume at End of Discharge Period, Scenario 11 (winter)	10/51
Figure 10.11	Dimensions of MEG Discharge Plume Two Hours After Discharge Commences	10/52
Figure 10.12	Summary of Effect of Underwater i) Piling, ii) Nearshore and Offshore Pipelay and ii) Subsea Infrastructure Installation Noise	

	Relative to Audiological Injury and Strong Behavioural Thresholds	10/58
Figure 11.1	Total Volume of NOX Emissions from Offshore Routine and Non Routine Operations during the PSA Period Per Source	11/8
Figure 11.2	Increase in Long Term NOx Concentration Onshore During Routine Offshore Operations	11/9
Figure 11.3	Increase in Short Term NOX Concentration Onshore During Non Routine Offshore Operations (Emergency Flaring for up to 1 hour duration)	11/10
Figure 11.4	Total Volume of NO2 Emissions from Onshore Routine and Non Routine Operations during the PSA Period Per Source	11/14
Figure 11.5	Increase in i) Long Term and ii) Short NO2 Concentrations Due to Onshore Operations at Onshore Receptors (Routine Conditions)	11/15
Figure 11.6	Increase in Long Term NOX Concentrations in the Sangachal Terminal Vicinity During Routine Onshore Operations.	11/15
Figure 11.7	Increase in Short Term NO2 Concentrations at Onshore Receptors For Non Routine i) Fired Heater and ii) Emergency Flaring Scenarios.	11/16
Figure 11.8	Increase in Short Term NOx Concentration in the Sangachal Terminal Vicinity During Non Routine Onshore Operation (Emergency Flaring).	11/17
Figure 11.9	Predicted Noise Levels Associated with Non Routine Flaring at Azim Kend/Masiv 3 (Year 3)	11/24
Figure 11.10	Plume Trajectory and Distance (m) to 3°C Change for Offshore Cooling Water Discharge at Discharge Temperature of 25°C	11/28
Figure 11.11	Dimensions of Tree Discharge Plume 15 Minutes After Discharge (Contingency Discharge Volume)	11/35
Figure 11.12	Dimensions of Manifold Discharge Plume 15 minutes After Discharge (Contingency Discharge Volume)	11/35
Figure 13.1	Location of Planned or Under Construction Projects in the Terminal Vicinity	13/5
Figure 13.2	Main Drainage Catchment Areas in the Vicinity of the Sangachal Terminal and Qizildas Cement Plant	13/7
Figure 13.3	Location of Existing SD and ACG Offshore Facilities and Proposed SD2 Offshore and Subsea Facilities	13/10
Figure 13.4	SD2 Non-GHG Emissions Per Project Phase	13/15
Figure 13.5	SD2 Greenhouse Gas Emissions Generated for Each SD2 Project Phase	13/17
Figure 13.6	ACG & SD1 GHG Emissions (2012) and Average Annual Forecast SD2 GHG Emissions	13/18
Figure 13.7	Locations of Accidental Events Resulting in Release of Condensate Considered Within Spill Modelling Assessment	13/20
Figure 13.8	Fate of Condensate Released from BO ES 1 (Summer Blowout Scenario)	13/23
Figure 13.9	Fate of Condensate Released from BO ES1 Blowout Scenario – Vertical Cross Section through Plume	13/24
Figure 13.10	Dissolved Hydrocarbon Concentrations in the Water for Day 15 of the BO NF2 Blowout Scenario	13/25
Figure 13.11	Dissolved Hydrocarbon Concentrations in the Water for Day 15 of the BO ES1 Blowout Scenario	13/26
Figure 13.12	Shoreline Deposition Resulting from the BO ES1 Blowout Scenario in Winter	13/27
Figure 13.13	Fate of Condensate Released from ES FL1 in Winter (Flowline Rupture Scenario)	13/28
Figure 13.14	Dissolved Hydrocarbon Concentrations in the Water for Day 1 of the WF FL4 Flowline Rupture Scenario	13/29
Figure 13.15	Dissolved Hydrocarbon Concentrations in the Water for Day 1 of the EL2 Condensate Export Pipeline Rupture Scenario	13/31

