Shah Deniz 2 Project

Environmental and Socio-Economic Impact Assessment

Non-Technical Summary

BP Azerbaijan

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Contents

Introduction

This document presents a non-technical summary of the Shah Deniz 2 (SD2) Project Environmental and Socio-Economic Impact Assessment (ESIA).

The Shah Deniz (SD) Contract Area lies approximately 100km south east of Baku (refer to Figure E.1). Full Field Development (FFD) of the SD Contract Area is being pursued in stages under the terms of a Production Sharing Agreement (PSA) between the State Oil Company of the Azerbaijan Republic (SOCAR) and a consortium of Foreign Oil Companies (FOC).

The SD Stage 1 development, which commenced production in 2006, includes a fixed platform with drilling and processing facilities limited to the separation of gas and liquids and two marine export pipelines to transport gas and condensate to onshore reception, gas-processing and condensate facilities at the Sangachal Terminal.

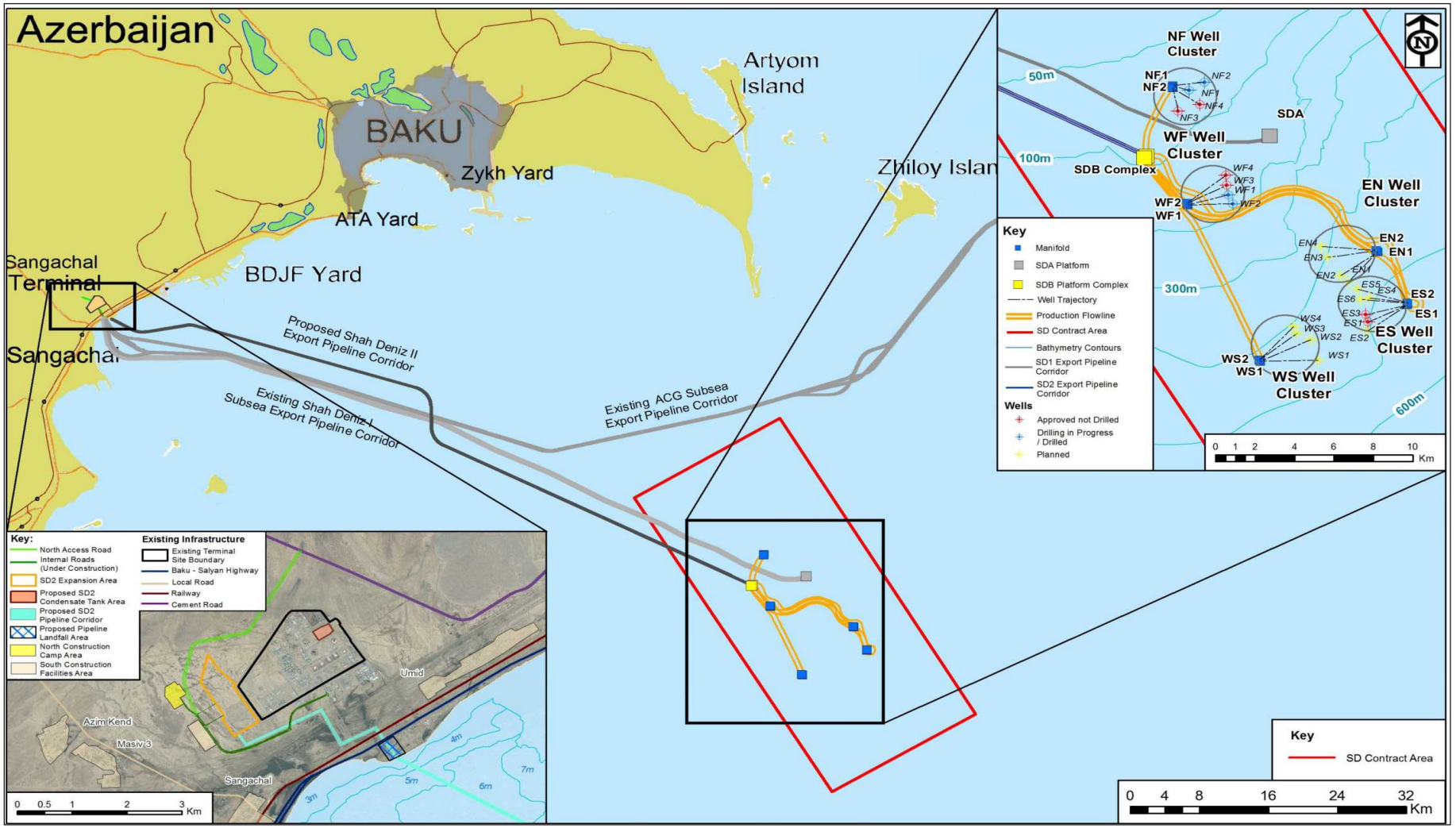
The SD2 Project represents the second stage of the SD field development. It is planned to comprise:

- A fixed platform complex, denoted SD Bravo (SDB), that includes 2 new bridge linked platforms:
    - A Production and Risers platform; and
    - A Quarters and Utilities platform
- Subsea manifolds, associated well clusters and flowlines. The subsea development incorporates a total of 26 wells, drilled using mobile drilling rigs (MODU); and
- New subsea gas and condensate export pipelines to the onshore terminal facilities and a dedicated monoethylene glycol (MEG) import pipeline from the Terminal to the platform complex;
- Onshore processing facilities for the SD2 Project within an expansion area at the Sangachal Terminal.

The scope of the SD2 Project includes the design and construction of the gas export compression, metering and associated utilities at the Terminal, but does not include the work involved in a separate project to expand the capacity of the existing South Caucasus Pipeline, which transports gas from the Terminal to its customers.

Figure E.1 shows the location of the offshore and onshore SD2 facilities, the approximate well locations, subsea infrastructure layout and the routing of the subsea pipelines between the platform complex and the Terminal. The location of the potential construction yards where the platform complex will be constructed (known as the BDJF and ATA yards) are also shown.

