Intended for
Sakhalin Energy Investment Company Limited

On behalf of
Sakhalin-2 Phase 2 Project Finance Parties

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SAKHALIN-2 PHASE 2 LENDERS' ENVIRONMENTAL CONSULTANT MONITORING REPORT SEPTEMBER 2017

RAMBOLL ENVIRON

SAKHALIN-2 PHASE 2 LENDERS' ENVIRONMENTAL CONSULTANT
MONITORING REPORT SEPTEMBER 2017

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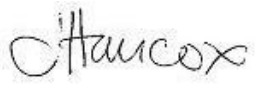
Approved by:	

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RoW Descriptions

LIST OF ABBREVIATIONS

ACM	Asbestos Containing Materials
AFFF	Aqueous Film-Forming Foam
AOC	Accidentally Oil Contaminated
AST	Above ground storage tank
BAT	Best Available Technique
BIC	Business Integrity Committee
BLF	Beach Landing Facility
BOD	Biological Oxygen Demand
BOP	Blow-out Preventer
BS2	Booster Station 2
BS3	Booster Station 3
BS4	Booster Station 4
BVS	Block Valve Stations
CAP (social context)	Community Awareness Programme
CAP	Chemicals Approval Panel
CAP	Competence Assurance Process
CLO	Community Liaison Organisation
CO_2	Carbon dioxide
COC	Continuously Oil Contaminated
CRI	Cuttings Re-injection (well)
CSR	Corporate social responsibility
EA	External Affairs
EBRD	European Bank for Reconstruction and Development
ENL	Exxon Neftegaz Limited
EPC	Engineering, Procurement and Construction
ESDV	Emergency Shut-down Valve
ESHIA	Environmental, Social and Health Impact Assessment
FPIC	Free, Prior and Informed Consent
FWCC	Federal Classificatory Catalogue of Waste
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GLMS	Global Logistics Management System
GP	Grievance Procedure
GRI	Global Reporting Initiative
GRORO Register	State register of waste disposal facilities
GTT	Gazprom Transgas Tomsk
HCFC	Hydrochlorofluorocarbon
HDPE	High-density polyethylene
HFC	Hydrofluorocarbon
HRA	Health Risk Assessment
HSE	Health, Safety and Environment
HSESAP	Health, Safety, Environmental and Social Action Plan
HSE-MS	Health, Safety and Environment Management System
HSE-SP MS	Health, Safety, Environment and Social Performance Management System
HUET	Helicopter Underwater Escape Training
IBC	Intermediate Bulk Container
IC	Information Centre, or 'info-centres'
IEC	Independent Environmental Consultant

IFC PS	International Finance Corporation Performance Standard(s)
IFC EHS	International Finance Corporation Environmental, Health and Safety
IP	Indigenous Peoples
IRP	Incident Review Panel
ISO	International Standards Organisation
IUCN	International Union for Conservation of Nature
JT	Joule-Thomson
KPA	Korsakov Permanent Accommodation
LNG	Liquefied Natural Gas
LSA	Low Specific Activity (material), also known as 'NORM'
LTI	Lost-Time Injury
LUN-A	Lunskoye-A Production Platform
MDEA	Methyl diethanolamine
MEG	Monoethylene glycol
MMO	Marine Mammal Observer
MMP	Monitoring and Mitigation Plan
MPC	Maximum Permissible Concentration
MPE	Maximum Permissible Emissions
MPQ	Molikpaq
MRF	Materials Recovery Facility
MSDS	Material Safety Data Sheet
NORM	Naturally Occurring Radioactive Material
NOx	Oxides of nitrogen
OBM	Oil based mud
OBN	Ocean Bottom Nodes
ODS	Ozone Depleting Substance
OE	Operational Excellence Engineer
OET	Oil Export Terminal
OFI	Opportunity for Improvement
OGM	Oil & Gas Module
OIM	Offshore Installation Manager
OPF	Onshore Processing Facility
OPF-C	OPF Compression (Project)
OSRP	Oil Spill Response Plan
OSS	Offshore Services Supervisor
OVOS	Оценка Воздействия на Окружающую Среду (an Environmental Impact Assessment in the Russian regulatory practice/statutory permitting)
PA	Piltun Astokhskoye
PA-A	Piltun Ashtokskoye A (production platform), or "Molikpaq"
PA-B	Piltun Ashtokskoye B (production platform)
PCB	Polychlorinated Biphenyl
PCDP	Public Consultation and Disclosure Plan
PCDR	Public Consultation and Disclosure Report
PGM	Power Generation Module
PM	Particulate Matter
PMD	Pipeline Maintenance Depot
PPE	Personal Protective Equipment
PTW	Permit To Work
Ramboll Environ	Ramboll Environ UK Ltd
RE	Ramboll Environ UK Ltd

RF	Russian Federation
RoW	Right of Way
RPN	RosPrirodNadzor, the Federal Environmental Inspectorate
RTN	RosTekhNadzor
Sakhalin Energy	Sakhalin Energy Investment Company Ltd
SD	Sustainable Development
SDW	Solid Domestic Waste
SE	Sakhalin Energy Investment Company Ltd
SI	Social Investment
SIMDP	Sakhalin Indigenous Minorities Development Plan
SIMOPS	Simultaneous operations
SP	Social Performance
SPZ	Sanitary Protection Zone
STP	Sewage Treatment Plant
TSS	Technical Support Services (maintenance contractor)
TSS (wastewater context)	Total Suspended Solids
AUV	Unmanned Aerial Vehicles
WCC	Work Control Certificates
WFM	Water Flood Module
WGW	Western Gray Whale
WGWAP	Western Gray Whale Advisory Panel
WHRU	Waste Heat Recovery Unit
YTD	Year-to-date
ZPGS	Zapolyarpromgrazhdanstroy, OPF-C Project early works contractor

EXECUTIVE SUMMARY

Ramboll Environ UK Limited (Ramboll Environ) is the Independent Environmental Consultant (IEC) acting on behalf of the Lenders to the Sakhalin-2 Phase 2 project (the 'Project'). Under the Terms of Reference of our engagement, Ramboll Environ undertakes annual monitoring visits and biennial audits of the Project.

This report covers the combined Project monitoring visit and audit conducted by Ramboll Environ from 11th to 18th September 2017 that focused on the following aspects:

Project Monitoring:

- Environmental monitoring
  - Pipeline right of way (RoW)
  - Liquefied natural gas (LNG) facility at the Prigorodnoye Production Complex
  - Nogliki landfill
  - OPF Compression (OPF-C) Project site
  - LNG Train 3 locations.
- Social performance (SP) monitoring
  - Social Performance update and progress overview
  - Community engagement and information disclosure
  - Social aspects of the development projects (OPF-C and Train 3)
  - Engagement with Japanese stakeholders and the '*Stroitel'* Dacha Cooperative
  - Social investment (SI) programme update
  - Implementation of the Sakhalin Indigenous Minorities Development Plan (SIMDP)
  - Community grievance redress mechanism.
- Other project updates, including:
  - Environmental Performance
  - Waste management
  - 4D Seismic survey and Western Gray Whales.

Level 1 Audits:

Appendices 2 and 3 of this monitoring report provide the findings of Level 1 (as defined in the HSESAP "HSE Assurance Standard Overview") audits of the Onshore Processing Facility (OPF) and Piltun Astokhskoye A (PA-A) production platform, which were undertaken concurrently with the monitoring visit.

The following sections summarise the key findings of the visit.

Right of Way

The September 2017 site visit to the pipeline RoW was concentrated on the general condition of the RoW with focussed visits to selected sites to view aspects including river crossings, Category 1-3 repair work sites, vegetation restoration and erosion control. In addition to visits to the RoW, environmental inspections were made of the proposed sites of Booster Station 3 (BS3) and Booster Station 4 (BS4), along with the existing Booster Station 2 (BS2).

Overall, biological reinstatement of the RoW continues to improve year upon year due to the positive and proactive approach taken by the Company with a focus on high risk issues such as river erosion and landslips. Five river crossings were visited by Ramboll Environ during the site visit. Protective stone rip-rap observed at these sites appeared to be in good condition with

vegetation emerging between the stones which is likely to aid stabilisation and improve visual appearance of the river banks.

A general observation was made that the 'naturalness' of vegetation within the RoW is low, and in several locations there is a relatively large difference between the plant communities within the RoW and the vegetation immediately adjacent on either side. In one or two technically challenging situations on sandy soils and dunes near the Lun-A landfall, vegetation has yet to recover. These small areas will likely require specially designed ecological restoration techniques.

In relation to the tree clearance works on the RoW, the Company appears to have maintained the regrowth issue at a steady level, although this is likely to be an ongoing task for the foreseeable future and will be subject to future review by the IEC.

LNG Monitoring

Ramboll Environ undertook a monitoring visit to the LNG facility, focussing on storage and handling of oil and chemicals, waste management, wastewater treatment, air quality and groundwater monitoring and energy efficiency, and the main findings are as follows.

- Storage of oil and chemicals is generally to a very high standard, however a couple of opportunities for improvement were highlighted with regards to secondary containment of drums and other containers.
- Waste management was similarly found to be of a high standard across the site and no issues were noted with regard to waste containment, labelling or segregation.
- Several sections of the temporary aboveground hose connecting the on-site sewage treatment plant (STP) to the older BR-200 water treatment units have been replaced (the need for such had been identified in previous IEC monitoring visits) and it currently appears in good condition. It is understood that the current STP, BR-200 treatment units and surrounding unused buildings will be demolished and replaced with a larger STP in around 2020, as part of the Train 3 Project.
- It is understood that an energy efficiency initiative has recently been launched at the LNG plant in order to reduce CO_2 emissions. Initially, in 2018 the focus will be on reducing flaring through implementation of numerous small incremental improvements. Attention will then shift to optimising the gas turbines.

Nogliki Landfill

Ramboll Environ conducted a visit to 'Nogliki landfill', the non-hazardous waste landfill facility located approximately 2 km south east of Nogliki, in the north east of Sakhalin Island. Nogliki landfill is operated by a 3rd party enterprise and is one of three landfill facilities utilised by Sakhalin Energy. Nogliki landfill receives waste from the OPF and the pipeline maintenance depots (PMDs) in the north of the island.

The facility comprises three active cells with associated leachate collection ponds, one of which is dedicated for Sakhalin Energy waste (the 'Sakhalin Energy Cell'). The other two cells are used for disposal of waste from Municipality of Nogliki and from Exxon Neftegas Ltd (ENL).

Ramboll Environ noted a clear positive difference in the standards of management applied to the Sakhalin Energy Cell and leachate pond, compared to the other two cells. Waste deposited within the Sakhalin Energy Cell was being regularly compacted and covered with sand, and the associated leachate pond was clear of debris and the water level managed. While there remains room for improvement, e.g. more frequent application of sand cover and secondary containment of oil drums, management standards are higher than those noted during Ramboll Environ's last visit to the landfill in 2014.

Two significant improvements were in progress at the site at the time of the visit:

- Installation of a weighbridge, which will provide Sakhalin Energy with more accurate data on its own waste disposal volumes and activities.
- Installation of a materials recovery facility (MRF), which will receive, screen, sort, recover and compact the recyclable fractions of mixed non-hazardous waste received from the municipality, Sakhalin Energy and ENL. The MRF was intended to be operational before the end of 2017.

Social Performance

Monitoring of Sakhalin Energy's social performance (SP) is implemented by the IEC on an annual basis to verify fulfilment of the HSESAP commitments and overall compliance with applicable local legislation and international standards. Similar to the previous monitoring visit, September 2017 monitoring confirmed that all systems and tools that support the Company's SP activities continue to function effectively under the close supervision of Sakhalin Energy's dedicated social performance professionals. As a result, this report mainly serves to highlight recent/future developments and opportunities for improvement.

- SP training continued for Sakhalin Energy staff and contractors. As of September 2017, eight training events for Company staff (with 23 participants) and 34 training events for contractor staff (with 764 participants attending) had been carried out.
- The general public's usage of the Company's Information Centres (IC) continues, with 2,763 visitors registered in 2016 and 2,502 visitors in the period January to June 2017. A public opinion survey confirmed that 100% of IC visitors gave positive feedback on their operation. Ramboll Environ provided further suggestions on how to get the most out of information collected by/from the ICs.
- In 2017, Annual Public Meetings were held in 13 communities with a turnout of 106 people.
- In February 2017, a dedicated Train 3 Community Liaison Organisation (CLO) office was opened in Korsakov.
- Sakhalin Energy continues to operate its well-established Community Grievance Procedure (GP). In 2016-2017, a public and intra-Company awareness-raising campaign was run, with the aim of disseminating information on the GP among the communities, as well as among contractors' and subcontractors' staff.

<u>Social Aspects of Development Projects</u>

We make the following comments regarding the social aspects of the two major development projects (Onshore Processing Facility Compression (OPF-C) Project and Train 3):

- There seems to be no clear and detailed strategy towards stakeholder engagement and information disclosure processes for Train 3, as well as no publicly available materials that provide the information required by IFC Performance Standard 1. Ramboll Environ is aware that certain Project details are currently unknown, and also that a very brief mention of the Project is provided in the annual Sustainable Development reports. However, the current approach to stakeholder engagement and information disclosure is not currently considered sufficient or compliant with the Project's Applicable Standards and Company commitments.

The September monitoring visit confirms potential escalation of concerns raised by the 'Stroitel' Dacha cooperative in light of the Train 3 project. The Company continued its engagement with the 'Stroitel' Dacha during 2016-17 via various mechanisms. Ramboll Environ notes the necessity for the Company to continue its close engagement with the Dacha owners, and, particularly if the Train 3 Project goes forward, to scrutinise any potential impacts of the Project

on the 'Stroitel' Dacha cooperative. Should any negative impacts be envisaged, Sakhalin Energy should suggest effective measures to mitigate these.

OPF Compression Project Monitoring

As part of the monitoring visit, Ramboll Environ conducted a visit to the OPF-C Project site, located in the central, eastern side of Sakhalin Island, adjacent to the OPF. The visit included inspection of the OPF-C construction site, laydown areas, water and wastewater treatment facilities, stormwater drains, soil and peat storage, generators, storage of hazardous substances, waste storage, and the location of the proposed Beach Landing Facility (BLF).

Early works for the OPF-C Project are scheduled for completion by the end of 2017. In September 2017, Sakhalin Energy signed a contract with Petrofac for the construction of the OPF compression station. Petrofac is expected to mobilise in Q4 2017 and to complete construction in 2022.

Petrofac has prepared a list of environmental management plans and procedures for the main construction phase, which will be reviewed by Sakhalin Energy in a pre-mobilisation audit scheduled for December 2017. Ramboll Environ recommends that Sakhalin Energy seeks confirmation from Petrofac on how air emissions, noise, environmental management and reporting, reinstatement, grievance management, and worker accommodation standards will be addressed in the construction phase environmental management plans as it was not clear to us whether these topics would be covered. In addition, a Simultaneous Operations (SIMOPS) procedure should be developed to manage environmental risks (e.g. roles and responsibilities for incidents) during the period when ZPGS and Petrofac are both working at the OPF-C construction site.

Generally, oil and chemicals are stored securely around the OPF-C construction site, however some opportunities for improvement were identified regarding appropriate secondary containment and missing MSDSs.

Soil and peat excavated from the construction site has been stockpiled in an area of 'natural habitat' as defined by IFC PS6. Ramboll Environ highlights a number of potential concerns regarding the soil and peat storage, including:

- Habitat losses caused by the footprint of the peat storage that do not appear to have been considered in the EHSIA. It is recommended that these losses will need to be taken into account by the Project BAP and assessed in terms of the IFC PS6 requirement of no net loss of natural habitats.
- If peat is being stored for later use, it must be stored in wet conditions or in a way that ensures the air cannot come into contact with the soil and cause aerobic decomposition of the humus. The current use of windrows and drainage is likely to cause drying and decomposition.
- Excavated soil deposited outside the construction zone. While permitted, this practice is likely to be causing further damage to surrounding habitats that could be avoided.