Figure 13.16	Shoreline Deposition Resulting from the EL2 Condensate Export Pipeline Rupture Scenario In Winter	13/31
Figure 13.17	Appearance of Various Condensates to be Produced at SD2	13/32
Figure 13.18	Physical State of the Distillation Residues at a Room Temperature Of 24°C	13/32
Figure 13.19	Lump of Wax Produced on Mixing the 250°C+ Distillation Residue With Seawater at 6°C	13/33
Figure 13.20	Weathered Condensate at Montara Incident Contained in a Boom	13/33
Figure 13.21	Weathered Condensate at Montara Incident on Sea Surface	13/34
Figure 14.1	AGT Region Local Operating Management System Framework	14/2
Figure 14.2	BP's Construction Phase ESMS Elements	14/4
Figure 14.3	Roles and Responsibilities Associated with Rig Environmental Management	14/9

List of Tables

Table 1.1	SD2 Project ESIA Team	1/6
Table 1.2	Structure and Content of the ESIA	1/6
Table 2.1	Summary of International Conventions	2/5
Table 2.2	Summary of Regional Conventions	2/6
Table 2.3	Key National Environmental and Social Laws	2/8
Table 2.4	Summary of Guidance on the EIA Process in Azerbaijan	2/11
Table 3.1	Event Magnitude Rankings	3/6
Table 3.2	Receptor Sensitivity Rankings	3/7
Table 3.3	Impact Significance	3/8
Table 4.1	Summary of Caspian Toxicity Test Species	4/14
Table 4.2	Toxicity Test Results	4/15
Table 5.1	Summary of the MODU and Vessel Utilities	5/9
Table 5.2	Summary of Drilling Discharge Types and Scenarios	5/10
Table 5.3	SD2 Project Generic Well Design	5/12
Table 5.4	Estimated Use of WBM Drilling Chemicals Per Hole – Pilot Hole, Geotechnical Hole and 42", 32" and 28" Sections	5/14
Table 5.5	Estimated Use of LTMOBM Drilling Chemicals Per Hole –22", 18" 161/2" 16" 121/4" & 81/2 Lower Hole Sections	5/16
Table 5.6	Estimated Well Cuttings and Mud Volumes Per Hole	5/17
Table 5.7	Estimated Discharge of Well Cement Chemicals per Hole During Cementing and Cement Unit Wash Out	5/18
Table 5.8	Estimated Usage of WBM Drilling Contingency Chemicals per Hole	5/18
Table 5.9	Percentage Composition of Stack Magic and BOP Fluid	5/19
Table 5.10	Summary of BOP Fluid Discharge Events Per Well – Two Pods	5/20
Table 5.11	Estimated GHG and Non GHG Emissions Associated with Routine and Non Routine Drilling, Completion and Intervention Activities	5/22
Table 5.12	Total Estimated Drilling Fluids and Cement Discharges to Sea	5/22
Table 5.13	Drilling and Completion Activities Waste Forecast	5/23
Table 5.14	Oil Water and STP Discharge Standards	5/26
Table 5.15	Estimated GHG and Non GHG Emissions Associated with SD2 Terminal Construction and Commissioning Activities	5/30
Table 5.16	Onshore Terminal Construction and Commissioning Waste Forecast	5/31
Table 5.17	Estimated GHG and Non GHG Emissions Associated with Routine and Non Routine SD2 Onshore Construction and Commissioning Activities	5/38
Table 5.18	Offshore Facilities Construction and Commissioning Waste Forecast	5/39
Table 5.19	Installation, Hook Up and Commissioning Vessel Utilities	5/42
Table 5.20	Estimated GHG and Non GHG Emissions Associated with SD2 Project Platform Installation, Hook Up and Commissioning	5/43