Figure E.1 Scope of the SD2 Project



The key onshore, subsea and offshore elements of the SD2 Project Base Case are shown in Figure E.2.

Figure E.2 Project Overview

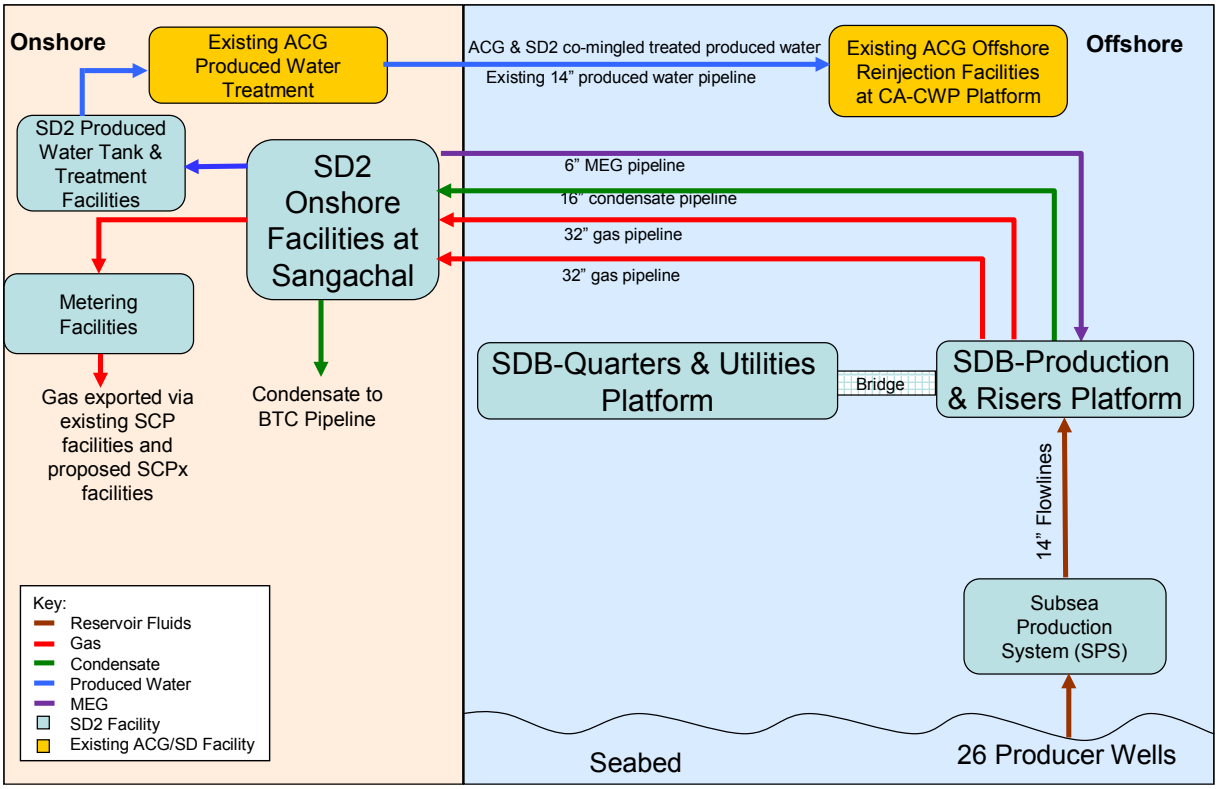


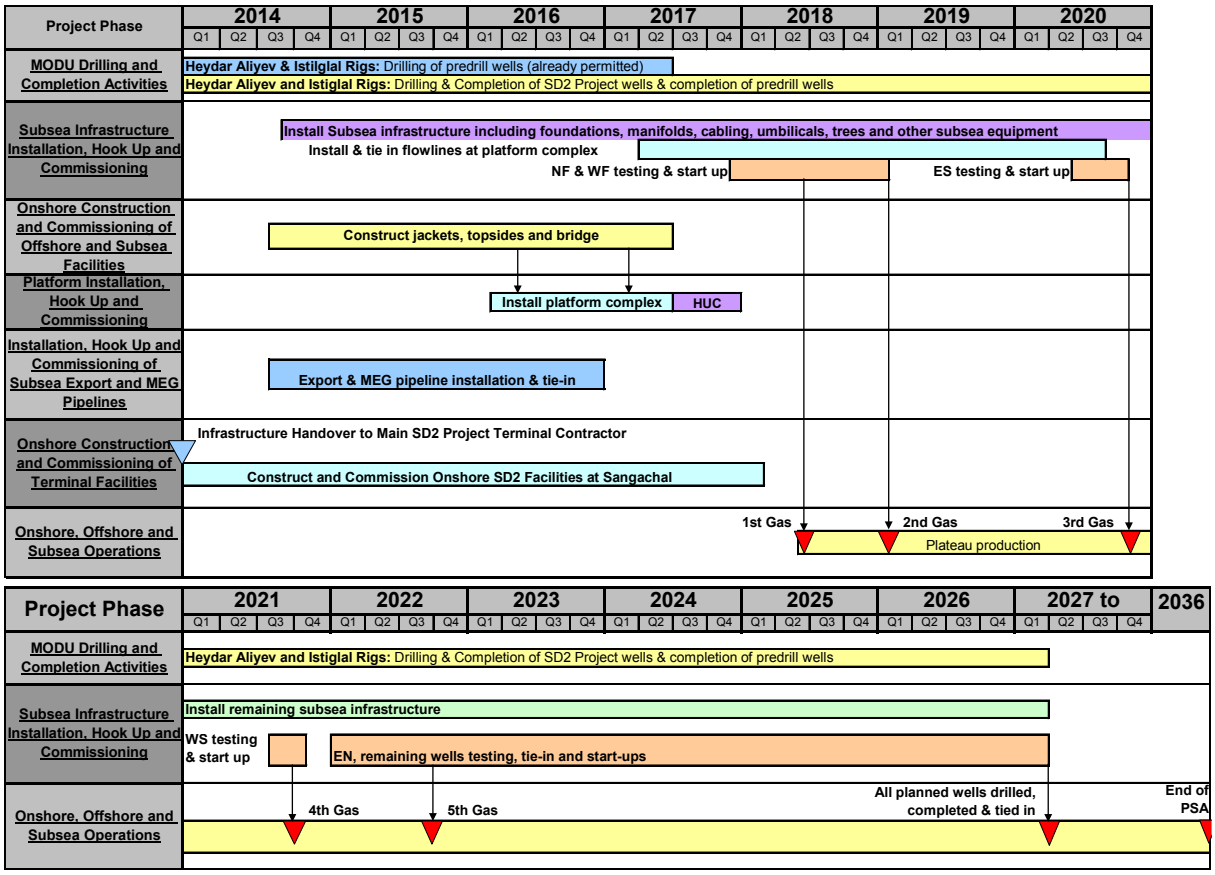
Figure E.2 shows how the production fluids from the wells are sent to the offshore SDB platform complex, via the subsea production system, where the fluids are separated into two primary streams; gas and condensate. From the platform complex the separated fluids are sent to the new SD2 facilities at the Terminal where the fluids are further processed to produce sales gas which meets export specifications and condensate. Produced water will either be sent to the existing ACG facilities (1st option), sent to a third party for treatment and disposal (2nd option) or stored in a new pond at the Terminal.