Existing damaged areas are reportedly due for restoration at the end of construction in 2020. Ramboll Environ recommends that habitat restoration would be more effective and easier to implement if conducted much sooner.

Stormwater drainage systems and outfalls inspected during the visit do not meet what is considered GIIP. Sakhalin Energy should ensure that stormwater runoff ditches are installed to a standard equivalent to those at the existing OPF site and that sediment and erosion control measures are incorporated into the design.

Train 3

Sakhalin Energy is planning the Train 3 project expansion, which will be fed by third party gas (the source of which is yet to be confirmed) and will require additional infrastructure including two new booster stations, a third LNG train, third LNG tank, second jetty and additional utilities (power generation, refrigeration etc). The third LNG production train will be within the existing footprint of the Prigorodnoye Production Complex so no major early works are anticipated. The Train 3 ESHIA is to be developed in line with IFC Performance Standards. This is under iterative review by Ramboll Environ and we will provide our review to lenders in due course. Public consultation and finalisation of the ESHIA is scheduled for 2018.

The Company has identified the following key environmental and social risks:

- Jetty construction – management of marine aspects and impacts.
- Waste management – compliant, adequately sized waste management facilities and practices.
- Community/neighbour relationships.
- Environmental aspects of upstream modifications (booster stations etc.) – land take, potential protected species, restoration of any disturbed areas.

Ramboll Environ's monitoring visit to the proposed new Booster Station 3 (BS3) site identified a new track that had been cleared through the forest and tree cover on the proposed BS3 site has already been felled. Vehicle movements and other forestry operations have removed the covering of vegetation in many areas, exposing bare soil. The proposed site of BS3 is located on a relatively steep slope and signs of soil erosion are already present. We raise the following Finding that the run-off of sediments poses a significant risk to the adjacent retained forest habitats and nearby water courses unless a robust monitoring and control plan is instigated.

Similarly for Booster Station 4, the site has recently been clear-felled, although has incurred less damage during the forestry operations than BS3 and a relatively intact vegetation cover remains. However, soil erosion and sediment run-off at this location will also be a significant risk during construction.

Aniva Bay was visited by Ramboll Environ's biodiversity specialist in order to view the baseline conditions described in the draft ESHIA. The rocky shoreline and small Mereya lagoon close to the LNG facility are important areas for a number of species including migratory and wintering grebes, divers and sea duck. Ramboll Environ recommends that the large area of rocky shoreline, the new LNG jetty and a larger area of the existing jetty are monitored for signs of alien invasive species as part of the monitoring programme. The shoreline is also well frequented by local people and it is therefore important that these local beneficiaries of ecosystem services are included in the Train 3 ESHIA.

Project Updates

<u>Waste Management</u>

Ramboll Environ has previously reported to lenders on significant issues in relation to capacity issues at the Korsakov landfill and legal restrictions that have stopped disposal of Company waste to the Smirnykh and Nogliki landfills. During this monitoring visit, the Company provided an update on its current short- and long-term Waste Management Strategy:

- Sakhalin Energy is currently using Korsakov landfill for the disposal of a small volume (20 m^3/week) of class 5 non-hazardous waste; Nakhodka landfill on the Russian mainland for the disposal of waste generated at the Company assets in the central and southern parts of the island; and Nogliki landfill for waste generated at the PMD in Nogliki and the OPF site. Class 1 to 3 (hazardous) wastes, including waste oil, continue to be disposed of on the mainland.

- Sakhalin Energy's waste minimisation initiatives have reduced the amount sent to landfill from 3,605 tonnes in 2013 to 1,629 tonnes in 2016 (excluding drilling waste).
- The Company's current longer-term waste management strategy relies on investment by the Oblast into the construction and/or upgrade of local facilities. The Company does not plan to construct any new landfill facilities, and export of waste to landfills on the mainland is seen as a temporary back-up option. Ramboll Environ notes that there have been many delays previously in the development of additional landfill facilities by the Oblast, and hence the status of these local facilities needs to be carefully monitored by the Company.
- The OPF-C Project scope includes incineration for the construction phase. The Company is investigating the option to keep the incinerator for the long-term operations phase.

We understand that the Company has investigated opportunities to develop a Company-owned facility for incineration of construction and operations waste in the south of the island, although any such facilities have been excluded from the Train 3 project design to reduce risks at the approval stage. Ramboll Environ stresses the value of Company-owned incineration facilities, particularly in the south of the island where the reliance on third party facilities and risk of reducing landfill capacity is greatest.

Environmental Performance

- HSE: Sakhalin Energy established a new HSE objective in 2016, known as "Goal Zero", which aims to achieve no harm and no leaks through four strategies: Lead and engage, People, Major Hazards and HSE Hazards and controls. Sakhalin Energy is ahead of target with its 2017 HSE Scorecard, which is structured around the four Goal Zero strategies.
- Flaring: Sakhalin Energy is committed to no continuous flaring or venting (HSESAP Air Emissions Standards Comparison, 0000-S-90-04-O-0257-00-E). Associated gas utilisation at PA-A and PA-B has consistently bettered the 95% target each month in 2017, and data provided by Sakhalin Energy indicates a decline in the quantity of gas flared each year since 2011.
- Sewage Treatment: Previous IEC monitoring reports have described compliance issues with discharges from a number of Sakhalin Energy's onshore STP, including at its staff accommodation facilities in Yuzhno-Sakhalinsk (Zima) and Korsakov (KPA), at BS2 and PMDs. The Company is implementing a number of specific action plans to resolve these issues and achieve permit compliance.
- Discharge to land: The general permitting issue (first identified in September 2012) relating to discharge of treated water to land/soakaways is still ongoing, and as such Sakhalin Energy still does not have valid permits for its ongoing for discharge of treated water to ground at its onshore facilities. The Company is evaluating alternative wastewater disposal options such as discharge to waterbodies to remove discharges to land. Ramboll Environ will continue to monitor this issue.

4D Seismic Survey and Western Gray Whales

Planning is underway for a 2018 4D seismic campaign. It is proposed that the survey uses a combination of streamers and ocean bottom nodes (OBN), which facilitate acquisition of data closer to platforms, for the survey. It is anticipated that there will be no simultaneous operations with ENL. The ESHIA for the 2018 survey is scheduled for April 2018. Approvals are expected to be completed in May 2018 and the survey is scheduled for June to July 2018. Sakhalin Energy maintains its active engagement with the Western Gray Whale Advisory Panel (WGWAP), and is currently working closely with the WGWAP Noise Task Force on a range of noise-related issues.

The MMP for the 2018 survey will be based on the 2015 plan and will be developed with input from the WGWAP. An Independent Observer will be appointed by IUCN, who will check

implementation of the monitoring and mitigation plan (MMP). In addition, Sakhalin Energy will appoint MMOs, including a Marine Environmental Consultant, who will act as the Central Commander for marine mammal mitigation issues. Ramboll Environ will provide additional review commentary to lenders on the assessment and management controls for the seismic survey in due course.

PA-A Platform Audit

Overall, Ramboll Environ identified that environmental performance at PA-A was good and that managers, platform workers and working practices on the Platform indicated a strong HSE culture. Clear leadership was evident from the OIM and management team, responsibility for HSE is shared by all, and it was evident that there was a strong team ethic and desire for continual improvement.

Further positive observations:

- The 'Boots on Deck' programme (encouraging managers to spend a minimum of two hours per day walking and observing the Platform and personnel) appears to be well implemented, with valuable HSE Observations being identified, shared at the daily Heads of Department Meeting and actioned.
- A good standard of housekeeping was observed despite the recent production shut-down and during the drilling rig renovation work.
- Proactive identification of HSE-related improvements / upgrades / capital projects, prioritised on the basis of detailed risk assessment.
- Good provision and maintenance of oil spill response equipment and good programme of emergency drills involve loss of containment elements.

During the course of the audit, the Auditor focused on management systems and more specifically the management of wastes, hazardous materials, air emissions, aqueous discharges and emergency response.

There was a good level of compliance with environmental law and the requirements of the HSESAP and no Findings were identified.

OPF Audit

Environmental performance at the OPF was also found to be very good with a strong HSE culture demonstrated. The following positives are particularly noteworthy:

- HSE communications systems at the OPF are very comprehensive and effectively implemented.
- The standard of waste management at the OPF is generally very high, with secure storage of hazardous and non-hazardous materials, clear labelling and good record keeping. The company has invested considerable effort into building an awareness of good waste management practices.
- The Company continues to implement waste minimisation initiatives, including the installation of additional drinking water treatment systems to allow water from the company's boreholes to be used in the canteen and the use of reusable cups, both reducing plastic waste.

There was a good level of compliance with environmental law and the requirements of the HSESAP with the following exception:

- Six nominally empty 205 litre plastic drums were noted on an area of hardstanding in the waste transit area, near upturned empty drums. At least two of the drums contain a significant amount (estimated at 10-20% of a drum's volume) of liquid, which is presumed to be residual corrosion inhibitor (thioalcohol solution, labelled as an environmentally hazardous

substance). The drums are not labelled as waste, which is a non-compliance with Requirement 4 of Appendix 10 (Waste Containers, Labeling and Transport) of the Waste Management Standard.

1. INTRODUCTION

Ramboll Environ UK Limited (Ramboll Environ) is the Independent Environmental Consultant (IEC) acting on behalf of the Senior Lenders to the Sakhalin-2 Phase 2 project (the 'Project'). Under the Terms of Reference of our engagement, Ramboll Environ undertakes:

- Annual Project monitoring visits that cover a range of project activities, assets, programmes and plans.
- Biennial 'Level 1'[1] audits of selected Project facilities.

A combined Level 1 audit and Project monitoring visit was conducted from 11th to 18th September 2017 and focused on the following aspects (the full Terms of Reference and schedule are presented in Appendix 1):

Monitoring Visit

- Environmental monitoring
  - Pipeline right of way (RoW)
  - Liquefied natural gas (LNG) facility at the Prigorodnoye Production Complex
  - Nogliki landfill
  - OPF Compression (OPF-C) Project site
  - LNG Train 3 locations.
- Social performance (SP) monitoring
  - Social Performance update and progress overview
  - Community engagement and information disclosure
  - Social aspects of the development projects (OPF-C and Train 3)
  - Engagement with Japanese stakeholders and the '*Stroitel'* Dacha Cooperative
  - Social investment (SI) programme update
  - Implementation of the Sakhalin Indigenous Minorities Development Plan (SIMDP)
  - Community grievance redress mechanism.
- Other project updates, including:
  - Environmental Performance
  - Waste management
  - 4D Seismic survey and Western Gray Whales.

Level 1 Audits

- Piltun Astokhskoye-A (PA-A) platform ("Molikpaq", or MPQ)
- Onshore Processing Facility (OPF)

Full reports from the audits of these facilities, with executive summaries, are presented in Appendices 2 and 3 respectively.

This report presents the findings of the site visit, and in addition provides:

Opportunities for Improvement (Section 10). A number of opportunities for improvement (OFIs) have been identified following the site visit that do not relate to specific areas of non-compliance (and hence are not included in the Findings Log – see below), but which are made

[1] As defined in the HSESAP "HSE Assurance Standard Overview" document 0000-S-90-04-O-0015-00-E
http://www.sakhalinenergy.ru/media/user/libraryeng/healthsocial/2015/88-0000-S-90-04-O-0015-00-E%20Appendix%201.pdf

for the benefit of either Sakhalin Energy and/or lenders to either improve performance or, in some cases, avoid future areas of non-compliance.

- An updated Findings Log (Section 11). The Findings Log is a live log of all Findings identified from IEC site visits and reviews of Project documentation. During the site visit, progress made towards the closure of open Findings was reviewed and the updated status of the Findings is provided in a revised Findings Log. The Findings Log has been updated following this audit and monitoring visit.
- Follow-Up Items (Section 12), which are neither Findings nor Opportunities for Improvement, but a list of topics or issues that Ramboll Environ intends to follow up on, either as part of future audits or monitoring visits or by requesting further information from the Company (as and when available).

2. LEVEL 1 AUDITS

Level 1 Audits were undertaken at two facilities, namely the PA-A platform ("Molikpaq") and the OPF. A Level 1 audit, for the purposes of the loan agreement is defined in the HSESAP as "*An environmental, social, health and safety audit of one of the Project Facilities or Project Expansion Facilities or of a major issue affecting the Project or any Project Expansion as a whole carried out by or on behalf of a third party or a Sponsor or Shareholder*". Full reports from the audits of these facilities are presented in Appendices 2 and 3 respectively.

OFIs, data requests, Findings and follow-up items from the audits are summarised alongside those of the monitoring visit in the main body of this report.

3. PIPELINE RIGHT OF WAY MONITORING

3.1 Introduction

The September 2017 site visit to the pipeline RoW concentrated on the general condition of the RoW with focussed visits to selected sites to view aspects including river crossings, Category 1-3 repair work sites, vegetation restoration and erosion control. The full list of locations visited, together with summary descriptions of observations from each location, is presented in **Error! Reference source not found.**.

In addition to visits to the RoW, inspections were made of the proposed sites of Booster Station 3 (BS3) and Booster Station 4 (BS4), along with the existing Booster Station 2 (BS2). The focus of these visits relates to the potential Train 3 project which is discussed in Section 8 of this report.

3.2 Biological Reinstatement

3.2.1 Overview

Following the site inspections and extensive discussions with Sakhalin Energy staff, it is evident that the Company is taking a very positive and proactive approach to managing environmental issues relating to the RoW. In particular, it is clear that Sakhalin Energy is implementing active monitoring of the RoW with a focus on high risk issues such as river erosion and landslips. This proactive approach is reducing the number and severity of incidents, as well as the associated scale of environmental damage and resulting repair works required.

Overall, there is a continuing trend of improvement over the preceding years. Observations during the current monitoring visit indicated further improvements in vegetation cover and progress in RoW clearance of tree saplings. While the overall levels of vegetation cover have improved, a general observation was made that the 'naturalness' of vegetation within the RoW is low. In several locations, there is a relatively large difference between the plant communities within the RoW and the vegetation immediately adjacent on either side. In one or two technically challenging situations on sandy soils, vegetation has yet to recover. These small areas will likely require specially designed ecological restoration techniques. In relation to the tree clearance works, it is clear that this is likely to be an ongoing task for the foreseeable future to cut back the rapid regeneration of trees within the RoW.

3.2.2 Tree Growth

Tree removal on the RoW is reportedly performed using hand held equipment only. The tree cutting works are limited to the late summer period. Trees cut in the early summer re-sprout and quickly put on growth in the same season. Trees cannot be cut in the winter due to snow cover. The short seasonal opportunity for works reduces the area that can be cut in any particular year and areas need to be cut according on an ongoing rotational basis. The current hand held equipment removal method avoids soil disturbance and the loss of non-tree vegetation and is an improvement from early mechanical methods employed by the Company.

It was explained by Sakhalin Energy that the cut material has to be removed from the RoW for disposal off-site (possibly to landfill). This appears to be a change in approach from previous years where it was understood that cut material was chipped and spread on-site. Either approach has pro and cons. If completed carefully, chipping on-site could help to provide organic matter to the soil, replacing that lost during construction. However, if spread too thickly it could suppress vegetation growth.

Sakhalin Energy reports that during the 2017 season, trees/saplings were removed from approximately 175 Ha of RoW (more than 2016 but less than 2015) and that the Company plans to maintain this level of effort going forward.

Follow-Up Item: Tree control on the RoW remains an ongoing issue. While Company appears to have maintained the issue of tree growth at a steady level, it will be subject to future review by the IEC. It is also recommended that the method for disposal of tree cuttings is reviewed to find the optimal methodology in terms of environmental impacts.

3.2.3 Steep Slopes

No specific visits were made to sites featuring steep slopes, however a number of steep slopes were observed incidentally while travelling along the RoW. All appeared from a distance to be well vegetated and no obvious signs of erosion were spotted. A number of instances of steep slopes having been created during construction immediately adjacent to the RoW from cuttings through hill side were observed; Photo 1 shows one example. It is understood that this and a number of other sites are being actively monitored by Sakhalin Energy for erosion or landslips via a geotechnical risk register.