Table 5.21	Offshore Facilities Installation, Hook-up and Commissioning Waste Forecast	5/44
Table 5.22	Estimated Pipeline Gauging, Hydrotesting, Tie-in, Leak Tests and Dewatering Discharges	5/54
Table 5.23	Pipelay Barge and Support Vessel Utilities	5/55
Table 5.24	Estimated GHG and Non GHG Emissions Associated with SD2 Project Installation of Subsea Export and MEG Pipelines	5/56
Table 5.25	Estimated Flowline Gauging, Hydrotesting, Tie-in, Leak Tests and Dewatering Discharges	5/59
Table 5.26	Estimated GHG and Non GHG Emissions Associated with SD2 Project Installation of Subsea Infrastructure	5/61
Table 5.27	Subsea Export Pipelines, MEG Import Pipeline and Subsea Infrastructure Fabrication and Installation Waste Forecast	5/61
Table 5.28	Anticipated Offshore Electrical Loads Across the PSA	5/66
Table 5.29	Predicted GHG and non GHG Emissions Associated with Routine and Non Routine SD2 Offshore Operations and Production Activities	5/73
Table 5.30	Offshore Operations Waste Forecast	5/73
Table 5.31	Subsea Flow Assurance Chemical Requirements	5/75
Table 5.32	Estimated Discharges of Control Fluid due to Valve Operations and DCV Discharges Per Day	5/78
Table 5.33	Estimated Discharges During Production Tree Choke Interventions	5/78
Table 5.34	Predicted GHG and non GHG Emissions Associated with Routine and Non Routine SD2 Onshore Operations and Production Activities	5/87
Table 5.35	Onshore Operations Waste Forecast	5/88
Table 5.36	Estimated GHG and non GHG Emissions Associated with the SD2 Project	5/89
Table 5.37	Hazardous and Non Hazardous SD2 Waste Forecast	5/90
Table 5.38	Current Planned Destination of SD2 Principal Project Waste Streams	5/91
Table 6.1	Relevant Terrestrial/Coastal, Nearshore and Offshore Surveys and Studies, 1996-2012	6/6
Table 6.2	Average Monthly Rainfall Data (Baku) 2002 to 2006	6/10
Table 6.3	Soil Composition Data Within and Adjacent to the SD2 Project Onshore Areas – Inorganic and General Analytes	6/18
Table 6.4	Soil Composition Data Within and Adjacent to the SD2 Project Onshore Areas – Organic Analytes	6/19
Table 6.5	Groundwater Composition Data Within and Adjacent to the SD2 Project Onshore Areas – Inorganic and General Analytes	6/21
Table 6.6	Groundwater Composition Data Within and Adjacent to the SD2 Project Onshore Areas – Organic Analytes	6/22
Table 6.7	Surface Water Composition Data for General Watercourses Within and Adjacent to the Proposed SD2 Pipeline Corridor and Landfall Area– Inorganic and General Analytes	6/25
Table 6.8	Surface Water Composition Data for General Watercourses Within and Adjacent to the Proposed SD2 Pipeline Corridor and Landfall Area – Organic Analytes	6/25
Table 6.9	Summary of Wetland Surface Water Analytical Data, 2012	6/26
Table 6.10	Summary of Wetland Sediment Analytical Data for Total Contaminant Concentrations, 2012	6/26
Table 6.11	Summary of Wetland Sediment Analytical Data for Leachable Contaminant Concentrations, 2012	6/27
Table 6.12	Summary of Sangachal Wetland Fauna Survey Results 2010	6/31
Table 6.13	Summary of Sangachal Terminal Mammals and Herpetofauna Survey Results 2011	6/32
Table 6.14	Summary of Faunal Sensitivity	6/33
Table 6.15	Birds Species of Conservation Significance Recorded Within the Vicinity of the Terminal, 2008-2011	6/35