The project facilities have been designed to process up to:

- 1,777 million standard cubic feet per day (MMscfd) of gas;
- 107 thousand barrels per day (Mbd) of condensate; and
- 25 thousand barrels per day (Mbd) of produced water.

Figure E.3 shows the anticipated schedule for the drilling, construction, installation and commissioning and operations phase activities.

Figure E.3 Indicative Project Schedule

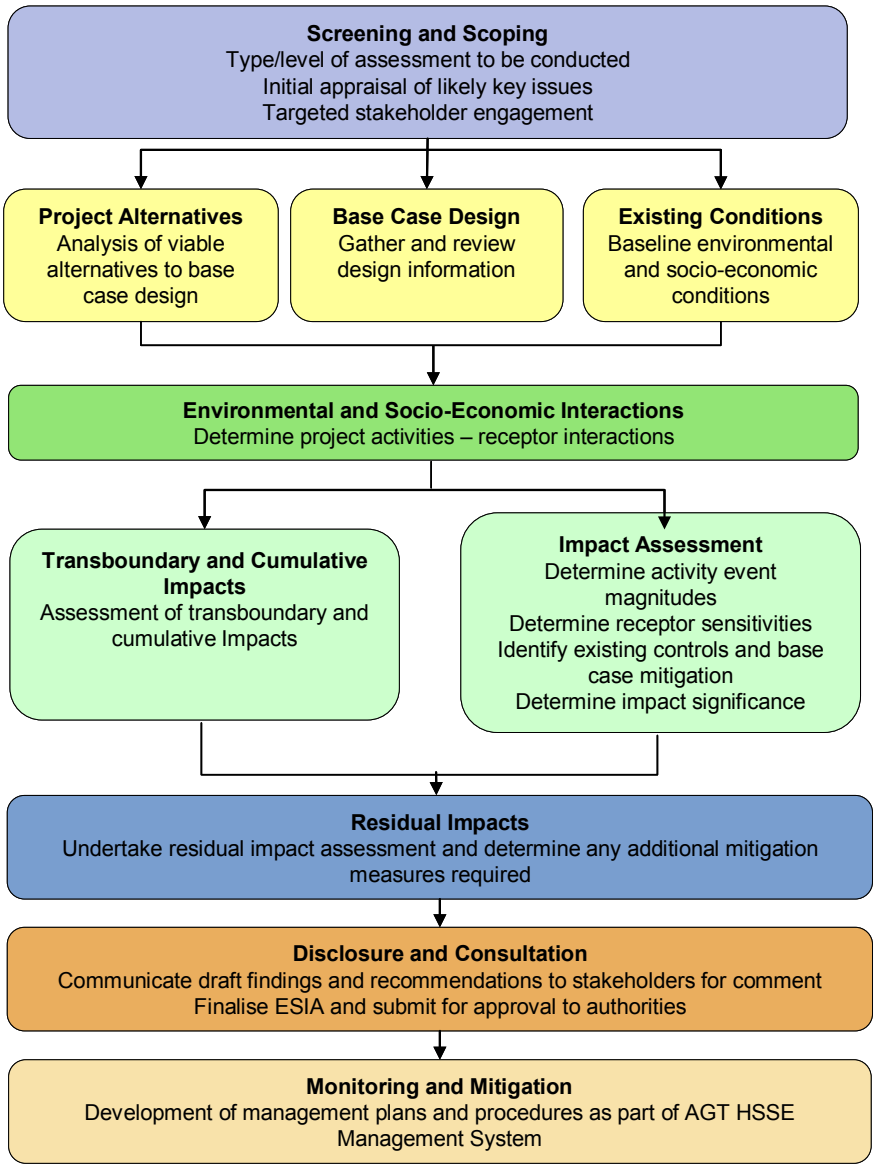


As the figure shows, the majority of the onshore construction activities at the construction yards and the Terminal and pipeline and platform installation activities will occur between 2014 and the end of 2017. It is currently anticipated that first gas will be achieved in 2018 following completion of installation and start up activities in the north flank (NF) of the Contract Area. Wells in the west, east south, west south and east north flanks (WF, ES, WS and EN) will be subsequently completed and started up in stages until 2027.

The environmental and socio-economic impacts associated with each project phase were assessed in accordance with the ESIA methodology presented below. The volume of emissions, discharges and waste associated with each phase was also estimated.