Photo 1 – En-route to KP499, steep slope on side of hill cutting

3.2.4 Sandy Slopes

A previous concern raised during RoW inspections was erosion control of sandy slopes that had partial or poor vegetation cover. The issue is not limited to those with a steep gradient – gentle slopes of sandy soil readily develop erosional features when vegetation cover is not adequate. Ramboll Environ's current visit to KP 123 has shown excellent revegetation progress since the previous site visit in June 2016 (Photo 2 and Photo 3). However, it is noted that the vegetation established within the RoW remains relatively 'unnatural' compared to the forest floor vegetation

present either side of the RoW. In part, this is likely to be due to the loss or mixing of the very shallow topsoil along with its seedbank during construction. It may take decades for a more authentic forest floor vegetation to restore within the RoW as the soil profile matures and seeds spread from its edges.

Another sandy slope was observed at Fault Crossing #1ALT (see Appendix 4). No erosion was observed at this location and the slopes have been protected through the installation of slope breakers and geo-textile. However, additional specialist ecological restoration may be required to restore natural vegetation at this location. The very low-nutrient sandy soils at this location naturally support fragile lichen mats and biogenic crusts. These vegetation types are not easy to restore and are likely to take some years. The difficulty of restoration of this and a number of other locations along the RoW are likely to have been exacerbated through the lack of preservation of the vulnerable topsoils along with their seedbanks during construction. This issue is being tracked as Finding LAND.16.

Photo 2 - Recently restored sandy slope (June 2016)

Photo 3 - Similar location, pictured during this visit (September 2017)

3.2.5 Sand Dunes at KP 14 (Lun-A landfall to OPF)

The beach landfall of the pipeline from the Lunskoye-A platform (Lun-A) to the OPF was visited. The area of dune vegetation immediately adjacent to the sandy beach has restored rapidly following construction due to the colonising ability of Marram in this naturally unstable sandy habitat. However, the vegetation on the more stable dune areas immediately inland has not restored (Photo 4 and Photo 5) and bare sand is still present. The plant community of stable dunes is relatively complex and includes biogenic crusts and lichen beds. Restoration of this natural habitat in the RoW will likely require a tailored ecological restoration programme, such as the local collection of seed and propagation of plants for transplantation.

Photo 4 - KP 14 (Lun-A landfall), mature stable dune habitat adjacent to the RoW

Photo 5 - RoW at KP 14 showing areas of bare sand

3.3 Wetlands

The recovery and condition of wetlands was one of the focal points of the 2014 monitoring visit, where a significant improvement was noted in comparison with previous years. During subsequent monitoring visits, Ramboll Environ revisited some of these wetlands, which indicated that habitat conditions and recovery of the wetlands continued to improve.

A single wetland site (KP 230) was visited during September 2017, close to Smirnykh. Additional culverts have been installed as recommended by the previous site visit monitoring report. Unfortunately, the visit coincided with a dry weather period and the site was dry at the time of the visit, therefore it was not possible to observe the efficacy of the new works. Ongoing monitoring of this location is required to ensure that sufficient water flow is maintained to restore the hydrological linkage either side of the RoW. The soils either side of the RoW at this location include a deep layer of surface peat and undecomposed mosses. This has been lost from the RoW during construction which will limit restoration of wetland vegetation within the RoW. However, it is important that water flow is maintained in the wider area to avoid this sensitive habitat from drying out (see **Error! Reference source not found.** for photos and more detailed description of this location). This issue is being tracked as Finding LAND.19.

3.3.1 River Crossings

Five river crossings were visited by Ramboll Environ during the site visit. This included sites subject to restoration work over a number of years. The majority of sites have had protective stone rip-rap installed on the banks to prevent erosion during 'high erosion potential' river flows, especially after snow melt in the spring. To prevent erosion from undercutting either the pipes or the restored banks, protective stone has had to be installed to areas *outside* of the RoW. It is understood that the permitting process for works outside of the RoW has a long lead-time. This is being managed through a proactive restoration programme that attempts to address erosion before it becomes a significant issue. All of the rip-rap observed looked to be in good condition, and by year four following installation has well-established vegetation growing in the cracks between the stones. This vegetation is likely to aid the stabilisation of the banks and improve the overall natural appearance of the stone banks (compare examples in Photo 6 below).


Photo 6 - Recently installed rip-rap, lacking vegetation (left)

Four year old rip-rap with good vegetation establishment (right)

3.3.2 Geotechnical Works

Sakhalin Energy and its contractor Gazprom Transgas Tomsk (GTT) have a process in place to monitor the RoW and identify areas of concern. We understand that the monitoring process comprises weekly helicopter surveillance flights in the autumn and spring and bi-weekly in the winter and summer. Based on the surveillance flight findings (and supplemented by ground inspection as necessary), any identified issues are classified into Category 1, 2 or 3 as follows:

- Category 1 – includes mostly minor issues such as replacement of damaged or missing signage. Works in this category are conducted directly by GTT personnel.
- Category 2 – includes projects that require subcontractor support and at times plant/machinery but do not require specific or specialist engineering design. This type of work is supervised by GTT. Works in this category include repair of slope breakers, and seeding etc.
- Category 3 – includes projects that require specific specialist engineering design and are more complex in nature than Category 2 projects. These works are currently entirely controlled by Sakhalin Energy. Works in this category include, inter alia: major overhaul of river bank protection (e.g. repair of reno matting), and repair of landslides and slope failures.

Sakhalin Energy reported that during 2017, five Category 3 Geotechnical Works were performed, of which two were landslides and three were river crossings. Also during the same period, three Category 2 Geotechnical Works were conducted – down from 10 during 2016 and 22 in 2015.

Three locations of geotechnical repair were visited during September 2017. Two previously completed Category 3 repair sites (KP382.5 and KP383.4) provide examples of specialist engineering design including the installation of large hard retaining structures (Photo 7). The third location (KP420) shows an example of where proactive restoration has possibly prevented a worsening landslide problem through the installation of "softer" engineering solutions (e.g. ground anchors and netting as shown in Photo 8).

3.4 RoW Access

Several RoW access roads were used during the recent visit and generally the roads lead to selected Block Valve Stations (BVS). The roads ranged in length from a few hundred meters to several kilometres, and appeared to be well constructed and with very minor signs of erosion. The majority of the roads used were protected by a locked barrier gate which limits access to sensitive facilities such as BVS and general access by the public to the RoW. Other access to the RoW is inherent where the pipeline RoW crosses public roads/tracks such as forestry tracks. These road crossings provide unhindered access for the general public including fisherman and recreational motor vehicles. It is recognised that it is difficult/impossible for Sakhalin Energy to block RoW access from road crossings, nevertheless Sakhalin Energy should continue to investigate methods to limit public access to the extent possible. No signs of local people using the RoW access tracks were observed in September 2017.

The RoW access tracks cross a number of water courses along their length. These tend to be spanned using steel supports and decked with timber covering. The timber parts of the bridges require routine maintenance and replacement. One example of bridge repair was viewed during the September 2017 visit (details in **Error! Reference source not found.**).

Photo 7 - Reinforced concrete retaining wall recently installed at KP 383.4

Photo 8 - KP 449 Restored slope in preparation of installation of ground anchors and netting

4. LNG FACILITY MONITORING

Ramboll Environ completed a monitoring visit to the LNG facility on 13th September 2017, which included an introductory meeting with the Operations Manager, a site tour and discussions with facility Health, Safety and Environmental (HSE) management personnel.

4.1 Storage and Handling of Oil and Chemicals

Storage of oil and chemicals is generally to a very high standard, with well labelled containers, appropriate use of secondary containment and adequate provision of spill kits. However, several secondary containment deficiencies were noted:

- a 10 litre drum of polyaluminium chloride coagulant at the sewage treatment plant (STP) had no drip tray (Photo 9);
- four drums of Tellus oil with no secondary containment were noted at the Rigging and Lifting Training Centre (Photo 10);
- several drums of Aqueous Film-Forming Foam Concentrates (AFFF) at the fire-fighting store have no secondary containment; and
- Room 101 (chemical storage room) appears to have not been designed for hazardous liquids as it has no secondary containment (e.g. hump at doorway), and drip trays are not used in the building.

As noted during previous site monitoring visits and audits, the auditor noted a difference in the design of chemical storage buildings. Room 101 has clearly been designed for chemical storage as it has a hump at the main vehicular access door and a step at the pedestrian access door. In contrast, Room 102, which also contains chemicals lacks these containment features.

In room 102, at least half of the eight drums of methyl diethanolamine (MDEA) stored are damaged. They are not leaking but their structural integrity could be reduced. This is not an environmental risk as the storage room has excellent secondary containment, however there is an elevated risk of leakage when drums are being handled, either in transit or at their point of use.

***Opportunity for Improvement*:** Sakhalin Energy should ensure that all containers of oil and hazardous liquids are provided with secondary containment.

***Opportunity for Improvement*:** It is recommended that drip trays are provided for all chemical storage drums in Room 102.

***Opportunity for Improvement*:** It is recommended that refresher training on the requirements of the materials management manual is provided to warehouse staff. In particular, it should cover the procedures on acceptance of damaged chemical drums.

Photo 9 – Drum of polyaluminium chloride with no trip tray in the STP

Photo 10 – Four drums of oil with no secondary containment

4.2 Waste Management

Waste is stored securely in well labelled containers throughout the site (Photo 11). No issues were noted with regard to waste containment, labelling or segregation.

The waste storage building (Building 10) is very tidy and well maintained and a spill kit is present. No issues were noted.

The facility has implemented several waste minimisation measures, including diverting grass cuttings from landfill to a local farmer, as recommended in the 2015 IEC audit report. In addition, plastic, cardboard and paper are now segregated for off-site recycling.

Photo 11 – Waste stored in secure containers with clear labelling

4.3 Wastewater Treatment

4.3.1 Sewage Treatment Plant

Sewage is treated at an on-site STP, which uses a combination of physical and biological treatment. Raw sewage is screened to remove coarse solids, before pH balancing by addition of sodium hydroxide. The wastewater then passes through an activated sludge process in which air is injected. Settled sludge is dewatered in a press, then sent for off-site disposal. Clarified wastewater is disinfected using an ultraviolet lamp.

Previous site visits by Ramboll Environ have highlighted issues with the STP. When the STP is closed for maintenance, untreated sewage is pumped to the older BR-200 treatment units via an aboveground hose. In 2014, a Finding (WATER.15) was raised about the risks of raw sewage leaking from the hose, which crosses a number of stormwater drainage ditches. The 2015 IEC audit noted that the temporary hose was still in use and that it was exhibiting signs of wear and tear.

During the September 2017 IEC visit, the auditor noted that the hose was still present (Photo 12), and it was reported that it is still sometimes used, most recently in early September, when

there was an operational issue with the STP. Several sections of hose have been replaced (the need for such had been identified in previous IEC monitoring visits) and it currently appears to be in good condition.

It is understood that the current STP, the older BR-200 treatment units and surrounding unused buildings will be demolished and replaced with a larger STP in around 2020, as part of the Train 3 Project.

Photo 12 – Temporary hose near the STP

4.3.2 AOC and COC Water Treatment

The Accidentally Oil Contaminated (AOC) and Continuously Oil Contaminated (COC) water treatment facilities were inspected and no issues were noted. Both facilities are in a good condition and appear to be operating efficiently.

4.4 Air Emissions

Air quality monitoring outside the sanitary protection zone (SPZ) has identified elevated levels of formaldehyde (attributed to smoke from barbeques in the nearby 'Stroitel' dacha area) in 2013, but facility HSE representatives explained that this is no longer an issue. Dacha residents still complain about perceived impacts from flaring

4.5 Groundwater Monitoring

Groundwater is monitored every six months at a series of wells around the LNG plant. The chemical analysis results generally comply with relevant limits but elevated levels of hydrocarbons have been detected. Sakhalin Energy carried out further monitoring to investigate the source of the contamination and concluded that it was caused by runoff from public roads during the spring snow melt.

4.6 Energy Efficiency

The LNG plant is highly energy efficient and is in the top quartile of all Shell LNG plants worldwide. It is understood that an energy efficiency initiative has recently been launched at the LNG plant in order to reduce CO_2 emissions. Initially, in 2018 the focus will be on reducing flaring through implementation of numerous small incremental improvements. Attention will then shift to optimising the gas turbines (for example increasing the firing temperature to reduce fuel consumption by around 2%).

Ramboll Environ noted external lights switched on during daylight hours around the entire LNG plant. It was reported that lights are normally turned off in daylight hours, but were on during the site inspection due to the overcast weather.

5. NOGLIKI LANDFILL

5.1 Introduction

As part of the monitoring visit, Ramboll Environ conducted a visit to the non-hazardous waste landfill facility located approximately 2 km south east of Nogliki, in the north east of Sakhalin Island (referred to herein as 'Nogliki landfill'). The visit was conducted on the 11th September 2017.

Nogliki landfill is one of three landfill facilities (also referred to as 'polygons') on the Island utilised by Sakhalin Energy for the disposal of solid domestic waste (SDW) and Hazard Class 4 and 5 industrial wastes in limited amounts[2]. The Nogliki landfill receives waste from the OPF and pipeline maintenance depots (PMDs) in the north of the Island.

According to the HSESAP, the facility was originally commissioned in November 2005. The site was developed with support from the Company to ensure that it was designed to appropriate standards (including clay barriers and additional impervious high-density polyethylene (HDPE) liners below each cell). The facility comprises three active cells with associated leachate collection ponds (also lined); one of which is dedicated for Sakhalin Energy waste (the 'Sakhalin Energy Cell'). The other two cells are used for disposal of waste from Municipality of Nogliki (the 'Municipal Cell') and from Exxon Neftegas Ltd (ENL) (the 'ENL Cell'). A further complete (or closed) municipal waste cell, understood to be in use historically (i.e. prior to 2005), is present in the west of the site.

The facility is operated by a third party public unitary enterprise, AO "Otkhody", which operates a number of waste facilities across the Island and has its head office in Yuzhno-Sakhalinsk.

The focus of the visit was on the following aspects:

- permit compliance;
- waste reception, acceptance, classification and testing
- landfill management and monitoring
- environmental monitoring programme and reporting
- nuisance complaints
- remediation & Restoration Programmes; and
- upgrade activities and expansion plans.

The visit included a walkover inspection of:

- the main gate and yard area (comprising site office, storage shed, wheel wash pit, oil store, worker welfare block and vehicle parking areas);
- the Sakhalin Energy Cell and associated leachate collection pond; and,
- the Municipal Cell leachate pond.

During the walkover, brief visual observations were also made of sections of the perimeter fence, the Municipal Cell, as well as the ENL Cell and its associated leachate pond. The site walkover was conducted in dry conditions, with solid cloud cover and no notable wind.

The visit also involved discussions with the Sakhalin Energy Logistics (ALG) HSE Manager, the Head of Department for Nogliki Landfill ('Site Manager') and his deputy. It was reported that the Site Manager had been in charge of the facility for the last three years.

[2] Waste Management Standard (Rev.05), Appendix 9 – Approved waste recycling & disposal facilities outside Sakhalin Energy assets (Doc ref. 0000-S-90-04-O-0258-00-E Appendix 9).

On arrival, Ramboll Environ received a basic verbal safety induction and was logged in the visitors register. It was reported that the facility operates 8am-5pm on weekdays and half days on weekends. Basic personal protective equipment (PPE) was observed to be in use by site operatives.

The facility is surrounded on all sides by forest land and according to site management the nearest residential properties are located approximately 3 km to the north-west (in Nogliki). The nearest surface water body to the facility is located approximately 400 m west of the site.

5.2 Permit Compliance

5.2.1 Overview

According to the HSESAP, Nogliki landfill is authorised to accept SDW as well as Hazard Class 4 (low hazard/non-hazardous) and 5 (inert) industrial waste types.