Table 6.16	Summary of Bird Species Sensitivity	6/36
Table 6.17	PM10 Concentrations 2009 and 2010 ($\mu\text{g}/\text{m}^3$)	6/43
Table 6.18	24-Hour Average Gravimetric PM10 Concentrations ($\mu\text{g}/\text{m}^3$), 12 March – 4 September 2012	6/43
Table 6.19	2010 and 2011 Noise Survey Results at Sensitive Receptors	6/47
Table 6.20	Sites of Ornithological Importance	6/49
Table 6.21	Overwintering Birds of Importance Recorded in 2002 – 2006 Surveys	6/51
Table 6.22	Migrating Birds of Importance Recorded in 2002 – 2006 Surveys	6/51
Table 6.23	Fish Species Found in Sangachal Bay from 2008 and 2009 surveys	6/57
Table 6.24	SD Expected Winter Maxima Current Values	6/61
Table 6.25	Statistical Summary of Trends in Sediment Hydrocarbon Content in SD Regional Survey 1998 - 2009 ($\mu\text{g}/\text{g}$) – Mean, Minimum and Maximum Concentrations	6/62
Table 6.26	Statistical Summary of Trends in Sediment Heavy Metal Concentrations, SD Regional Surveys 1998 – 2009 ($\mu\text{g}/\text{g}$)	6/64
Table 6.27	Seasonal Fish Presence in the Vicinity of the Southern Caspian and SD Contract Area	6/70
Table 6.28	Summary of the Review of Fish Species in the SD Contract Area and Adjacent Areas of the Caspian Sea, 2008	6/70
Table 6.29	Caspian Seal Sensitivity per Season within SD Contract Area	6/73
Table 6.30	Hydrocarbon and Phenol Concentrations in Water Samples, SD Regional Surveys 2005, 2007 and 2009	6/74
Table 6.31	Heavy Metal Concentrations in Water Samples, SD Regional Surveys 2005, 2007 and 2009 ($\mu\text{g}/\text{l}$)	6/74
Table 6.32	Physical Properties of Sediments, SD Regional Survey Stations, 2009	6/76
Table 6.33	Hydrocarbon Concentrations at the ACG Pipeline Sediment Survey Stations, 2002, 2006, 2008 and 2010	6/76
Table 6.34	Hydrocarbon Concentrations within the Proposed SD2 Subsea Export Pipeline Corridor, 2009	6/76
Table 6.35	Summary of Species Richness and Individual Abundance, Pipeline Survey, 2006, 2008 and 2010	6/77
Table 6.36	Average Physical Sediment Characteristics – SDB Platform Complex Location (2011)	6/79
Table 6.37	Statistical Summary of Sediment Hydrocarbon Concentrations, SDB Platform Complex Location (2011)	6/79
Table 6.38	Statistical Summary of Heavy Metal Concentrations in SDB Platform Complex Location Sediments ($\mu\text{g}/\text{g}$)	6/79
Table 6.39	Comparison of Species Richness and Total Abundance between SDA Location (2001-2009) and SDB Platform Complex Location (2011)	6/80
Table 6.40	Average Physical Sediment Characteristics – WF Location (2009)	6/81
Table 6.41	Statistical Summary of Heavy Metal Concentrations in WF Location Sediments ($\mu\text{g}/\text{g}$)	6/81
Table 6.42	Comparison of Species Richness and Total Abundance between SDA Location Surveys (2001-2009) and WF Survey (2009)	6/83
Table 6.43	Comparison of Species Richness and Average Abundance between Four SD Regional Survey Stations and WF Survey	6/83
Table 6.44	Statistical Summary of Sediment Heavy Metal Concentrations ($\mu\text{g}/\text{g}$) at the NF Location, 2008	6/84
Table 6.45	Summary of the Species Richness and Total Abundance in the 2008 NF Location Survey	6/85
Table 6.46	WS Hydrocarbon Sampling Results, 2005 and 2011	6/86
Table 6.47	Statistical Summary of Sediment Heavy Metal Concentrations at WS1 Well Location	6/86
Table 6.48	Summary of the Species Richness and Total Abundance in the 2005 WS1 Location Survey	6/87