The ESIA has been conducted in accordance with the legal requirements of Azerbaijan as well as BP Azerbaijan's Health, Safety, Security and Environment (HSSE) Policy. The ESIA process (illustrated in Figure E.4) constitutes a systematic approach to the evaluation of a project and its associated activities throughout the project lifecycle.

Figure E.4 The ESIA Process



Assessment of SD2 environmental impacts has been undertaken based on identified SD2 activities and events for each project phase that have the potential to interact with the environment. The expected significance of the impact has been assessed by taking into account:

- ***Event Magnitude:*** Determined based on the following parameters;
  - ***Extent*** – the size of the area that is affected by the activity being undertaken;
  - ***Duration*** – the length of time that the activity occurs;
  - ***Frequency*** – how often the activity occurs; and

  - ***Intensity of the impact -*** the concentration of an emission or discharge with respect to standards of acceptability that include applicable legislation and international guidance, its toxicity or potential for bioaccumulation, and its likely persistence in the environment.
- ***Receptor Sensitivity:*** Determined based on:
  - ***Presence –*** whether species/people are regularly present or transient in the area of impact, whether species present are unique, threatened or protected or not vulnerable or whether features are highly valued or of little or no value; and
  - ***Resilience –*** how vulnerable species/people/features are to the change or disturbance associated with the environmental interaction with reference to existing baseline conditions and trends (such as trends in ecological abundance/diversity/status).

The SD2 impact assessment process has benefited from the fact that offshore SD and Azeri-Chirag-Guneshli (ACG) Contract Area discharges and emissions have been comprehensively studied and characterised during the operational phase of the existing SD and ACG facilities. As a result, impacts have been evaluated and understood to a far greater extent than was previously possible.

The evaluation of impacts has been based on three principal sources of information:

- Previous environmental risk assessments, including results of toxicity tests and modelling studies applicable to the SD2 Project;
- Modelling studies, including discharge and spill modelling, onshore and offshore noise assessments and air dispersion modelling, undertaken specifically for the SD2 Project; and
- Results from the Azerbaijan Georgia Turkey (AGT) Region Environmental Monitoring Programme (EMP), which has included systematic and regular offshore monitoring at all new and operational platforms and which has regularly carried out ‘regional’ monitoring to identify and quantify natural environmental trends, and with onshore surveys including ecological and air quality monitoring in and around Sangachal Terminal.

The EMP has provided a clearer picture of the composition and sensitivity of benthic biological communities in both the SD and ACG Contract Areas and of the effect of platform and pipeline installation, drilling activities and platform operations on these receptors. With SD Stage 1 and ACG Phases 1, 2 and 3 now in operation, the EMP demonstrates that the control measures (design and operation) included in previous ESIAs have adequately mitigated impacts on the marine environment.

The assessment has also included examination of how agreements, legislation, standards and guidelines apply to the project.

The detailed legal regime for the joint development and production sharing of the Shah Deniz field is set out within the PSA signed by BP and its co-venturers and SOCAR in June 1996 which was enacted into law in October 1996. The analysis clarifies that the PSA prevails in the event of conflicts with any present or future national legislation, except for the Azerbaijani Constitution; the highest law in the Republic of Azerbaijan.

The PSA sets out that petroleum operations shall be undertaken *"in a diligent, safe and efficient manner in accordance with the Environmental Standards to minimise any potential disturbance to the general environment, including without limitation the surface, subsurface, sea, air, lakes, rivers, animal life, plant life, crops, other natural resources and property"*. In developing relevant standards and practices, environmental quality objectives, technical feasibility and economic and commercial viability must be taken into account. In accordance with the PSA, environmental protection standards relevant to production activities have been developed for approval and permitting, planning, risk assessment and management, environmental quality, discharges and emissions, chemical selection and management, condensate and chemical spill contingency planning and waste management.

The project also takes account of a wide range of international and regional environmental conventions and commits to comply with the intent of current national legal requirements where those requirements are consistent with the provisions of the PSA, and do not contradict, or are otherwise incompatible with, international petroleum industry standards and practice. The project will also adhere to the framework of environmental and social standards within the ESIA approved by the MENR. The PSA also makes reference to international petroleum industry standards and practices which the Project will comply with.

Options Assessed

In developing the project, a number of design options were assessed in accordance with a formal BP process for appraising, selecting and defining projects prior to their execution and operation.

The key options assessed during the project design development focused on defining the project concept, selecting the optimal offshore strategy to exploit the SD reservoir, and where possible avoid, adverse environmental impacts. The potential impacts are those associated with discharges to the marine environment, atmospheric emissions, onshore noise, and waste. The environmental evaluation of project options was undertaken alongside technical and economic evaluation and consultation with stakeholders including SOCAR and SD partners.

A number of development concepts were identified for assessment including deepwater platforms, platform drilling options, and multiphase tie-back to shore and subsea development concepts. The concept selection was primarily informed by drilling conditions, seabed depths and reservoir characteristics.

The option of not developing the SD2 Project has also been considered. The decision to not proceed would result in a reduction of potential revenues to the Azerbaijan government with a resultant inability to deliver the associated benefits to the Azerbaijan economy. Pursuing the SD2 Project will result in employment creation for national citizens during both the construction and operational phases of the development, as well as increased use of local facilities, infrastructure and suppliers. The option of not proceeding was therefore disregarded when considered against these socio-economic benefits.

The environmental assessment draws on a wide range of surveys principally from 1999-2004, and the survey data collected from the EMP from 2004 to date, in which survey work was overseen by stakeholder representatives including SOCAR, ministerial bodies and the Azerbaijan National Academy of Sciences. Where additional data linked to the project has been required, specific surveys have been undertaken. Overall, 69 terrestrial and coastal surveys, 24 nearshore surveys, 20 offshore survey, and three pipeline surveys were reviewed.