The operator of the site holds a Waste Management Licence, last issued 26 April 2017 by Sakhalin Branch of Federal Environmental Inspectorate, Rosprirodnadzor (RPN) (Licence Ref. 651305 TRIP). The licence covers activities of collection, transport, processing, recycling and neutralisation of hazard class 1-4 wastes. The licence is valid indefinitely. The Sakhalin Energy representative reported that within 2017, the operator has successfully applied for updates to its licence in order to ensure full coverage of the range of Sakhalin Energy waste streams received.

The facility has been listed on the State Register of Waste Disposal Facilities (known as 'GRORO Register') since November 2016 (verified by Ramboll Environ via the online register).

The facility is also understood to hold a Waste Disposal Limits Approval issued by the local municipality for receipt of SDW and Class 4 and 5 wastes. It was reported that the limits are set over three to five year timeframes and that Sakhalin Energy has confirmed that these limits are more than sufficient for the Company's needs (see discussion below regarding landfill capacity).

5.2.2 GRORO Registration

Ramboll Environ has previously reported to Lenders on significant issues in relation to Sakhalin Energy's management strategy for non-hazardous waste that have resulted from legal restrictions that stopped disposal of Company waste to the Smirnykh and Nogliki landfills in 2015/16. In response to these issues, Sakhalin Energy developed a revised waste management strategy and for a period of time in 2016 transported non-hazardous waste generated in the north of the Island to facilities in mainland Russia[3].

These legal restrictions included a change in legislation requiring landfill operators to have their sites listed on the GRORO Register. It is understood that in the case of Nogliki landfill, the operator prepared and submitted an application in August 2016 and after unexpected delays, the facility was finally listed on the GRORO Register on 2nd November 2016. The Company resumed waste shipments to Nogliki landfill in January 2017.

In response to this event, as well as other uncertainties over the future waste strategy of the Sakhalin municipal authorities, Sakhalin Energy amended its strategy to include the development of its own waste facilities at the OPF and Prigorodnoye Production Complex. During this latest visit by Ramboll Environ, it was confirmed that the Company would be constructing an incineration plant in the north of the Island as part of the OPF-C Project, thereby reducing its reliance on Nogliki landfill for waste disposal.

[3] Ramboll Environ understands that in 2017 that the Company is still using Nakhodka landfill on the mainland for disposal of waste generated at Company assets located in the central and south parts of the island.

5.2.3 Regulatory Inspections, Actions and Penalties

The Site Manager reported that the facility has not received a formal inspection from the environmental authorities for more than three years. However, Ramboll Environ established from a publicly-available source online that the last visit by RPN was in August 2016, as part of the GRORO registration process. No issues were identified.

The Site Manager reported that no regulatory action or financial penalties (e.g. for exceedance of limits) have been applied to the facility by the authorities in the last three years. The Sakhalin Energy representative confirmed that the Company was not aware of any such action or penalties.

5.2.4 Sakhalin Energy Assurance

According to the Sakhalin Energy representative, the Company has conducted three visits to Nogliki landfill in 2016/17 (one audit and two inspections). The reported purpose of these visits is to verify compliance with the site's licence/limits, Russian Federation (RF) waste laws and norms, and the contract with Sakhalin Energy. An example report from a Company inspection conducted in October 2016 (prior to the Company re-starting waste shipments to site) was provided to Ramboll Environ. The report was very brief and identified no issues. No report was available in relation to the annual Level 3 Audit, which the Company is committed to undertake under the HSESAP[4].

Opportunity for Improvement: It is recommended that the scope of Sakhalin Energy's visits to this landfill and the report format are reviewed and made more structured and detailed. The reports should clearly show how the facility is complying with relevant licence, contract and HSESAP requirements. For the Level 3 audits, a review of the operator's environmental monitoring results should be conducted and a summary of the results provided in the audit report.

5.3 Waste Reception, Acceptance, Classification and Testing

Visual cross checks of the waste received at the landfill against the accompanying manifests are made at the relevant cell, when wastes are first deposited out of the collection truck (and before they are transferred to the active sub-cell and compacted). Such practice is not in line with Good International Industry Practice (GIIP), where pre-checks for unauthorised waste are advised (i.e. in a contained area and before transfer to the cell). However, the ongoing project to install a paved waste sorting area and Materials Recovery Facility (MRF) at the site, will help ensure compliance (see Section 5.9 Landfill Upgrade Activities & Expansion Plans below for further details).

The Site Manager reported that the operating company has a contract in place with an approved laboratory for the testing of waste streams when required, to confirm its classification.

The Site Manager reported that no unauthorised waste materials have been found in waste shipments received from Sakhalin Energy. Unauthorised wastes (such as batteries, fluorescent lamps and tyres) are reportedly found periodically in waste shipments received from municipal sources. Site personnel reported that in such cases the relevant Rejection Act document is generated and collection of the waste by the producer is arranged. It was also noted that unlike the waste streams being directed to the other two cells, the waste directed to the Sakhalin Energy cell has been subject to some level of segregation at source, to minimise the biodegradable (food waste) fraction as well as certain recyclable materials.

[4] Waste Management Standard – Appendix 12 Waste Management Assurance (Rev05) Doc ID. 0000_S-90-04-O-0258-00-E

Site personnel maintain a dedicated log book in which they record all shipments of waste received from Sakhalin Energy. These records contain details of the date, waste source, volume, class and category as well as the reference number of the relevant Sakhalin Energy Waste Transfer Note that accompanies each shipment (completed copies of which are retained by the operator and the Company). The latest entry in the log indicated that the last shipment of waste from Sakhalin Energy was received two days prior to Ramboll Environ's visit (9th September 2017).

5.4 Landfill Management and Monitoring

5.4.1 General Observations

Ramboll Environ noted a clear positive difference in the standards of management applied to the Sakhalin Energy Cell and leachate pond, compared to the other two cells.

It was clear from visual observations that waste deposited within the Sakhalin Energy Cell was being regularly compacted and covered with sand and that the pond was being kept clear of debris and the water level managed. While there remains room for improving the operational practices applied to the Sakhalin Energy Cell (see discussion below), there has been an improvement in standards since Ramboll Environ's last visit to the site in 2014. The management of the other two cells remains poor.

The Site Manager confirmed that he and two other site operatives have undergone the mandatory HSE and waste management training required under RF law. Records of the Site Manager's training was provided to Ramboll Environ.

Photo 13 - General view of Sakhalin Energy cell

Photo 14 - Leachate pond associated with Sakhalin Energy cell

Photo 15 - Municipal cell and associated pond

5.4.2 Compaction and Cover

During the visit, Ramboll Environ observed a tracked bulldozer being used to compact and cover solid waste recently deposited within the Sakhalin Energy Cell.

Ramboll Environ noted that the facility's studded roller (or 'Sheepsfoot' roller), an item of plant commonly used for compaction in active landfill cells, was not in use. The Site Manager reported that it was non-operational and that it was to be replaced. Such rollers are designed to disaggregate waste and integrate it with the soil fill, thereby promoting break-down, whilst also

concentrating the load during compaction to increase in-place waste density and maximise a landfill's life.

Photo 16 - Compaction and covering operations at Sakhalin Energy cell

Photo 17 - Non-operational studded roller - to be replaced

Opportunity for Improvement: Sakhalin Energy should seek confirmation from the operator of its intention to replace the studded roller and should use its influence to ensure a replacement is put into operation at the Sakhalin Energy Cell in a timely manner.

Apart from the two active sub-cells, the remainder of the surface of the Sakhalin Energy cell appeared to be covered with sand. Stockpiles of sand were present in the main yard and at the cell. Covering active cells with inert cover such as sand or soil on a regular basis has multiple benefits, including: reducing insects, vermin and birds; reducing odour; and, forming cells to prevent inadvertent fires from spreading.

Whilst these covering practices are improved from Ramboll Environ's 2014 visit, Site Management personnel reported that whilst compacting is regular, cover material is only applied typically on a weekly basis.

Opportunity for Improvement: In order to align with GIIP, Sakhalin Energy should use its influence over the landfill operator to encourage more frequent application of cover, i.e. daily or within 24 hours of the deposition of fresh waste materials to the Sakhalin Energy cell.

5.4.3 Drainage and Leachate Management

The Sakhalin Energy cell is lined and is designed with a basic drainage system, which carries storm water runoff and landfill leachate to a dedicated collection pond.

A brief visual inspection of the leachate collection pond indicated that it was generally well managed. There was no floating debris/litter in the pond (unlike in the other two leachate ponds on site) and there were no obvious signs that the pond had been allowed to over-fill and discharge into the surrounding land.

Site Management personnel reported that staff used two methods to control the level of the pond:

1. The first method is to use portable pumping equipment to transfer water from the pond back to the cell and distribute it over the cell surface to control dust, promote waste decay and waste stabilisation (in line with GIIP). Site management reported that it had two sets of pumping equipment (primary and spare), of which one set was seen by Ramboll Environ. However, no records were kept of how often pumping is undertaken and the approximate volume of water pumped.
2. The second option, which has recently been implemented, is to call in a tanker and transfer large volumes of water to the local municipal sewage treatment works for treatment and discharge. Collection records of this being done in August and September 2017 were provided to Ramboll Environ. It was reported that testing was undertaken on the pond water prior to the contractor accepting it for treatment and disposal.

Opportunity for Improvement: In order to meet requirements of the HSESAP and GIIP, the operator should maintain a log of all transfers of leachate from the Sakhalin Energy leachate pond (both in terms of pumping to irrigate the cell and tanker collections). These records should be checked by the Company during its periodic monitoring visits to the landfill and a physical demonstration of the pumping system should be requested by the operator to verify equipment is present and operational.

5.5 Hazardous Material and Waste Storage

The Nogliki landfill facility includes a small storage shed containing engine oil, lubricants and waste oils associated with the maintenance of site vehicles. While it was reported that the storage facility had been upgraded at the Company's request in recent years (i.e. concrete paving had been installed), the store was still observed to be poorly managed and well below the standards of housekeeping and secondary containment applied at Company assets.

Photo 18 - Oil store

Opportunity for Improvement: Sakhalin Energy should seek to use its influence to achieve improvements in the general standard of housekeeping applied in the facility's oil store, and improve the secondary containment up to a level commensurate with HSESAP requirements.

5.5.1 Emergency Response

The facility maintains basic firefighting equipment and oil spill response materials (sand). Two groundwater abstraction wells are installed on site to provide a water supply for use by the fire brigade in the event of a major fire. Site management reported that the fire brigade makes periodic visits to inspect the site from a fire risk and emergency response perspective.

5.6 Environmental Monitoring Programme and Reporting

Site Management reported that it has an approved environmental monitoring programme in place and that since 2016, the operator now commissions a certified laboratory to conduct environmental sampling and analysis twice a year. This is an improvement from previous visits were no evidence (or even knowledge) of groundwater sampling/monitoring could be provided by the landfill operator. The scope of the monitoring includes groundwater quality (at two locations to the north and south of the operational site area), soil quality (at approximately six locations), air quality (around the perimeter) and radiation monitoring. No noise or surface water quality monitoring has reportedly been required by the authorities.

Site Management reported that the monitoring conducted to date had identified no concerns and had demonstrated that the facility was in compliance with maximum permissible concentrations (MPCs) across all parameters. A sample of available results from the monitoring in September/October 2016 and September 2017 was shared with Ramboll Environ.

From a brief review of the analysis results, no issues were noted in relation to soil quality, air quality or radiation were noted. However, in terms of groundwater monitoring, it appears that Coliform bacteria were detected during in 2016 (exceeding the MPC in one location) and in 2017 (no limits stated). Furthermore, exceedances appear to have been detected at one location in 2016 relation to concentrations of ammonia, nitrite and lead.

Opportunity for Improvement: Sakhalin Energy should conduct a thorough review of the operator's Environmental Monitoring Programme and the analysis results obtained to date. The

review should verify that the scope of the monitoring is as per the approved plan and the HSESAP, and check all results against applicable RF standards/MPCs. Where exceedances are identified these should be investigated and assessment provided as to the potential environmental impacts.

The Sakhalin Energy representative confirmed that the Company has verified that the operator submits the required reports annually to the authorities (known as '2TP2' report').

5.7 Nuisance Complaints

While a distinctive organic odour was detected by Ramboll Environ at the site boundary and throughout the facility, it was not noted to be particularly strong or offensive.

The Site Manager reported that no nuisance complaints have been received in the last three years, i.e. related to odour, noise, dust or litter.

5.8 Remediation & Restoration Programmes

5.8.1 Sakhalin Energy Cell

The Sakhalin Energy cell is still active. The cell has a reported design capacity of 100,000 m^3 of solid waste. The Sakhalin Energy representative and Site Manager confirmed that to date, the Company has deposited approximately 30,000 m^3 of waste at the landfill, meaning that 70% of the capacity remains available. The Sakhalin Energy representative further reported that the planned construction of a waste incineration plant by the Company as part of the OPF-C Project, is likely to reduce the volume of waste sent by the Company to the Nogliki landfill.

5.8.2 Other Cells

No active remediation or restoration programmes were reportedly ongoing at the time of Ramboll Environ's visit. The closed cell on-site, to the west of the Sakhalin Energy cell, appeared from a distance to be vegetated. It is not actively managed by the operator. In accordance with the HSESAP, a passive ventilation system is installed for gas removal.

Ramboll Environ has previously notified Lenders of an issue whereby leachate from the historic closed municipal cell had migrated below the liner of leachate pond serving the active Municipal Cell. As a result, a bulge or 'bubble' of flammable methane gas has formed beneath the pond liner. The issue was first identified in 2013, when Ramboll Environ assessed the situation to constitute a potential risk to human health and the environment, and recommended that Sakhalin Energy worked with the landfill operator to investigate and reduce the risk to an acceptable level.

In response, Sakhalin Energy funded a study into the likely causes of the 'bubble' and potential remedial measures (although it was agreed that responsibility for corrective actions remained with the landfill operator). Then in October 2014 and subsequent to that study, Ramboll Environ noted that the 'bubble' had significantly reduced in size. Sakhalin Energy representatives and site management reported that the 'bubble' reduced naturally, without any physical intervention. During 2015 and then 2016, when Sakhalin Energy were unable to use the landfill whilst its GRORO registration was pending, it appears no further progress was made to definitively identify the root cause or implement the recommended remedial measures. During the latest visit by Ramboll Environ, it was observed that the 'bubble' was present and was approximately the same size as observed in 2014.

Photo 19 - Methane gas 'bubble' in centre of municipal cell leachate pond

Opportunity for Improvement: Sakhalin Energy should use its influence to ensure that the operating company re-initiates its investigation into this issue and designs and implements a permanent solution to the problem in a timely manner. In the meantime, Sakhalin Energy should closely monitor the extent of the 'bubble' and record it during each periodic monitoring visit to the site.

5.9 Landfill Upgrade Activities & Expansion Plans

Ramboll Environ noted that two significant improvements were in progress at the site at the time of the visit:

- A weighbridge was being installed in order to provide accurate data on the weight of waste materials arriving at the site. This will help to provide Sakhalin Energy with more accurate data on its own waste generation and disposal activities, supplementing and refining the data the Company already calculates for regulatory, corporate and Lender reporting purposes.
- The existing equipment storage warehouse was being upgraded in order to house a MRF. The purpose of the MRF will be to receive mixed non-hazardous waste from the municipality, Sakhalin Energy and ENL, screen and sort it (including removing any hazardous wastes that may be inadvertently/illegally present), and recover and compact the recyclable fractions (i.e. plastic bottles, aluminium cans, glass, wood, cardboard and paper). The recovered materials will then be transferred to Yuzhno-Sakhalinsk for recovery/recycling. Only the residual waste will then be landfilled on-site. This improvement is legally driven and is noted to be several months overdue[5]. However, once complete, the benefits of this MRF are potentially significant for Sakhalin Energy and all other stakeholders in that it will allow proper segregation of recyclable materials and also reduce the volume of waste entering the landfill cells, thereby extending the life of facility. It was reported that most of the required

[5] Under Russian Federal Law No.89-FZ 'On production and consumption of waste' it is prohibited as of 01 January 2017 to bury waste containing recyclable commercial components.

machinery for the MRF was already present on site (covered by sheeting) and that it was intended that the MRF would be operational before the end of 2017.