Table 6.49	Summary of Physical Properties of Sediments at the ES Location	6/88
Table 6.50	ES Location Hydrocarbon Sampling Results, 2007, 2010 and 2011	6/88
Table 6.51	Statistical Summary of Sediment Heavy Metal Concentrations at the ES Location	6/89
Table 6.52	Recorded Taxa at SDX5 Well Location in 2007 per m ²	6/89
Table 6.53	Recorded Taxa in SDX-5 Post Drill Survey 2010 per m ²	6/89
Table 6.54	Recorded Taxa in the ES Baseline Survey 2011 per m ²	6/90
Table 6.55	Summary of Physical Properties of EN Location Sediments 2011	6/90
Table 6.56	Summary of EN Location Hydrocarbon Concentrations 2011	6/91
Table 6.57	Summary of Sediment Heavy Metal Concentrations at the EN Location 2011	6/91
Table 6.58	Comparison of Sediment Median Particle Size (um), Total Hydrocarbon Concentration (THC, µg/g) and Heavy Metal Concentrations (µg/g)	6/92
Table 6.59	Comparison of Species Richness and Total Abundance	6/92
Table 6.60	Summary of 2001 Archaeological Survey Finds/Cultural Heritage Sites	6/93
Table 6.61	CHBS Archaeological Site Summary Data	6/94
Table 7.1	Relevant Data Sources	7/4
Table 7.2	National Age Profile, Urban and Rural, 2010	7/8
Table 7.3	District Population, In-Migration, Death and Fertility Rates, 2005-2010	7/8
Table 7.4	Source of Potable Water in the Communities within the Terminal Vicinity	7/11
Table 7.5	Monthly Household Expenditure (AZN)	7/21
Table 7.6	Companies and Individuals Who Hold a Commercial Licence to Fish in 2012	7/27
Table 7.7	BP/AIOC Social Spend 2002 to 2011 (US\$M)	7/35
Table 7.8	Local Content Spend 2006 to 2011 (US\$M)	7/35
Table 8.1	Key Issues Raised During Engagement and Consultation	8/6
Table 9.1	Structure of SD2 Project Impact Assessment	9/3
Table 9.2	“Scoped Out” SD2 Project Drilling and Completion Activities	9/4
Table 9.3	“Assessed” SD2 Project Drilling and Completion Activities	9/5
Table 9.4	Event Magnitude	9/10
Table 9.5	Human Receptor Sensitivity	9/11
Table 9.6	Biological/Ecological Receptor Sensitivity	9/11
Table 9.7	Impact Significance	9/11
Table 9.8	Event Magnitude	9/14
Table 9.9	Receptor Sensitivity (Seals and Fish)	9/15
Table 9.10	Impact Significance	9/15
Table 9.11	Summary of Drilling Discharges per Hole	9/16
Table 9.12	Approximate Extent of Cuttings Deposition to 1mm Depth and Maximum Depth of Deposition for NF and ES MODU Drilling Discharges (1 and 6 Well Scenarios)	9/18
Table 9.13	Approximate Composition and Environmental Fate of WBM	9/21
Table 9.14	Seawater Sweeps and Water Based Mud Toxicity Tests (2007)	9/22
Table 9.15	Event Magnitude	9/22
Table 9.16	Receptor Sensitivity (Seals and Fish)	9/23
Table 9.17	Receptor Sensitivity (Plankton)	9/23
Table 9.18	Receptor Sensitivity (Benthic Invertebrates)	9/24
Table 9.19	Impact Significance	9/24
Table 9.20	Event Magnitude	9/28
Table 9.21	Receptor Sensitivity (Benthic Invertebrates)	9/28
Table 9.22	Receptor Sensitivity (Seals and Fish/ Zooplankton/ Phytoplankton)	9/29
Table 9.23	Impact Significance	9/29
Table 9.24	Event Magnitude	9/33
Table 9.25	Receptor Sensitivity (All Receptors)	9/34

Table 9.26	Impact Significance	9/34
Table 9.27	Event Magnitude	9/35
Table 9.28	Receptor Sensitivity (All Receptors)	9/36
Table 9.29	Impact Significance	9/36
Table 9.30	Event Magnitude	9/39
Table 9.31	Receptor Sensitivity (All Receptors)	9/39
Table 9.32	Impact Significance	9/40
Table 9.33	Summary of SD2 Project Drilling and Completion Activities Environmental Impacts	9/41
Table 10.1	“Scoped Out” SD2 Project Activities	10/4
Table 10.2	“Assessed” SD2 Project Construction, Installation and HUC Activities	10/10
Table 10.3	Event Magnitude	10/16
Table 10.4	Receptor Sensitivity	10/17
Table 10.5	Impact Significance	10/17
Table 10.6	Event Magnitude	10/21
Table 10.7	Receptor Sensitivity	10/21
Table 10.8	Impact Significance	10/22
Table 10.9	Event Magnitude	10/22
Table 10.10	Receptor Sensitivity	10/23
Table 10.11	Impact Significance	10/23
Table 10.12	Predicted Construction Noise Levels LAeq (dB) During Pre-ILI and ILI Pigging at Pipeline Landfall Area and Pipeline Dewatering and Air Drying at the Sangachal Terminal	10/26
Table 10.13	Event Magnitude	10/27
Table 10.14	Human Receptor Sensitivity	10/27
Table 10.15	Biological/Ecological Receptor Sensitivity	10/28
Table 10.16	Impact Significance	10/29
Table 10.17	Event Magnitude	10/31
Table 10.18	Human Receptor Sensitivity	10/31
Table 10.19	Biological/Ecological Receptor Sensitivity	10/32
Table 10.20	Impact Significance	10/32
Table 10.21	Event Magnitude	10/33
Table 10.22	Biological/Ecological Receptor Sensitivity	10/35
Table 10.23	Impact Significance	10/35
Table 10.24	Event Magnitude	10/38
Table 10.25	Receptor Sensitivity (Soil and Surface Water)	10/39
Table 10.26	Impact Significance	10/39
Table 10.27	Event Magnitude	10/41
Table 10.28	Receptor Sensitivity	10/42
Table 10.29	Impact Significance	10/42
Table 10.30	Event Magnitude	10/46
Table 10.31	Receptor Sensitivity	10/46
Table 10.32	Impact Significance	10/46
Table 10.33	EC/LC50 Values and No-effect Dilution Factors for the SD2 Export and MEG Import Pipelines and Infield Flowlines Preservation Product	10/48
Table 10.34	Summary of Small, Medium and Large Discharge Scenarios	10/48
Table 10.35	Event Magnitude (Pre-commissioning Discharges)	10/51
Table 10.36	Event Magnitude (MEG Discharges During Subsea Production System Installation)	10/53
Table 10.37	Receptor Sensitivity	10/53
Table 10.38	Impact Significance	10/53
Table 10.39	Event Magnitude	10/55
Table 10.40	Receptor Sensitivity (All Receptors)	10/56
Table 10.41	Impact Significance	10/56
Table 10.42	Event Magnitude	10/59
Table 10.43	Receptor Sensitivity	10/60
Table 10.44	Impact Significance	10/60
Table 10.45	Event Magnitude (Finger Piers)	10/62