Existing archaeological and cultural heritage sensitivities were also examined and described, taking account of previous field survey work undertaken in 2001 for the SD1 Project, a follow up survey carried out in 2002 and a reconnaissance and baseline archaeological survey conducted in 2011.

Environmental impacts have been identified and assessed for the following phases of the project: Drilling and Completion; Construction, Installation, Hook-up and Commissioning (HUC); and Operations.

Table E.1 presents the residual impacts of the environmental assessment for the Drilling and Completion phase of the project. As the table shows, the impacts of all aspects of the Drilling and completion programme were predicted to be of minor negative significance, with adequate control, monitoring and mitigation measures.

Table E.1 Summary of SD2 Project Drilling and Completion Activities Environmental Impacts

	Event/ Activity	Magnitude				Sensitivity	Overall Score		
		Extent/ Scale	Frequency	Duration	Intensity		Event Magnitude	Receptor Sensitivity	Impact Significance
Atmosphere	Emissions from mobile drilling rig power generation	1	3	3	1	1 1 1 1	Medium	Human: Low Biological/ Ecological: Low	Minor Negative
	Emissions from MODU flaring (well testing, clean up or intervention flaring)	1	3	1	1	1 1 1 1	Medium	Human: Low Biological/ Ecological: Low	Minor Negative
	Emissions from support vessel engines	1	3	3	1	1 1 1 1	Medium	Human: Low Biological/ Ecological: Low	Minor Negative
Marine Environment	Underwater noise from drilling and vessel movements	1	3	3	1	1 1	Medium	Low	Minor Negative
	Drilling discharges	1	2	3	1	1 1	Medium	Low	Minor Negative
	Cement discharges to seabed	1	3	1	2	1 1	Medium	Low	Minor Negative
	Cement unit washing discharges	1	2	1	2	1 1	Medium	Low	Minor Negative
	BOP testing discharges to sea	1	3	3	1	1 1	Medium	Low	Minor Negative
	MODU cooling water discharges to sea	1	3	3	1	1 1	Medium	Low	Minor Negative
	Vessel and drilling rig ballast water discharge	1	2	1	1	1 1	Medium	Low	Minor Negative
	Vessel and drilling rig treated black water discharge	1	3	3	1	1 1	Medium	Low	Minor Negative
	Vessel and drilling rig grey water discharge	1	3	3	1	1 1	Medium	Low	Minor Negative
	Vessel and drilling rig drainage discharges	1	3	3	1	1 1	Medium	Low	Minor Negative

Table E.2 presents the residual impacts of the environmental assessment for the Construction, Installation and HUC phase of the project, which includes:

- Expansion of Sangachal Terminal to accommodate SD2 facilities (including temporary facilities for construction and construction workers);
- Installation and commissioning of gas and condensate export lines, and a MEG import line, between the SDB platform complex and the new Terminal facilities;
- Installation and commissioning of the subsea flowlines and associated subsea infrastructure;
- Onshore construction and pre-commissioning of the platform topsides and jackets; and
- Offshore installation and HUC of the platform complex.

Table E.2 Summary of SD2 Project Construction, Installation and HUC Residual Environmental Impacts

	Event/ Activity	Magnitude				Sensitivity	Overall Score		
		Extent/ Scale	Frequency	Duration	Intensity		Event Magnitude	Receptor Sensitivity	Impact Significance
Atmosphere	Emissions from Construction Plant and Vehicles (Terminal, Onshore Pipelay and Pipeline Drying)	1	3	3	1	3 1	Medium	Medium	Moderate Negative
	Emissions from Offsite Vehicles	1	3	3	1	3 1	Medium	Medium	Moderate Negative
	Emissions from Terminal Commissioning	1	3	2	1	3 1	Medium	Medium	Moderate Negative
	Emissions from Construction Yard Plant and Vehicles	1	3	3	1	1 1	Medium	Low	Minor Negative
	Emissions from Onshore Commissioning of Main Platform Generators and Topside Utilities	1	3	3	1	1 1	Medium	Low	Minor Negative
	Vessel Emissions	1	3	3	1	1 1	Medium	Low	Minor Negative
Terrestrial Environment	Terminal Construction Plant and Vehicles (Noise)	3	3	3	2	2 2 1 2	High	Human: Medium Biological / Ecological: Medium	Major Negative - reduced to Moderate Negative following additional mitigation
	Onshore & Nearshore Pipelay (Noise)	3	1	3	1	2 2 1 2	Medium	Human: Medium Biological / Ecological: Medium	Moderate Negative
	SD2 Export and MEG Pipeline Pre-Commissioning and Drying	1	1	3	1	2 2 1 2	Medium	Human: Medium Biological / Ecological: Medium	Moderate Negative
	Terminal Commissioning (Noise)	1	1	2	1	2 2 1 2	Low	Human: Medium Biological / Ecological: Medium	Minor Negative
	Construction Yard Plant (Noise)	1	3	3	1	3 1 2 1	Medium	Human: Medium Biological / Ecological: Medium	Moderate Negative