The Site Manager reported that the landfill operating company had no plans to expand the existing cells nor develop any new cells at this location. It was reported that AO "Otkhody" was planning to develop a new polygon at a location approximately 30 km from Nogliki. No timeline for construction of this polygon was provided.

Photo 20 - New weighbridge under construction

Photo 21 - Recently refurbished storage shed ready for installation of MRF equipment

6. SOCIAL PERFORMANCE MONITORING

6.1 Objectives

Monitoring of Sakhalin Energy's social performance (SP) is implemented by the IEC on an annual basis to verify fulfilment of the HSESAP commitments and overall compliance with applicable local legislation and international standards.

The following aspects were covered during Ramboll Environ's annual monitoring visit in September 2017:

- Progress with implementation of key social documents/plans/activities;
- Ongoing community engagement and information disclosure;
- Social aspects of the development projects;
- Social investment (SI) programme update;
- Update on engagement with stakeholders in Japan;
- Engagement with Indigenous People and implementation of the Sakhalin Indigenous Minorities Development Plan (SIMDP);
- Grievance redress mechanism.

Updates on each of the aforementioned aspects are provided in the following subsections.

6.2 General Update and Observations

Detailed descriptions of the SP mechanisms and procedures established by Sakhalin Energy to date have been provided in previous IEC site visit reports over the period of 2007-2016. All of these reports are publicly available on Sakhalin Energy's website[6]. The latest IEC visit conducted in September 2017 confirmed that all systems and tools that support the Company's SP activities continue to function effectively under the close supervision of the dedicated Social Performance, and 'Communications, Stakeholder Engagement and Event Management' (CSEEM) Subdivisions[7]. Therefore, the current report mainly serves to highlight aspects related to recent/future developments and recommendations on improvement of the existing system.

It should be noted that, due to well-established and efficiently functioning system and procedures for managing SP, all social findings are considered to be suggestions for improvement rather than actual non-compliances, with a single exception of potential non-compliance related to insufficient stakeholder engagement / information disclosure activities being undertaken in relation to the Train 3 Project implementation (see section "Social Aspects of the Development Projects" below).

6.3 Progress with Implementation of Key Social Documents/Plans/Activities

Earlier in 2017, the Company completed the development of its Public Consultation and Disclosure Plan (PCDP) for 2017 and finalised the Public Consultation and Disclosure Report (PCDR) for the preceding year. Both documents are available on Sakhalin Energy's website. The activities planned within the PCDP have been/are being implemented as per the initial schedule. The Company is also routinely implementing various social activities outlined in the 2017 SP Plan which was approved in Q4 2016. Although Ramboll Environ recognises the efforts made by Sakhalin Energy's External Affairs (EA) team in relation to timely development and regular

[6] http://www.sakhalinenergy.ru/en/library/folder.wbp?id=09946bc1-9839-4dd2-aa3d-1e89b64d377f [In English]
http://www.sakhalinenergy.ru/ru/library/folder.wbp?id=827a621e-77cf-43b3-87e6-73c601c1df54 [In Russian]
[7] Social Performance (SP), and Communications, Stakeholder Engagement and Event Management (CSEEM) Subdivisions function under an 'umbrella' Government and Shareholder Relations and External Affairs Division.

updates of the social documents, we recommend that the Company issues key social plans (PCDP, PCDR, SP Plan) at the beginning of the year, i.e. no later than Q1 of each year.

In view of the potential plans of the Train 3 Project implementation and the ongoing ESIA process, a dedicated Train 3 PCDP and SP Plan have been developed. These plans were under the IEC's review at the time of the site visit.

Another annual initiative, the Company's Sustainable Development (SD) Report or non-financial report as per Global Reporting Initiative requirements[8] has been completed and issued in April 2017. This included two rounds of stakeholder engagement that typically accompany the preparation of this annual report. As part of the reports' preparations, the Company commits to holding regular consultation with stakeholders so they can share their opinions on the report content, the Company's activities and make suggestions on further development of the Company's responsibility in production, environment and social areas. From 2016, the Company has issued open public invitations to the SD dialogue meetings so that any interested party/individual could attend. Work on the 2017 SD Report is ongoing as planned.

In 2016 the Company conducted a self-assessment of ISO 26000[9] implementation. ISO 26000 provides guidance on underlying principles of social responsibility, core subjects and issues pertaining to social responsibility and ways to integrate socially responsible behaviour into existing organisational strategies, systems, practices and processes. The self-assessment concluded that Sakhalin Energy's practices are in compliance with ISO 26000 and key management systems and processes related to key ISO 26000 subject areas are in place.

Almost each year Sakhalin Energy undertakes a public opinion survey. Survey objectives are to:

- Understand public attitudes to the Company, the Sakhalin-2 project and other oil & gas companies operating in the area;
- Receive feedback on the Company's activities and Project implementation;
- Identify expectations and concerns of the local community members relating to Company activities;
- Receive feedback on the SI programmes;
- Determine the level of awareness of community members about the Project;
- Identify information needs related to the Project implementation and the Company activities.

The scope of 2017 survey covered 14 settlements and 700 respondents. As can be seen from Figure 1 below, around 45% of respondents shared favourable opinion about the Company.

Other questions relating to communities' feedback on the Company activities also got positive responses.

Additionally, during the course of 2016-2017, the Company continued social performance training programmes for its staff (training both management and construction projects teams) and contractors (operations contractors and contractors on development projects). As of September 2017, eight training events for Company staff with 23 participants and 34 training events for contractor staff with 764 participants attending had been carried out.

[8] Being developed according to the GRI Reporting Framework.

[9] ISO 26000 is the international standard developed to help organizations effectively assess and address those social responsibilities that are relevant and significant to their mission and vision; operations and processes; customers, employees, communities, and other stakeholders; and environmental impact.

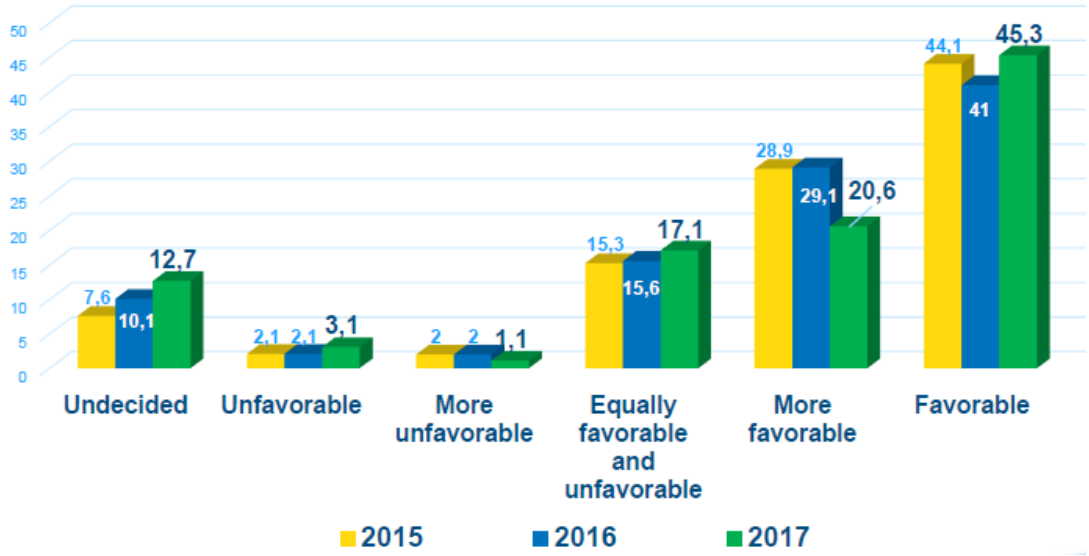

Figure 1 - 2017 Public Opinion Survey Results: Overall opinion about the Company

6.4 Ongoing Community Engagement and Information Disclosure

6.4.1 Information Centres

The 23 Information Centres (ICs) established by the Company across Sakhalin Island remain operational and constitute a live communication link with the external public. The Company regularly informs stakeholders on availability of the ICs via district newspapers, the "Vesti" news bulletin, its website, public meetings and with help of the ICs consultants (librarians). Various printed materials are mailed to the ICs at least once a month. The September 2017 monitoring visit (which included visits to 6 info-centres[10]) confirmed that in most cases all necessary documents were available, including:

- PCDP 2017;
- PCDR 2016;
- 2016 SD Report;
- IEC 2016 Report;
- HSESAP 2015 (version 4);
- Grievance Procedure (GP) materials.

One minor observation was that information holders located in the libraries were sometimes 'overloaded' with papers and often contained old versions of the Project materials (e.g., PCDP 2015, IEC 2013 report, old versions of the GP brochures, SD reports for each year starting from 2010, etc.) and/or English-language versions of various documents. This makes the process of looking for the needed document too complicated, as well as preventing the most recent materials from being easily noticeable to public.

Opportunity for Improvement: In order to optimise documents' layout on the holders and to simplify navigation, Ramboll Environ suggests keeping only up-to-date Russian-language versions of the materials on the information holders and archiving/storing separately the old and/or English-language papers.

On the other hand, in certain instances, a few most recent editions of the "Vesti" news bulletin were not available in a number of visited info-centres as these had been retained by the readers. It is noted that the "Vesti" news bulletin is not included in the minimally required document

[10] Nogliki, Tymovskoye, Poronaysk, Yasnoe, Gastello, Korsakov.

package to be placed in the info-centres, however, given that it is in demand with the local population, Ramboll Environ suggests considering potential options to ensure availability of the 'master copies' of most recent editions in the libraries.

All visited centres provide Internet access to the wider public. The consultants at the info-centres visited are well aware of their duties and provided very positive feedback on the variety of materials supplied by the Company and good access to the Company's SP staff[11] for advice. It was clear to Ramboll Environ that the consultants have sufficient knowledge of aspects of the Company's activities that may be of interest among local people. This is partially ensured by regular training, carried out annually. In 2016 the training workshop covered the following topic areas:

- Sakhalin-2 project overview;
- Grievance Procedure;
- Company's social programmes;
- New projects (including the results of the OPF Compression (OPF-C) Project Environmental, Social and Health Impact Assessment (ESHIA));
- Biodiversity and environmental monitoring.

The workshop also covered basic computer skills. This was due to the Company's plans to provide the ICs with brand new computers, monitors and multimedia equipment (done in 2017).

In view of the planned implementation of the development projects (Train 3, OPF-C, etc.), more visitors are currently coming to the ICs to check for job vacancies. In such cases the IC consultants usually refer potential job seekers to the Company's 'Jobs and Careers' webpage[12]. However, it is likely that the majority of the unskilled/low-skilled positions will be available within the Company's contractors. As reported by the EA team representatives, the Company's website also provides a regularly-updated list of contractors and, presumably, using contact details of these companies, job-seekers could contact the contractors' HR departments directly. As part of the 2017 training workshop, Ramboll Environ recommends that Sakhalin Energy advises IC consultants to refer job-seekers to this list of Company contractors, as well as to check job centres for availability of additional employment opportunities.

The total number of visitors to Sakhalin Energy's info-centres in 2016 was 2,763 people. In the period January to June 2017, 2,502 visitors were registered. Figure 2 provides a breakdown of all visits by topic areas.

[11] The Company's SP staff visits the ICs four times a year.
[12] http://www.sakhalinenergy.ru/en/vacancy/index.wbp

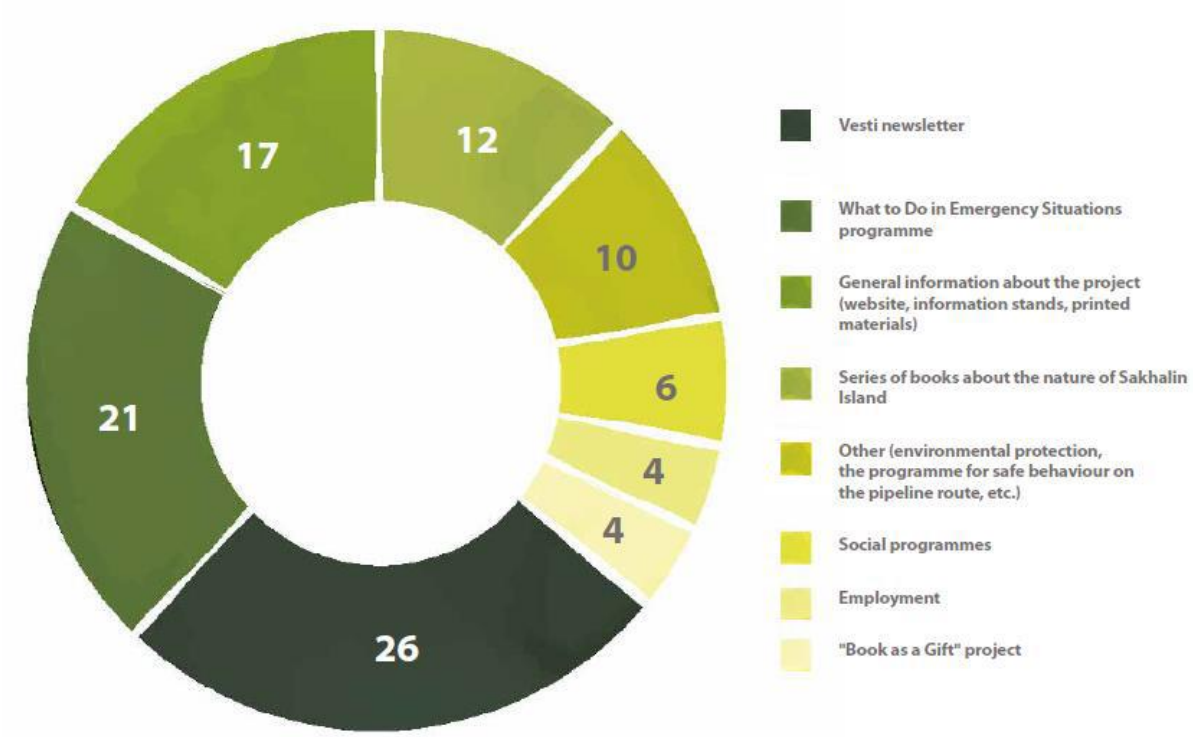

Figure 2 - Visits to the ICs in 2016 - breakdown by topic

The 2017 public opinion survey confirmed that 100% of respondents who visited the ICs gave positive feedback on how they operate, with opportunity to get the required information being the key reason for this. Other reasons for the positive feedback are given in Figure 3 below.

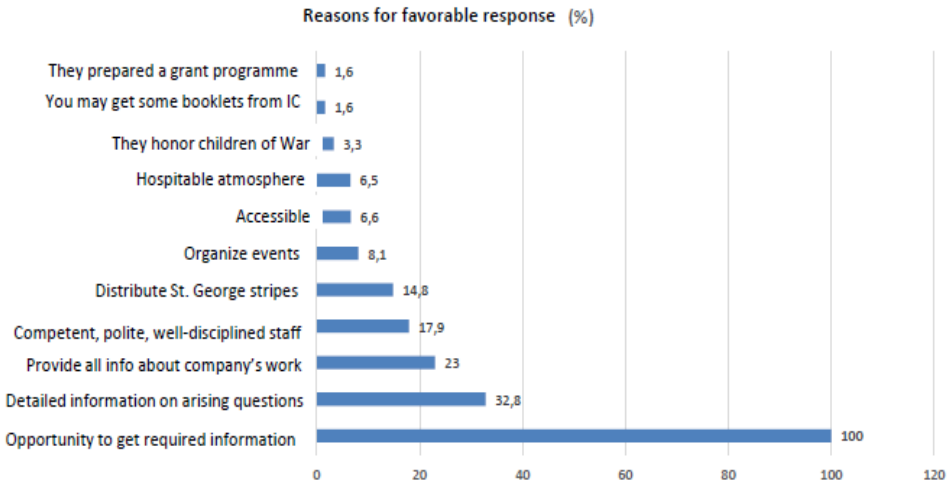

Figure 3 - 2017 public opinion survey results: Reasons for positive feedback on the ICs work.