Table 10.46	Event Magnitude (Nearshore Trenching)	10/63
Table 10.47	Receptor Sensitivity	10/63
Table 10.48	Impact Significance	10/63
Table 10.49	Event Magnitude	10/65
Table 10.50	Receptor Sensitivity	10/65
Table 10.51	Impact Significance	10/65
Table 10.52	Summary of SD2 Project Construction, Installation and HUC Residual Environmental Impacts	10/66
Table 11.1	“Scoped Out” SD2 Project Offshore, Onshore and Subsea Operations Activities	11/3
Table 11.2	“Assessed” SD2 Project Offshore, Onshore and Subsea Operations Activities	11/6
Table 11.3	Predicted Increase in Long Term and Short Term NO2 Concentrations at the Absheron Peninsula/Shahdili Receptor for Modelled Offshore Operating Scenarios	11/11
Table 11.4	Event Magnitude	11/11
Table 11.5	Human Receptor Sensitivity	11/12
Table 11.6	Biological/Ecological Receptor Sensitivity	11/12
Table 11.7	Impact Significance	11/12
Table 11.8	Event Magnitude	11/18
Table 11.9	Human Receptor Sensitivity	11/18
Table 11.10	Biological/Ecological Receptor Sensitivity	11/19
Table 11.11	Impact Significance	11/19
Table 11.12	Event Magnitude	11/20
Table 11.13	Receptor Sensitivity	11/21
Table 11.14	Impact Significance	11/21
Table 11.15	Summary of SD2 Noise Levels at Receptors During Routine Operations	11/23
Table 11.16	Anticipated Flaring Events (Routine and Non Routine Operations)	11/23
Table 11.17	Event Magnitude - Routine Plant Operations	11/24
Table 11.18	Event Magnitude – Non Routine Flaring	11/25
Table 11.19	Receptor Sensitivity	11/25
Table 11.20	Impact Significance	11/26
Table 11.21	Event Magnitude	11/29
Table 11.22	Biological/Ecological Receptor Sensitivity	11/29
Table 11.23	Impact Significance	11/30
Table 11.24	Event Magnitude	11/32
Table 11.25	Receptor Sensitivity (All Receptors)	11/32
Table 11.26	Impact Significance	11/33
Table 11.27	Event Magnitude	11/36
Table 11.28	Receptor Sensitivity	11/36
Table 11.29	Impact Significance	11/36
Table 11.30	Event Magnitude	11/38
Table 11.31	Receptor Sensitivity	11/38
Table 11.32	Impact Significance	11/38
Table 11.33	Summary of SD2 Project Operations Residual Environmental Impacts	11/39
Table 13.1	Flood Levels at Key Receptors from the Qizildas Cement Plant and SOCAR Petrochemical Complex	13/8
Table 13.2	Predicted Annual Average NO2 Concentrations at Receptors in the Sangachal Terminal Vicinity (Cumulative Scenario)	13/16
Table 13.3	Predicted NO2 Concentrations at the Absheron Peninsula and Sangachal During Routine Operation of all ACG and SD Offshore Facilities	13/16
Table 13.4	Blowout Scenarios – Common Modelling Input Data	13/21
Table 13.5	Blowout Scenarios –Key Input Data Specific to Each Modelling Scenario	13/21
Table 13.6	Flowline Rupture Scenarios – Common Modeling Input Data	13/21