	Event/ Activity	Magnitude				Sensitivity	Overall Score		
		Extent/ Scale	Frequency	Duration	Intensity		Event Magnitude	Receptor Sensitivity	Impact Significance
Terrestrial Environment	Platform Commissioning and Topside Utilities (Noise)	3	1	1	1	3 1 2 1	Medium	Human: Medium Biological / Ecological: Medium	Moderate Negative
	Onshore SD2 Export Pipeline Installation (Ecology)	1	1	3	1	2 1	Medium	Medium	Moderate Negative
	Onshore Pipeline Installation (soils, groundwater and surface water)	1	3	3	1	2 2	Medium	Medium	Moderate Negative
	SD2 Condensate Tank Area Works (soils, groundwater and surface water)	1	3	3	1	2 2	Medium	Medium	Moderate Negative
	Piling within the SD2 Expansion Area (Cultural Heritage)	1	3	1	1	1 2	Medium	Medium	Moderate Negative
	Onshore Pipeline Installation (Cultural Heritage)	1	1	3	2	1 2	Medium	Medium	Moderate Negative
Marine Environment	Construction Yard Cooling Water Discharge	1	3	3	1	1 1	Medium	Low	Minor Negative
	Pipeline and Flowline Pre-commissioning Discharges	3	3	2	1	1 1	High	Low	Moderate Negative
	MEG Discharge During Subsea Infrastructure Installation	1	1	1	1	1 1	Low	Low	Negligible
	Ballast Water (Vessels)	1	2	1	1	1 1	Medium	Low	Minor Negative
	Treated Black Water (Vessels)	1	3	3	1	1 1	Medium	Low	Minor Negative
	Grey Water (Vessels)	1	3	3	1	1 1	Medium	Low	Minor Negative
	Drainage (Vessels)	1	3	3	1	1 1	Medium	Low	Minor Negative
	Piling – Jackets and SSIVs (underwater noise)	3	2	1	2	1 1	Medium	Low	Minor Negative
	Vessels During Nearshore and Offshore Pipelay (underwater noise)	2	3	3	1	1 1	High	Low	Moderate Negative
	Vessels During Subsea Infrastructure Installation (underwater noise)	1	3	3	1	1 1	Medium	Low	Minor Negative
Nearshore/Coastal Environment	Construction of Finger Piers	1	3	3	1	1 1	Medium	Low	Minor Negative
	Nearshore Pipeline Installation Works	1	2	2	1	1 1	Medium	Low	Minor Negative
	Seabed disturbance (cultural heritage)	1	3	1	1	2 2	Medium	Medium	Moderate Negative

Atmospheric emissions and noise associated with onshore construction at the Terminal, onshore and nearshore pipelay and construction at the yards were predominantly predicted to result in impacts of moderate negative significance. Additional measures to reduce noise impacts associated with terminal construction plant and vehicles include completion of a detailed noise assessment immediately prior to works commencing, completion of work plans to include when noisy works are anticipated (to be communicated to the local communities) and noise monitoring prior to and during construction focused on identifying and addressing the reasons for any exceedances of the relevant noise limit Discharges to the marine environment associated with pipeline and flowline pre-commissioning were also assessed as having a moderate negative impact. The marine impact of other offshore installation and HUC activities were predominantly assessed as being of minor negative significance.

During operations, noise and emissions associated with onshore terminal activities were assessed as being of moderate negative significance (refer to Table E.3). Impacts associated with offshore activities during operations were predominantly assessed as being of minor negative significance. Impacts associated with odour due to the anticipated non routine use of ponds for produced water storage were assessed to be of moderate adverse impact, taking into account existing controls and additional mitigation, which includes use of a treatment package to manage any potential exceedances of air quality thresholds from the produced water stored in the pond and evaluation of odour control techniques to be included in the design, if practicable.

Table E.3 Summary of SD2 Project Operations Residual Environmental Impacts

	Event/ Activity	Magnitude				Sensitivity	Overall Score		
		Extent/ Scale	Frequency	Duration	Intensity		Event Magnitude	Receptor Sensitivity	Impact Significance
Atmosphere	Non-GHG Emissions from Routine Offshore Operations	1	3	3	1	1 1	Medium	Low	Minor Negative
	Non-GHG Emissions from Non Routine Offshore Operations (DEH)	1	3	1	1	1 1	Medium	Low	Minor Negative
	Non-GHG Emissions from Non Routine Offshore Operations (Emergency Flaring)	1	3	1	1	1 1	Medium	Low	Minor Negative
	Non-GHG Emissions from Routine Onshore Operations	1	3	3	1	3 1 1 1	Medium	Humans : Medium Biological / Ecological: Low	Moderate Negative Minor Negative
	Non-GHG Emissions from Non Routine Onshore Operations (Emergency Flaring)	1	3	1	1	3 1 1 1	Medium	Humans : Medium Biological / Ecological: Low	Moderate Negative Minor Negative
Terrestrial Environment	Noise associated with Routine Onshore Plant Operations	1	3	3	1	3 1	Medium	Medium	Moderate Negative
	Noise associated with Non Routine Onshore Flaring	3	2	2	1	3 1	Medium	Medium	Moderate Negative
	Odour from non routine pond storage of produced water	2	2	3	2	3 2	High	High	Major Negative - reduced to Moderate Negative following additional mitigation
Marine Environment	Offshore Operations: Cooling Water intake and discharge	1	3	3	1	1 1	Medium	Low	Minor Negative
	Offshore Operation: Other Discharges to Sea: Treated Black and Grey Water	1	3	3	1	1 1	Medium	Low	Minor Negative
	Offshore Operation: Other Discharges to Sea: Galley Waste	1	3	3	1	1 1	Medium	Low	Minor Negative
	Offshore Operation: Other Discharges to Sea: Drainage	1	3	3	1	1 1	Medium	Low	Minor Negative
	Offshore Operation: Other Discharges to Sea: Freshwater Maker – Saline Effluent	1	3	3	1	1 1	Medium	Low	Minor Negative
	Subsea Operations: Routine and Non Routine Control Fluid Discharge:	1	3	1	1	1 1	Medium	Biological / Ecological: Low	Minor Negative
	Discharges due to Subsea Interventions	1	2	1	1	1 1	Medium	Biological / Ecological: Low	Minor Negative

Control measures to mitigate impacts to the marine environment from routine and non routine discharges associated with the SD2 Project and associated reporting requirements are detailed within Chapters 9, 10 and 11 of this ESIA. These include design and operating principles (e.g. no planned discharge of non-water based mud), facility maintenance regimes, appropriate chemical selection and monitoring to confirm effective operation and/or confirm compliance with standards.