All consultants interviewed demonstrated good knowledge of Sakhalin Energy's community grievance procedure and were able to provide appropriate advice and assistance with completing the grievance form and communicating a complaint to the Company's representative.

Sakhalin Energy has tracked the number of visitors to all ICs since they opened in 2008. The consultants make records on each visitor in a register, structured as follows:

- Visit/query reference number;
- Date of visit;
- Social status of a visitor;
- Brief description of the query;
- Actions taken;
- Comments.

At the end of each month the IC consultants forward the aggregated data to the Company.

Opportunity for Improvement: In order to get the most out of the information collected by/from the Company ICs, Ramboll Environ suggests the following:

- Register not only those requests that result in use of one or another Project document, but also verbal queries;
- Add a separate column to the visitors register for Grievance Procedure requests;
- Review the existing columns to avoid potential overlapping of topics that may confuse the IC consultants.

Refresher training on filling in the visitors register during the 2017 workshop would be beneficial.

6.4.2 Annual Public Meetings

Annual public meetings are an effective tool in maintaining contact with the communities near the Project's main operating assets. The main objectives of the meetings are to get feedback from communities, provide regular Project updates and to deliver certain messages to the local population (e.g. Community Awareness Programme (CAP) on pipeline protection, etc.). In 2017, meetings were held in 13 communities, with a total turnout of 106 people.

Public meetings are announced through newspapers and the website. The IC consultants also notify local residents of forthcoming meetings. Exit questionnaires continue to be administered after each public meeting to gauge participants' attitude towards the Sakhalin-2 Project, their satisfaction with the presented materials and any need for the provision of additional information. Currently, the level of satisfaction is 92%.

6.5 Social Aspects of the Development Projects

The OPF-C Project is nearing the end of the early works phase and the Engineering, Procurement, and Construction (EPC) contract for the main works is currently out to tender. An ESHIA was developed and approved back in 2016. In relation to the next phase, Ramboll Environ notes that the social management plans will need to be provided to and agreed by lenders prior to commencement of the main construction works.

The ESHIA for the Train 3 Project is currently being developed. The Train 3 PCDP and the SP Plan have been provided to IEC for review. Ramboll Environ will provide our review comments to lenders separately and in due course.

6.5.1 Train 3 Stakeholder Engagement and Information Disclosure

In February 2017, a dedicated Train 3 Community Liaison Organisation (CLO) office was opened in Korsakov. Since then 221 individuals have visited the office. Various Company materials, similar to the ones located in the ICs, are available in the CLO office. It is recommended to ensure that the 2017 Project PCDP, as well as the Train 3 PCDP (when approved) is available there as well.

The Korsakov CLO makes notes of all visitors and the topic of their interest in a visitors' register. Among key areas of interest/concern are the Company's future expansion plans and the corresponding consequences (such as potential impacts and employment opportunities), social investment programmes, sponsorship and some others. Ramboll Environ recommends that the "Other" category of the Register is expanded to devote individual columns to some important topics that are now covered under the "Other" category (e.g. 'environmental concerns').

As reported, during 2017, the Company provided some information on the Train 3 Project during its public meetings. However, there seems to be no clear and detailed strategy towards stakeholder engagement and information disclosure processes, as well as no publicly available materials on the Train 3 Project that would give the following information (as required by International Finance Corporation Performance Standard (IFC PS) 1):

- Purpose, nature, and scale of the Project;
- The duration of proposed Project activities;
- Any risks to and potential impacts on local communities and relevant mitigation measures;
- The envisaged stakeholder engagement process, etc.
- Effective consultations, inter alia, should meet the following criteria:
- Begin early in the process of identification of environmental and social risks and impacts;
- Continue on an ongoing basis as risks and impacts arise;
- Be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to the Affected Communities.

Ramboll Environ is aware that certain Project details are currently unknown, and also that a very brief mention of the Project is provided in the annual SD reports. However, in our opinion the current approach to stakeholder engagement and information disclosure is not sufficient or compliant with the Project's Applicable Standards and the Company's commitments (including those contained in the 'Public Consultation and Information Disclosure Specification').

6.6 Engagement with the 'Stroitel' Dacha cooperative

The 'Stroitel' Dacha cooperative is a residential area located 1.2 km from the Prigorodnoye Production Complex. A detailed description of the previous history of engagement is provided in the previous IEC Monitoring Visit Reports, in particular the one issued in 2012[13], as well as in a standalone briefing note which is regularly updated by the Company and may be provided to any interested party upon request.

As reported by the Chairman of Dacha cooperative during the 2017 monitoring visit, only 14 out of a total of 37 dacha owners continue using their land plots. Most of them attend the dacha settlement in summer time, and one person lives there from May till October.

The Company continued its engagement with the Stroitel community during 2016-17, and this routine engagement included:

- Annual meetings organised as part of the Company's monitoring of social impact;
- On-going monitoring of air quality and noise levels at the boundary of the dachas as part of the "Quality of Life" monitoring conducted from May till October (in addition to the mandatory industrial monitoring at the other various locations). Dacha residents were invited to be present during samples' collection, however no one attended. The results of the monitoring

[13] Publicly available on http://www.sakhalinenergy.ru/media/30b3121b-96f4-42e2-98f4-3427369e5b39.pdf, section 2.3.5 "Engagement with the 'Stroitel' Dacha Community in Prigorodnoye", pp. 15-31

did not demonstrate any exceedances of contaminants in the air during the reporting period, and were communicated directly to the Chairman of Dacha cooperative.

- Invitations to participate in wider stakeholder dialogues conducted as part of the preparation of the Company's Sustainable Development (GRI) Report, however the dacha owners did not attend the second dialogue. They did attend the first dialogue with stakeholders under the preparation of the 2017 Sustainable Development report;
- Public hearings on the LNG jetty design documentation, where the environmental impact assessment (EIA) materials were also presented;
- Regular notifications of the planned maintenance works at the Prigorodnoye Production Complex through the Korsakov newspaper "Voskhod", Korsakov TV, and the Korsakov district administration's website, as well as by mailing the Chairman of Dacha cooperative.
- Meetings with representatives of the External and Corporate Affairs Department (to discuss the results of the public meeting);
- Reminder letters for the weekly alarm system testing at the Prigorodnoye production complex;
- Ad hoc telephone engagement.

The September 2017 monitoring visit confirmed that the state of the issue generally remains unchanged, if not escalated, due to public resonance around the likely Train 3 Project.

The main concerns expressed by the dacha owners relate to the following:

- Potential soil contamination that leads to difficulties in undertaking agricultural activities, for example some plants and bushes "do not grow". The dacha owners named benzo(a)pyrene as the main soil contaminant. Soil sampling undertaken by the local agricultural institute on behalf of the Dacha cooperative back in 2011 recorded elevated levels of benzopyrene in few locations of the cooperative[14].
- The Company's on-going monitoring of air quality and noise levels is not considered to be frequent enough, and soils and water quality are not monitored;
- Dacha owners feel that they have to remain 'on hold' until it is known for sure what is going to happen with the cooperative due to the potential Project expansion. This prevents them from investing time, money and efforts into their land and structures;
- 'Suspicious' people use a by-pass road constructed by the Company to avoid Project transport passing right near the cooperative boundary;
- The road approaching and going through the Dacha cooperative is in a very bad condition.

Ramboll Environ is not aware of any objective evidence of the Company's environmental non-compliances or violations of the legislation in force. However, we recommend that the Company to continues its close engagement with the Dacha owners, and, particularly if the Train 3 Project goes forward, to scrutinise any potential impacts of the Project on the Stroitel cooperative.

6.7 Engagement with Stakeholders in Japan

The Company, via its External Affairs Department staff, continues to actively engage with the Project stakeholders in Japan. In the reporting period the following events took place:

- 16 February 2017 – meeting with Hokkaido Government and Hokkaido Fisheries Environmental Centre;
- 19 February 2017 – the 31st Mombetsu Oil in Ice Symposium;

[14] Ramboll Environ has previously reported to lenders on this and found no evidence that significant soil contamination has resulted from the operation of the LNG facility.

- 20 February 2017 – Oil spill workshop in Mombetsu under the International Symposium;
- 24 August 2017 – meeting with Japan Coast Guard in Abashiri.

Key aims of the ongoing interaction are to provide general updates on the Project and Company activities, as well as to regularly inform Japanese stakeholders on the marine safety operations, environmental and oil spill response provisions.

6.8 Social Investment (SI) Programme Update

Sakhalin Energy has been implementing its SI Programme in line with its Sustainable Development Policy. Over the years, the SI Programme has evolved into a constructive model of community investment with a strong partnership foundation and a robust sustainability agenda. The main purpose of the programme is to contribute to the sustainable development of the Sakhalin Island. Through the years, the programmes were linked to contribute to the long-term objectives of the Company in the region. All SI projects are coordinated with the local authorities and integrated into the general business strategy of the Company.

Successful flagship programmes that have been devised under the SI framework include:

- Safety is Important (some focus areas and initiatives include development of Life Safety Fundamentals Resource classes and educational corners at Sakhalin schools and kindergartens, annual regional Safety Festival for children, and special projects like Safety on Water in Children's Summer Camps, Travel Safely, etc.);
- SIMDP;
- Road Safety (main purpose – development and implementation of special projects aimed at reduction of road accident victims and number of road accidents);
- Korsakov Partnership (212 projects supported since 2003);
- Fund of Social Initiatives 'Energy' (520 projects in 64 settlements from 2003 to 2017);
- Hurry Up for Good Deeds (96 projects have been implemented since 2003; employees collected over 17.76 mln roubles for such projects – this amount has been doubled by the Company), and few others.

The Company won several awards for its social investments and corporate social responsibility (CSR) activities.

6.9 SIMDP Update

Sakhalin Energy continues to implement the third Sakhalin Indigenous Minorities Development Plan, SIMDP 3. SIMDP 3, like the previous ones, is based on international standards on indigenous peoples and is implemented in compliance with them. SIMDP 3 takes into account the experience gained over the past decade and is aimed at increasing participation of the Sakhalin Indigenous Minorities at the district level.

Key steps undertaken back in 2016 included the following:

- SIMDP 3 programmes' documents finalised (March);
- The first meetings of SIMDP 3 coordinating bodies held (March);
- SIMDP 3 programmes' grant contests launched;
- A round of consultations under SIMDP 3 held (21 March – 1 April; 16 meetings in 12 IP communities; 257 participants);
- Two training events for SIMDP 3 coordinating bodies held (May and October);
- Meetings of SIMDP coordinating bodies (Programmes' Committees, Expert Groups, and District Committees) held to discuss and approve projects submitted under the grant contests (May);

- SIMDP internal monitoring held (November);
- 72 SIMDP projects supported;
- SIMDP external monitoring implemented by an Independent expert held in November – December;
- 4 SIMDP News Bulletins published and distributed among stakeholders.

Achievements under the SIMDP in 2017 include:

- SIMDP 3 programmes' grant contests launched (January);
- Public consultations in IP communities held (29 January – 10 February; 15 meetings in 11 IP communities; 276 participants);
- Meetings of SIMDP coordinating bodies (Programmes' Committees, Expert Groups, and District Committees) held to discuss and approve projects submitted under the grant contests;
- Publication of independent consultant's report (as part of the external monitoring);
- 2 SIMDP News Bulletins published and distributed among stakeholders.

Ramboll Environ notes the ready accessibility and availability of the dedicated IP CLO that covers the traditional areas of the Indigenous Peoples residence. On the whole, the SIMDP 3 serves as the exemplary model for similar projects in regions with Indigenous Peoples that require demonstration of the Free, Prior and Informed Consent (FPIC) concept.

Additionally, during 2016-2017 the Company held and participated in more than 10 cultural, art/craft and historical/ethnographic events related to IPs in various regions of Russia.

Figure 4 - Indigenous Peoples Events

6.10 Grievance Redress Mechanism

Sakhalin Energy continues to successfully operate its well-established Community Grievance Procedure (GP) that has been described in detail in previous IEC Site Visit reports. In 2016, a wide public and inter-Company information campaign was run, with the aim of disseminating information on the GP among the communities, as well as among contractors' and subcontractors' staff.

The campaign included the following elements:

- Leaflets/posters/pocket calendars about the GP were placed in the localities and districts affected by the Project, including Company's and contractors' offices and camps;
- Information about the GP was included in presentations during regular public meetings;
- Publications about the GP made in Sakhalin district newspapers;
- Training delivered for Sakhalin-2 Project contractors/subcontractors on HSESAP social commitments (including grievance resolution process);
- Refresher trainings/inductions provided for relevant Company staff;
- Special training for librarians running the Company's ICs (IC consultants).

Awareness raising activities continued in 2017; this included development of a GP communication strategy to meet the needs of the Development Projects (Train 3, OPF-C).

The Company informed Ramboll Environ that in 2016 22 grievances were lodged in total. All lodged grievances were classified as 'blue' (low risk) as per the HSESAP Risk Assessment Matrix. A breakdown by categories is provided in Table 1.

Table 1 - Grievances Received in 2016

Category	Number of Grievances
Community impact	8
Labour issues (incl. H&S)	3
SIMDP related	5
Others	6
Total	22

Under the 'Other' category grievances related to information disclosure, camp management, contract management and code of conduct were consolidated.

19 out of 22 grievances were closed out in 2016[15] within the period stipulated by the Community Grievance Procedure (45 working days), and three grievances were carried over to 2017. After conducting an investigation and clarifying the circumstances, the latter were closed out by a Business Integrity Committee (BIC) decision. The 2017 statistics are presented in Table 2.

Table 2 - Grievances Received in 2017 (as of September 2017)

Category	Number of Grievances
Code of conduct	3
Labour issues (incl. H&S)	5
SIMDP related	2
Camp management	1
Total	11

[15] Major part - with statements of satisfaction

Seven grievances were finalised by the time of the September 2017 monitoring visit[16]; review of the other four was ongoing. Similar to 2016, all grievances were finalised within the period stipulated in the Community Grievance Procedure.

SIMDP-related grievances were reviewed by the SIMDP external expert.

Overall, Ramboll Environ concludes that the Company's Public Grievance Procedure represents an example of good practice in the oil and gas industry. Recommendations on minor improvements relate to GP paperwork and are given below.

Opportunity for Improvement: Currently, grievance forms are attached to the GP brochures. The brochures describe the GP step-by-step and are available in the ICs. As per the information provided by IC consultants, some visitors tend to take the GP brochures home, to have more time for filling the grievance forms in. This may lead to the situation when an IC has run out of the GP materials. To avoid this situation, Ramboll Environ recommends printing out the grievance forms separately from the GP brochures, and sending additional copies to the ICs when needed. This would also be beneficial from an environmental perspective as less paper will be required.

Opportunity for Improvement: In case any changes to the current version of the brochure are planned, it is recommended to put a date of publishing on the title page, to avoid mixing of old and new versions.

Opportunity for Improvement: Reportedly, IC consultants give the GP brochures to the readers to take away. Ramboll Environ suggests to ensure that at least one 'master copy' of the brochure is always available at each IC.

[16] Three - with statements of satisfaction, four – closed out by the BIC decision

7. OPF COMPRESSION PROJECT MONITORING

7.1 Introduction

As part of the monitoring visit, Ramboll Environ conducted a visit to the Onshore Processing Facility Compression (OPF-C) Project site located in the central, eastern side of Sakhalin Island, adjacent to the OPF. The 20 Ha OPF-C construction site is located to the east of the OPF site. The visit was conducted on 14th to 15th September 2017, with additional observations made by from an ecological-focused visit on 13th September.

The focus of the visit was on the following aspects:

- Environmental management activities during early works; and
- Environmental management plans for the main construction phase.

The visit included a walkover inspection of the OPF-C construction site, laydown areas, water and wastewater treatment facilities, stormwater drains, soil and peat storage, generators, storage of hazardous substances, waste storage, and the location of the proposed Beach Landing Facility (BLF).

The visit also involved discussions with the Greenfield Construction Manager, HSE Manager and Environmental Manager.