Table 13.7	Flowline Rupture Scenarios– Key Input Data Specific to Each Modelling Scenario	13/22
Table 13.8	Condensate Export Pipeline Rupture Scenarios – Common Modelling Input Data	13/22
Table 13.9	Condensate Export Pipeline Rupture Scenarios – Key Input Data Specific to Each Modelling Scenario	13/22
Table 13.10	Diesel Inventory Loss Scenario – Input Data	13/22
Table 13.11	Summary of Modelled Blowout Outputs	13/25
Table 13.12	Amounts of Condensate Released from Ruptured Flowlines	13/28
Table 13.13	Summary of Modelled Flowline Rupture Outputs	13/29
Table 13.14	Amounts of Condensate Released from Ruptured Condensate Export Pipeline	13/30
Table 13.15	Summary of Modelled Condensate Export Pipeline Rupture Outputs	13/30
Table 13.16	Chemical Compounds in Crude Oils and Condensates That Have the Potential to Exert Toxic Effects on Marine Organisms	13/35
Table 14.1	Environmental and Social Management Plans	14/5
Table 14.2	ISO 14001 EMS Components	14/8
Table 15.1	Summary of Residual Environmental Impacts for SD2 Drilling and Completion Activities	15/2
Table 15.2	Summary of Residual Environmental Impacts for SD2 Construction, Installation and HUC Activities	15/4
Table 15.3	Summary of Residual Environmental Impacts for the SD2 Offshore, Onshore and Subsea Operations Activities	15/9

Appendices

Appendix 2A	Shah Deniz Production Sharing Agreement Extract
Appendix 5A	Emissions Estimate Assumptions
Appendix 5B	Shah Deniz 2 Project Composition and Function of Key SD2 Chemicals with Potential for Discharge
Appendix 5C	Determination of Chemical Hazard Categories
Appendix 5D	Seismic Design of SD2 Platforms and Onshore Facilities
Appendix 5E	Estimate of Sludge Generated from the SD2 Platform Complex
Appendix 5F	Estimated Vessels, Construction Plant and Vehicles Used for Shah Deniz 2 Project Activities
Appendix 6A	Air Quality Monitoring Results
Appendix 6B	Bird Survey Report
Appendix 6C	Fish and Fishing Review Report
Appendix 6D	Caspian Seal Report
Appendix 6E	Criteria for the Screening of Baseline Data for Soils, Groundwater and Surface Water
Appendix 8A	Scoping Consultation Presentations and Meeting Minutes
Appendix 8B	Public Consultation Presentations, Meetings and Minutes
Appendix 9A	Shah Deniz 2 Project Drilling and Completion Activities and Events
Appendix 9B	Drilling and Completion Offshore Air Quality Assessment
Appendix 9C	Underwater Noise Assessment
Appendix 10A	Shah Deniz 2 Project Construction, Installation and HUC Activities and Events
Appendix 10B	Onshore Noise Screening Assessment – Construction (Yards and Terminal Vicinity)
Appendix 10C	Onshore Noise Screening Assessment – Commissioning (Yards and Terminal Vicinity)
Appendix 10D	Onshore Construction (Terminal & Pipeline) Air Quality Screening Assessment
Appendix 10E	Onshore Construction (Yards) Air Quality Screening Assessment
Appendix 10F	Marine Discharges Assessment
Appendix 10G	Soil Classification and Water Monitoring Criteria (Construction Phase)
Appendix 11A	Shah Deniz 2 Project Operations Activities and Events
Appendix 11B	Onshore Operations Air Quality Screening Assessment
Appendix 11C	Offshore Operations Air Quality Screening Assessment
Appendix 11D	Noise Assessment (Onshore)

Appendix 11E	Produced Water Sampling Parameters
Appendix 12A	Socio-Economics Activities and Events
Appendix 12B	Visual Screening Assessment
Appendix 13A	Summary of the Spill Modelling Assessment Report