Monitoring and reporting procedures and documentation requirements for the each SD2 Project phase are included within BP Azerbaijan's Health, Safety, Security and Environment (HSSE) Policy (Refer to Chapter 14). Once operational, the SD2 Project will develop a set of specific monitoring, management and reporting procedures based on, and consistent with, the procedures already in use on existing SD and ACG platforms.

An extensive range of survey work was undertaken to describe the socio-economic baseline conditions relevant to the project, drawing on a wide range of primary and secondary sources. Primary sources included data collected from a qualitative and quantitative stakeholder and socio-economic survey undertaken in 2011, while secondary data included information from recognised institutions such as the United Nations, the International Monetary Fund, the Statistical Committee, of the Republic of Azerbaijan and the Garadagh Executive Committee, the authority responsible for administration within the district where the onshore facilities are located (refer to Table E.4).

Table E.4 Relevant Socio Economic Data Sources

Date	Title of document / survey
2006	ACQUIRE, Reproductive Health & Services in Azerbaijan 2005: Results of a Baseline Survey in Five Districts, E&R Study #6
2006	USAID, Country Profile
2007	UNDP, Gender Attitudes in Azerbaijan: Trends and Challenges, Azerbaijan Human Development Report
2007	USAID, Country Health Statistical Report Azerbaijan
2008	International Monetary Fund, Republic of Azerbaijan: Statistical Appendix 2007
2008	State Statistical Committee of the Republic of Azerbaijan, Demographic & Health Survey 2006
2009	Garadagh Cement Project New Dry Kiln 6 ESIA 2009
2009	Gizildash (Qizildas) Cement Factory ESIA, NORM, 2009
2010	United Nations Azerbaijan, United Nations Development Assistance Framework 2011-2015
2010	AIOC Chirag Oil Project ESIA,2010
2010	International Crisis Group (ICG) Global 2010 Report
2010	State Statistical Committee of the Republic of Azerbaijan, Socio-economic Development of the Settlements of Baku City
2010	ICG, Azerbaijan: Vulnerable Stability Europe Report No.27
2010	Agents of Change: Reflections on a working partnership between BP Azerbaijan and the International Institute for Environment and Development (IIED)
2011	Data provided to BP from Garadagh ExComm
2011	SD2 Project Stakeholder and Socio-Economic Survey (SSES)

The following socio-economic interactions resulting from project activities were identified based on the anticipated project activities:

- Employment creation and de-manning;
- Training and skills development;
- Procurement of goods and services (including construction yard operations and their workers);
- Disruption to fishing and commercial shipping operations; and
- Offsite construction vehicle movements and an associated increased risk to community health and safety.

Survey work indicated that those individuals and groups most likely to be affected by project activities:

- The local communities of Sangachal Town, Umid, Masiv 3 and Azim Kend, which are the four main settlements in the vicinity of the Terminal;
- Recreational, small-scale and artisanal fishermen, commercial fishermen and recreational users of the shoreline;
- Users of regional road infrastructure;
- Local, regional and national businesses and their staff (including the contractors and workers at construction yard operations); and
- Owners and the crew of vessels engaged in commercial shipping operations and local government authorities responsible for regulating such activities.

The assessment predicted predominantly positive impacts in terms of employment, training and skills development and procurement of goods and service with potential negative impacts (e,g, disruption to fishing and shipping) minimised through the use of appropriate plans and mitigation.

Consultation

Stakeholder consultation is an important element of the ESIA process, ensuring that the opinions of potentially affected people and interested parties are solicited, collated and documented.

The stakeholder engagement and consultation process has:

- Made use of the consultation framework and methods established for other BP projects in Azerbaijan;
- Been developed with reference to accepted international guidance on expectations of ESIA consultation and disclosure;
- Considered the extent of consultation and disclosure previously undertaken, linked to expansion of the Sangachal Terminal over the past ten years;
- Incorporated recommendations made from a ”lessons learned” review of earlier consultation programmes; and
- Primarily involved the Ministry of Ecology and Natural Resources as the ESIA approving authority. Other national state bodies (such as the Ministry of Culture and Tourism, on cultural heritage aspects) have been involved during the planning and completion of supporting studies as and when required, as well as the general public. Engagement processes involved regular meetings, workshops and surveys with communities and stakeholders near the terminal and a wide range of other individuals, organisations and groups.

A Public Consultation and Disclosure Plan has been prepared for the project which outlines the objectives of consultation, the process for identifying and consulting stakeholders, roles and responsibilities, and the process for lodging and responding to complaints. The draft ESIA report was made widely available in English and Azerbaijani, and comments on it were collated and analysed with responses provided where relevant.

Cumulative Impacts and Accidental Events

A detailed assessment of environmental and socio-economic project impacts, based on expected activities and events, is presented in Chapters 9, 10, 11 and 12 of the ESIA. The assessment takes into account each activity and the existing controls and additional mitigation identified to minimise and manage impacts.

A review of other projects and activities identified the following as having potential cumulative interactions with the SD2 project:

- Qizildas cement plant;
- BP SD1 flare project at Sangachal Terminal;
- Garadagh District Jail House;
- New Baku Port;
- SOCAR petrochemical complex;
- Baku Shipyard Company; and
- Navy and Military camp for Navy Officers;

Cumulative impact evaluation focuses on assessing the potential temporal and geographical overlap between impacts, based on the current project schedule. The construction of the cement plant and the petrochemical complex are expected to alter local hydrological conditions, with a potential increase in flood risk at receptors; however, the SD2 Terminal expansion is not, in itself, expected to have a significant impact on flood levels at any receptor location assessed.

Modelling of noise levels associated with SD1 and SD2 non routine flaring undertaken for safety reasons indicated a potential for noise limits to be exceeded approximately 12% of the time. The majority of the exceedance was estimated to be due to SD1 flaring. The SD1 flare project has committed to implement a flaring policy aimed at reducing this value.

The assessment of cumulative impacts from atmospheric emissions took into account both non-greenhouse gases (GHG) (e.g. NO2) and greenhouse gases (e.g. CO2).