Zapolyarpromgrazhdanstroy (ZPGS), which is a subsidiary of StroyGasConsulting, is conducting early works for the OPF-C Project, which are scheduled for completion by the end of 2017, with the contract formally terminating in March 2018. Site preparation (early-works) is currently 85% complete. The scope of the early works contract included stripping the site of vegetation and soil/peat, backfill with crushed rock from existing commercial quarries, site drainage works, and construction of a new site access road.

In September 2017 Sakhalin Energy signed a contract with Petrofac for the construction of the OPF compression station. Petrofac is expected to mobilise in Q4 2017 and to complete construction in 2022. The scope of work includes inlet separation and feed gas compression facilities, a new flare system, utilities, substations and associated buildings, a temporary beach landing facility, refurbishment of the previously utilised camp, temporary site facilities for Sakhalin Energy and Petrofac, as well as brownfield tie-ins and integration into the existing OPF.

7.2 Environmental and Social Management Systems and Plans

7.2.1 Early Works

Sakhalin Energy has developed the following management plans for the early works contractor, ZPGS, which are comprehensive and address the potential environmental and social risks and impacts:

- Action Plan for the Prevention and Oil Spill Response
- Chemicals Management Plan
- Emergency Response Procedure
- Environmental Plan
- HSE Incentive & Recognition Procedure
- Health, Safety, Environment and Security (HSES) and SP Management Plan
- Plan for the Management of Social Issues and Interaction with the Public
- Road Safety Plan
- Security Plan

- Subcontractors HSE Management Procedure
- Waste Management Plan
- Production Control Program for Compliance of Sanitary Rules and Realizing the Sanitary Epidemic Prevention Events for 2017.

7.2.2 Construction Phase

In August 2017 Sakhalin Energy and Petrofac completed a gap analysis of the contractor's Health, Safety and Environment Management System (HSE-MS) against Sakhalin Energy's Health, Safety and Environment and Social Performance Management System (HSE-SP MS) stipulated in the Contract Section VI – HSSE & SP Obligations. It identified 41 gaps, none of which are significant enough to delay the contract. An action plan has been developed to address the issues identified in the gap analysis.

Petrofac has prepared a list of environmental management plans and procedures for the main construction phase, which will be reviewed by Sakhalin Energy in a pre-mobilisation audit scheduled for December 2017. It is not clear from the list of plans whether the following topics will be covered:

- Air emissions (e.g. waste incinerator off-gases, combustion products from generators and vehicles etc. and dust);
- Noise;
- Environmental monitoring and reporting;
- Reinstatement;
- Grievance management; and
- Worker accommodation standards.

It is understood that the waste incinerator construction project is considered as a separate sub-project (also by Petrofac but under a separate contract), which will have its own management plans. Petrofac is scheduled to complete an OVOS by July 2018.

***Opportunity for Improvement*:** Sakhalin Energy should seek confirmation from Petrofac on how air emissions, noise, environmental management and reporting, reinstatement, grievance management, and worker accommodation standards will be addressed in the construction phase environmental management plans. In addition, a Simultaneous Operations (SIMOPS) procedure should be developed to manage environmental risks (e.g. roles and responsibilities for incidents) during the period when ZPGS and Petrofac are both working at the OPF-C construction site.

***Opportunity for Improvement*:** Environmental management plans should be defined for the waste incinerator, and made available to the IEC for review.

7.3 Chemical & Oil Storage

Generally, oil and chemicals are stored securely around the OPF-C construction site. In particular almost every storage drum and all plant and equipment inspected had a drip tray (Photo 22). However, there are some opportunities for improvement.

Photo 22 – Example of secondary containment for a generator and oil drums

***Opportunity for Improvement*:** A drum of hypochlorite in the water treatment plant has no secondary containment (Photo 23). Ground staining indicates that leaks have occurred. It is recommended that a trip tray is provided at this location.

***Opportunity for Improvement*:** The MSDS for hypochlorite in the water treatment plant is only available in Russian language. The HSESAP requires a copy of the MSDS in English and Russian for all chemicals used.

***Opportunity for Improvement*:** The early works contractor relies on unconventional forms of secondary containment including:

- Flexible plastic portable bunds which rely on correct insertion of stiffeners at the corners to maintain their integrity. On several occasions during the site visit fully or partially collapsed bunds were noted. For example, Photo 24 shows a drum of waste oil with a fully collapsed plastic bund, and Photo 25 shows a drum of waste oil next to a generator which was partially collapsed and was quickly fixed when the auditor pointed out the issue.
- Metal drums that appear to have been fabricated on site, which do not seem to provide a fully impermeable barrier.

It is recommended that metal bunds are tested for water-tightness and repaired or replaced where necessary and that all portable plastic bunds are inspected daily.

Photo 23 – Drum of hypochlorite without secondary containment

Photo 24 – Fully collapsed portable bund around a waste oil drum

Photo 25 – Waste oil drum in a partially collapsed portable bund (it was being repaired when the photo was taken, after the auditor highlighted the issue)

7.4 Waste Management

The standard of waste management was generally good. Waste containers are clearly labelled for different materials (e.g. paper, plastic, food waste, general waste and oily rags) and in good condition, and secondary containment has been provided for waste oil / oily rag drums (Photo 26 and Photo 27).

ZPGS maintains comprehensive records of waste generated by the early works, and disposes of waste via government-registered contractors, who have also been audited by Sakhalin Energy.

***Opportunity for Improvement*:** Two drums of waste oil, one in a waste storage area and one adjacent to a generator were noted to have incorrect labels as waste oil is stated as being Class 4, not Class 3.

Photo 26 – Clearly labelled non-hazardous waste storage containers

Photo 27 – Clearly labelled waste oil / oily rags storage containers

7.5 Soil and Peat Storage

Soil and peat excavated from the construction site has been stockpiled in an area to the north of the construction worker accommodation camp. The peat storage area is located on a north facing gentle slope, in an area that according to the ESHIA, previously supported shrub-cotton grass-moss bog (similar to the remaining surrounding habitat). This is a natural habitat as defined by IFC PS6. The peat is being piled in a series of long windrows, 3-4 metres high (Photo 28). Each windrow has a drainage ditch excavated either side, which collects water run-off and transports it to a settling pond at the northern end of the area, shown in purple in Figure 5). The settling pond discharges into an unnamed creek, which ultimately forms a tributary of the Vatung River.

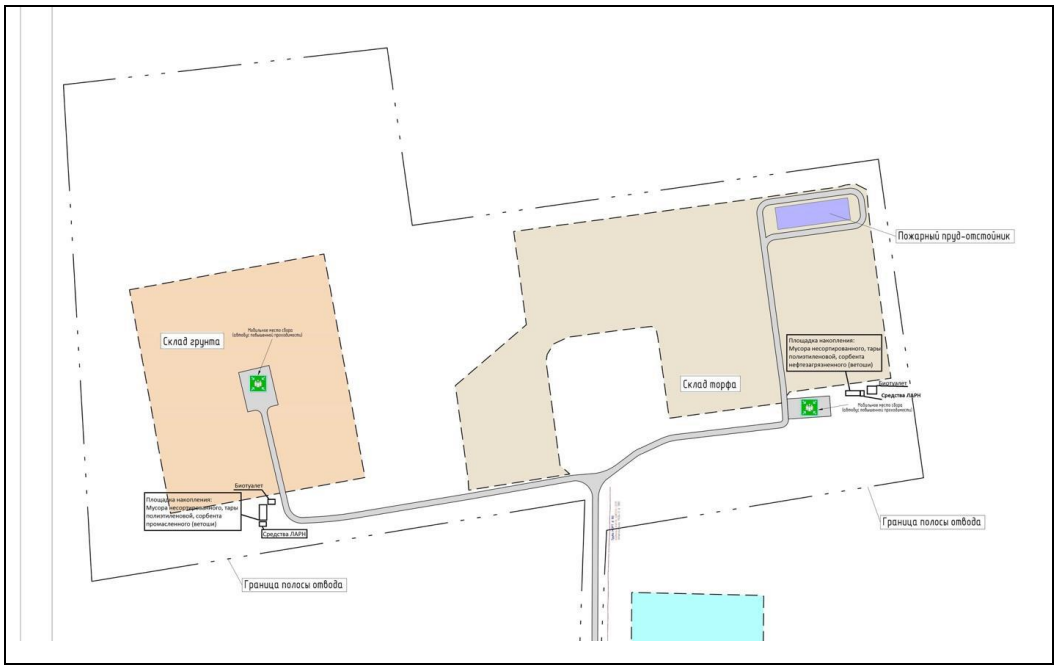

Figure 5 - Soil and peat storage areas

There are a number of potential concerns over the peat storage area. Firstly, it appears that the habitat losses caused by the footprint of the peat storage was not taken into account in the EHSIA. It is recommended that these losses taken into account by the Project BAP and assessed in terms of the IFC PS6 requirement of no net loss of natural habitats.

Ramboll Environ also has concerns over the peat storage design. Peat is formed when wet conditions create abiotic conditions, leading to incomplete decomposition of plant material (especially wetland plant species such as sphagnum moss). Because of the wet conditions and the lack of decomposition, it is naturally stored and gradually accumulates over long periods of time. If peat is allowed to dry out, it allows oxygen to enter the soil and decomposition to start, releasing CO_2 to the atmosphere. Therefore, if the aim of the peat storage is to preserve it for later use, it needs to be stored in wet conditions or in a way that ensures the air cannot come into contact with the soil and cause aerobic decomposition of the humus. The use of windrows and drainage is likely to cause peat drying and decomposition.

Photo 28 – Peat Storage Windrow and Adjacent Drainage Ditch

In their current form, the piles and adjoining channels are vulnerable to exposure from rain and snowmelt water. This poses the risk of peat material being washed out and deposited downslope. While the windrows have been hydro-seeded, the vegetation requires time to grow and fix the top layer with roots. Given the late season of hydro-seeding, it is unlikely that complete vegetation cover will be achieved before this year's snowfall. This will require careful monitoring in spring 2018. It is understood that monitoring of the water quality of the unnamed tributary of the Vatung River is ongoing. This should assess whether run-off from the peat storage area is causing a deterioration in water quality, pH, oxygen or organic matter.

Long-term, further ongoing management is likely to be required to prevent colonisation of the area by woody species of plant and succession to scrub and woodland over the next 20-30 years, as well as the risk of fire during summer.

In terms of further recommendations, it is not understood whether the detailed storage methodology has been subject to state expertise review and formally agreed as part of the relevant permitting process. Therefore, Ramboll Environ requests further detail and documentation regarding the permitting of the peat storage methodology. Further detail is requested in respect of the planned monitoring programme for the peat storage area and water run-off. In addition, if monitoring results show that the peat is drying out, decomposing, washing out during high rainfall or snow melt, or causing deterioration in the nearby water course, Ramboll Environ would like to understand what rectifying measures can be taken, including the potential for redesign and reconfiguration within the conditions of the current permit.

In several areas soil and sub-soil storage was also observed beyond the construction site's boundary ditch (Photo 29). It was reported that when ditches were excavated the soil was deposited nearby rather than in the central soil store and that these areas will be reinstated after construction has been completed. Site management also stated that although the soil has been deposited outside the construction zone it is within the Project's allocated area.

The perimeter of the construction zone is not clearly demarcated on the ground. The current process is likely to be causing further damage to surrounding habitats that could be avoided. It is recommended that in future, the construction area is clearly demarcated on the ground (e.g. using high-visibility tape) and that plant operators are made aware of the importance of limiting the construction zone to avoid damage to habitats.

According to Sakhalin Energy HSE staff, the existing damaged areas are due for restoration at the end of construction in 2020. It is recommended that habitat restoration would be more effective and easier to implement if conducted much sooner. Restoration should include the removal of excess sediments from the vegetation surface.

Photo 29 – Sub-soil that has been deposited beyond the active construction zone

7.6 Sewage Treatment

The OPF-C project has a STP which treats around 70 to 100 m^3/day of wastewater from worker accommodation, offices and canteen facilities. The plant is operated by a subcontractor to ZPGS, Sudexo. The main process steps are maceration, screening of coarse solids (>2 mm), biological treatment in two 50 m^3 activated sludge units, and disinfection with an ultraviolet lamp. Sludge is taken to a municipal STP in Nogliki in vacuum trucks. Treated water from the STP is discharged to a stream near the peat storage area, north of the OPF.

It was reported that the current STP will be decommissioned in August 2018 and replaced by a new one as part of Petrofac's construction contract.

Analysis of records on treated wastewater from the STP quality highlighted significant exceedances of several parameters, in particular total suspended solids (TSS), pH and chloride. When an exceedance is detected, Sakhalin Energy raises the issue with ZPGS, who then contact Sudexo. Investigations normally identify the root cause of exceedances as "human factors". As

a result, the STP operators have been on additional training courses, the last one being in September 2017.

In addition, a number of other improvements are underway to improve the performance of the STP, including:

- Installation of a grease trap in September 2017 (currently the high concentration of grease in raw sewage leads to a reduction in pH, which inhibits the ammonium group oxidation reaction);
- Operational control programme developed and implemented in September 2017;
- Further operator training planned in October 2017;
- Camera survey of sewers to look for groundwater ingress in September 2017;
- More frequent cleaning of UV-lamps; and
- "Express-laboratory" equipment purchased in August 2017 to allow rapid analysis.

7.7 Stormwater Management

Stormwater drainage systems and outfalls that were inspected do not meet what is considered GIIP. For example, a surface water retention pit and discharge point in the north-east corner of the OPF-C site is poorly constructed and the pit has insufficient capacity to accommodate runoff from a storm (Photo 30), and the ditch into which water is pumped from the retention pit has no erosion and sediment control measures such as stone traps (Photo 31). However, pipes were observed next to the pit and it was reported that the stormwater system was about to be upgraded. It is understood that an underground settlement tank and an oil interceptor will be installed in 2019.

It is clear that large quantities of sediment have washed off the construction site and entered the surrounding bog vegetation (Photo 32). The surrounding vegetation comprises the natural habitat shrub-cotton grass-moss bog. It is recommended that careful restoration of the affected areas is required.

Surface water quality is monitored and no exceedances of limits have been identified.

***Opportunity for Improvement*:** Sakhalin Energy should ensure that stormwater runoff ditches are installed to a standard equivalent to those at the existing OPF site and that sediment and erosion control measures are incorporated into the design. Where damage to habitats has occurred from excess sediment run-off, it is recommended that these areas are restored as soon practicable.