The cumulative emissions of non-GHG onshore were modelled, and are predicted to remain well within the annual average air quality standards. No cumulative impacts are expected from offshore drilling, construction, installation or commissioning activities.

GHG emissions associated with offshore activities were estimated. Drilling and completion activities will account for 13.0% of total project emissions, compared with 79.8% for onshore and offshore operations combined. On an annual basis, SD2 Project is estimated to account for 13% of total ACG and Shah Deniz operational emissions; by 2020, SD2 is expected to contribute approximately 0.36% of the national GHG emissions total for Azerbaijan.

The expected activities and events that may result in a cumulative socio-economic impact from different components of the SD2 Project are:

- A rise in employment opportunities during the construction phases;
- A rise in economic flows from the use of major construction and installation contractors and their associated supply chain network of companies; and
- An increase in road traffic on the Baku-Salyan Highway.

The assessment of socio-economic cumulative impacts demonstrated that negative cumulative impacts associated with the SD2 Project and other projects in the vicinity of the Sangachal Terminal are expected to be limited. Positive cumulative impacts are expected to occur from employment, increased economic flows and the implementation of community development initiatives. These positive impacts will occur in parallel with increasing industrialisation across the Garadagh region which may lead to improvements in transport, communications, utility connections and social infrastructure.

Cumulative Impacts and Accidental Events

The potential for cumulative impacts to the marine environment (from drilling, installation, hook-up, commissioning and operation) was considered. The impacts identified in Chapters 9, 10, 11 and 12 are all either localised, transient, infrequent or small in magnitude. It was concluded that, as all impacts would be restricted to a relatively small area around the points of release, there would be no overlap or interaction, and that cumulative impacts would not occur.

Several types of accidental event were considered:

- Well blow-out;
- Flowline rupture (between subsea installations and the platform complex);
- Condensate export line rupture (between the platform complex and the shoreline); and
- Spillage of diesel fuel from the platform complex.

A well blow-out represents the largest potential event, with the most severe consequences. It is estimated that condensate could be released at a rate of 25,000 barrels per day for up to 224 days (the time required to mobilise a rig and to drill a relief well). This would lead to the presence of dissolved and dispersed hydrocarbons in the water column over a distance of tens of kilometres, with the potential for substantial ecological harm. Some of the condensate components will either not dissolve, or will reach the surface; once on the surface, the condensate will weather to a form of waxy 'flakes'. This wax residue might come ashore in some circumstances, but is expected to have substantially less impact on the shoreline than would be the case with an oil spill.

A Spill Response Plan has been developed, which provides guidance and actions to be taken during a condensate spill incident associated with all Shah Deniz offshore operations, which include mobile offshore drilling units, platforms, subsea pipelines and marine vessels. It is valid for spills that may occur during the commissioning, operations, and decommissioning.

The Spill Response Plan is designed to:

- Establish procedures to control a release or the threat of a release, that may arise during offshore operations from offshore facilities;
- Establish procedures to facilitate transition of response operations from a Tier 1 incident (least significant) to a Tier 2/3 release or threat of release;
- Minimise the movement of the spill from the source by timely containment;
- Minimise the environmental impact of the spill by timely response;
- Maximise the effectiveness of the recovery response through the selection and use of
- appropriate equipment and techniques; and
- Maximise the effectiveness of the response by having trained and competent operational teams in place.

BP's response strategy is based on: an in-depth risk assessment of drilling and platform operations and subsea pipelines; analysis of potential spill movement; environmental sensitivities and; the optimum type and location of response resources.

Each phase of the SD2 Project will be subject to formal environmental and social management planning. During drilling, construction, installation, hook-up and commissioning, the key contractor companies will be contractually required to develop and implement environmental and social management systems. BP will operate the SD2 facilities using an Operations Phase ESMS that is certified to ISO 14001 Environmental Management System (EMS) and will be based on the 'plan-do-check-act' cycle.

BP's has implemented an Environmental Monitoring Programme (EMP) in Azerbaijan, designed to provide a consistent, long-term set of data, with the objective of developing an accurate picture of potential impacts on the surrounding environment, so that they can be managed and mitigated as effectively as possible. The EMP will be expanded for the SD2 Project, to integrate operational monitoring of key discharges and emissions. The aim of regular monitoring is to establish an understanding of trends over time, taking account of the results from concurrent regional surveys and initial baseline data. Combined with operational discharge and emissions monitoring, this approach provides a robust method for assessing the impact of SD2 Project operations based on actual monitoring data.

ESIA Disclosure

The draft ESIA was widely disseminated and was available (along with feedback forms) for a period of 60 days at the following locations and via the Internet:

- BP Energy Centre at Sangachal Terminal;
- BP Offices in Baku;
- Community Centre at Umid (Umid Settlement);
- Public libraries in Sangachal and Sahil (Sahil Settlement E. Guliyev Street, Sangachal Settlement M.A. Sabir Street 1);
- Aarhus Public Environmental Information Centre (MENR, 100 B. Agayev Street, Baku);
- Baku Education Information Centre (40 J. Jabbarli Street, 2nd Floor);
- M.F.Akhundov Central Public Library (29 Khagani Street);
- International Eco-Energy Academy (5 Mammad Arif Street, Baku);
- The Azerbaijan State Oil Academy (20 Azadlig Avenue, Baku); and
- Scientific Library of the National Academy of Sciences (31 H.Javid Avenue).

In addition the following meetings were held (in addition to meetings with the MES, SOCAR and MES):

- Scientists meeting, Baku, 12th August 2013
- Public meeting, Baku, 13th August 2013
- Sangachal community meeting, 15th August 2013
- Umid community meeting, 15th August 2013

The draft ESIA was then revised to address comments provided by stakeholders during disclosure, and will be submitted formally to the Ministry of Ecology and Natural Resources for final approval.

The Final NTS and ESIA are available in the Reports and Publications Section of www.bp.com/caspian