Photo 30 – Stormwater retention pit in the north of the OPF-C site

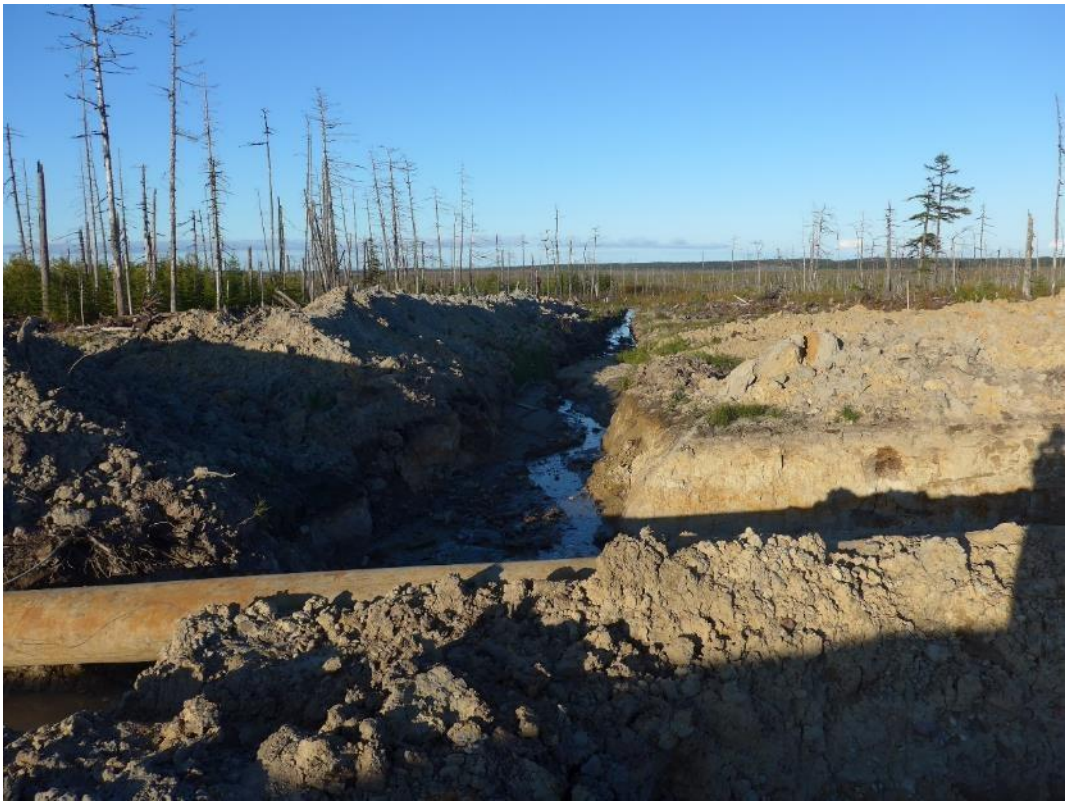

Photo 31 – Ditch adjacent to stormwater retention pit in the north of the OPF-C site

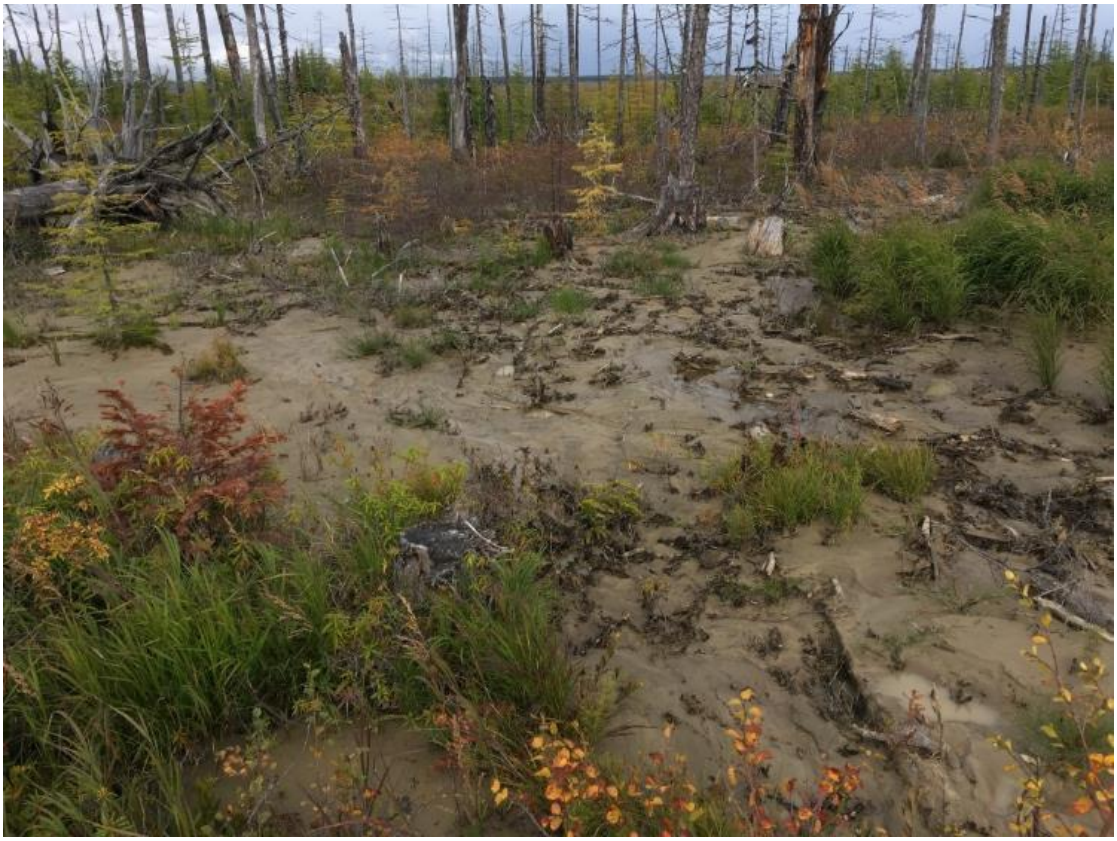

Photo 32 – Sediment run-off into surrounding natural habitat

7.8 Beach Landing Facility

The Beach Landing Facility (BLF) was first developed in 2006 for the delivery of large plant and equipment for the construction of the OPF. All infrastructure has been removed but a laydown area, access road and a track to the beach still exist. The lease has been extended to cover the expected re-use of this facility in June to August 2019.

The laydown area near the BLF site has an accumulation of waste and scrap metal on the surface, and several wooden huts and boats were present in the adjacent sand dunes during the site inspection on 14th September. It was reported that these materials were left by illegal fisherman.

A gap in the dunes was made during the construction of the original OPF beach landing facility (Photo 33). It is understood that it is planned to re-use the same opening for the OPF-C, although it may require widening. The opening appears to be being used by illegal fishermen to access the beach.

Photo 33 - Gap in the Dunes

***Opportunity for Improvement*:** It is recommended that Sakhalin Energy clears all illegal structures and debris from the BLF area (which presents an environmental and a health & safety hazard), and secures access to the site to prevent further environmental degradation. Following completion of construction of the OPF-C, it is recommended that the laydown area is fully decommissioned and a programme of habitat restoration is completed to return the area to its original sand dune habitat. It is also recommended that the gap in the dunes is closed post-construction and its natural vegetation restored.

7.9 Worker Accommodation

The "fly-camp" has been refurbished and is being used to accommodate around 300 early works construction staff.

Refurbishment of the main construction camp, located to the north of the OPF, is due to start in late 2017 or early 2018 as part of the Petrofac construction contract. Sakhalin Energy should ensure that the refurbishment works are designed to meet Russian Federation standards and GIIP (as defined in *Workers' Accommodation: Processes and Standards – A Guidance Note by IFC and the EBRD)*, whichever is stricter.

It is understood that if the camp is not able to accommodate the peak workforce number of 700 in August 2018, another camp, around 7 to 8 km away will be used. It was reported that the alternative camp is of a lower standard than the OPF camp, and that it is unlikely to meet GIIP standards.

***Opportunity for Improvement*:** Sakhalin Energy should ensure that Petrofac prepares and executes an accommodation standard that meets GIIP. It should include a contingency plan for rapid assessment and upgrade of the alternative camp if there is a realistic chance that the main construction camp cannot accommodate all the construction phase personnel.

8. TRAIN 3 PROJECT

8.1 Project Overview

Sakhalin Energy plans to deliver the Train 3 LNG Project, under a Production Sharing Agreement, by 2023 to 2024. The peak construction period will be in 2021 to 2022, when there will be 8,000 contractor personnel working on the project.

The Train 3 Project scope includes:

- Gas transportation system
  - Expansion of Booster Station (BS) 2
  - Construction of BS 3 and BS 4
- LNG plant
  - Train 3
  - Third LNG tank (100,000 m^3)
  - Second jetty
  - Utilities (power generation, two refrigerant tanks and second boil off gas compressor).

The only change in scope since the last IEC monitoring visit is that a spare generator has been removed from the project design. This will ensure better loading of existing generators and will reduce emissions.

Feed gas will be supplied by a third party but commercial negotiations are not yet complete. It is likely that a new 165 km pipeline will be required, with a tie-in close to the OPF.

The Company is no longer considering a gas treatment (CO_2 removal) facility in the north of the island.

The third LNG production train will be within the existing footprint of the Prigorodnoye Production Complex so no major early works are anticipated. Given the proximity to Trains 1 and 2, the Company is also trying to maximise the use of shared infrastructure.

8.1.1 HSE Management

The Train 3 Project will comply with the IFC 2012 Performance Standards and Sakhalin Energy Standards. The Project ESHIA, which is underway, is being completed to Russian and international standards. Public consultation and finalisation of the ESHIA is scheduled for 2018.

HSE lessons learnt from Trains 1 and 2 will be incorporated into an Action Plan, which will be communicated to the EPC contractor.

The Company has identified the following key environmental and social risks:

- Jetty construction – management of marine aspects and impacts.
- Waste management – compliant, adequately sized waste management facilities and practices.
- Community/neighbour relationships.
- Environmental aspects of upstream modifications (booster stations etc.) – land take, potential protected species, restoration of any disturbed areas.

8.1.2 Social Issues

Train 3 stakeholder engagement and information disclosure is discussed in section 6.5.1 of this report.

8.1.3 Train 3 Site

A geotechnical survey was completed in 2016, involving over 150 boreholes for the Train 3 site and around 30 for the proposed jetty location.

8.1.4 BS3 and BS4 Sites

Around 100 boreholes have been drilled at each BS site (each is around 50 Ha in area) for a geotechnical investigation. Both new BS sites are in areas of natural habitat, so Sakhalin Energy is seeking opportunities to replant forestry as an offset. Ramboll Environ will continue to monitor this issue. After evidence of an old settlement was found at the BS3 site, a full archaeological survey was conducted in collaboration with the Ministry of Culture (Sakhalin Region).

8.2 Monitoring Visits to Project Sites

8.2.1 KP 123 – Booster Station 3

A visit to the proposed site of BS3 was made during the RoW inspection. A new access track has been cleared through the forest from the RoW to the proposed site (Photo 34). The track has not been reinforced with hardcore and comprises loose soil, limiting vehicular access to the proposed site. The track crosses a number of small streams that have not been culverted under the track at the current time.

Photo 34 - Access track to BS3

The tree cover on the proposed site of BS3 has also been felled, with the resulting timber currently stacked on-site. The cleared area still has tree stumps in-situ and currently retains forest floor vegetation cover in patches across the area, however we raise the following finding:

FINDING: Vehicle movements and other forestry operations have removed the covering of vegetation in many areas, exposing bare soil. The proposed site of BS3 is located on a relatively steep slope and signs of soil erosion are already present (Photo 36). The run-off of sediments poses a significant risk to the adjacent retained forest habitats and nearby water courses unless a robust monitoring and control plan is instigated.

This risk will be much higher during construction as the large site will require significant cut and fill of the hillside to create a level site.

Photo 35 - Soil erosion within the proposed BS3 site

8.2.2 KP 298 – BS2

A very brief visit was made to BS2 during the RoW inspection. It is understood that as part of the Train 3 Project, additional plant will be installed within the existing footprint of the site. The BS2 site is situated within an area of previously cleared forest and it is understood that no additional tree clearance will be required for the main Train 3 related works at BS2 (Photo 36).

Photo 36 - Edge of BS2, showing cleared buffer area and forest

8.2.3 KP 444 Booster Station 4 (BS4)

The proposed site for BS4 was also visited during the RoW inspection. As with BS3, the site has been recently clear-felled and the timber stacked in piles on-site (Photo 37). The cleared site has incurred less damage during the forestry operations than at BS3, and a relatively intact vegetation cover remains. However, soil erosion and sediment run-off will be a significant risk during construction. Due to the large size of the site and the slopes present, it is likely that significant cut and fill will be required to create a level site.

Photo 37 - Part of the cleared site for BS4

An access track has been created to the proposed BS4 site. This has required some tree felling in places and stone fill appears to have been imported to create a temporary road surface. The access track crosses a water course, which has yet to be culverted and forms a barrier that limits vehicular access to the site (Photo 38).

Photo 38 - Small watercourse crossing on access track to BS4

8.2.4 Aniva Bay

Aniva Bay was visited by Ramboll Environ's biodiversity specialist to view the baseline conditions as described in the draft ESHIA for Train 3, as well as in respect to Sakhalin Energy's Environmental Monitoring Programme. This has informed the subsequent review of the Train 3 ESHIA baseline section (Ramboll Environ will report on the findings of the ESHIA to lenders separately in due course).

The majority of the shoreline within 3 kilometres of the LNG facility comprises a mixture of sandy beaches and rocky wave-cut platforms (Photo 39). These are largely unsuitable to provide migratory stop-over feeding habitats for large numbers of wading bird species. However, the rocky shoreline areas are suitable for species such as harlequin duck *Histrionicus histrionicus*. Possibly more significant in terms of the Aniva Bay Important Bird Area is the small Mereya lagoon close to the LNG facility. It is understood that on occasion this does support larger numbers of migratory shorebird species. A number of red-necked grebe *Podiceps grisegena* were viewed offshore, and it is important that the ESHIA assesses the value of the bay for migratory and wintering grebes, divers and sea duck.

Photo 39 - Wave-cut rocky platform, site of environmental monitoring location

During the site visit, it was observed that the shoreline was well frequented by local people, both recreational users on the sandy beaches (Photo 40) and people collecting seafood from the rocky shoreline. It is important that these local beneficiaries of ecosystem services are included in the Train 3 ESHIA.

Photo 40 - Recreational ecosystem services provided by nearby sandy beaches

Opportunity for Improvement: With respect to the environmental monitoring programme, it is understood that one of the sample locations is the rocky shore shown in Photo 39. A transect of survey points is made down the shore profile between high and low tide. Given the local use by people for harvesting seafood, any colonisation of the area by non-native invasive species introduced by ballast water could cause significant impacts. Therefore, it is recommended that a large area of the rocky shoreline is monitored for signs of alien invasive species as part of the monitoring programme.

Opportunity for Improvement: A similar observation to the above OFI is made in relation to the existing jetty. A single monitoring location is used on the jetty (albeit with multiple sampling points in the water profile). Given the large size of the jetty, invasive species could colonise and not be evident at the sampling location. Therefore, it is recommended that a larger area of the jetty is monitored for alien invasive species, although possibly not every year and it may not require the same level of detail as the existing fixed-point monitoring location.

The new jetty to be built as part of the Train 3 project will also require careful monitoring for signs of colonisation by alien invasive species.

9. OTHER PROJECT UPDATES

9.1 Waste Management

9.1.1 Waste Management Strategy

Sakhalin Energy has historically used three landfill facilities in the northern (Nogliki), central (Smirnykh) and southern (Korsakov) portions of the island for the disposal of its non-hazardous wastes. Each of these facilities was originally developed/upgraded with support from the Company to ensure that they were designed to appropriate standards. Ramboll Environ has previously reported to lenders on significant issues in relation to Sakhalin Energy's management strategy for non-hazardous waste that have resulted from (i) capacity issues at the Korsakov landfill, and (ii) legal restrictions that have stopped disposal of Company waste to the Smirnykh and Nogliki landfills. In response to these issues, Sakhalin Energy has developed a revised waste management strategy, which has continued to evolve in recent years. The current waste management strategy is outlined below:

Short-Term Strategy

Sakhalin Energy has reduced the volume of waste going to landfill through a waste minimisation initiative. Excluding drilling waste, the amount of waste sent to landfill has fallen from 3,605 tonnes in 2013, to 2,668 tonnes in 2014, 2,013 tonnes in 2015, and 1,629 tonnes in 2016. During the last two years the largest reductions in waste going to landfill are in paper and wood wastes.

A contract was signed with the Korsakov landfill in July 2017 for the disposal of a small volume (20 m^3/week) of Class 5 non-hazardous waste. The Smirnykh landfill is still unavailable so Sakhalin Energy still uses the Nakhodka landfill on the Russian mainland for the disposal of waste generated at the Company assets in the central and southern parts of the island.

Sakhalin Energy has resumed operations with the Nogliki landfill, in the north of the island, and from January 2017 started to deliver waste generated at the PMD in Nogliki and the OPF site to the Nogliki landfill.

Class 1 to 3 (hazardous) wastes continue to be disposed of on the mainland. Until 2016 waste lube oil was injected into crude oil but that practice stopped when the Company was informed that a waste management licence was required. Waste oil is now disposed of on the mainland.

Long-Term Strategy

The Company's current long-term waste management strategy relies on investment by the Oblast into the construction and/or upgrade of local facilities. Export of waste to landfills on the mainland is seen as a temporary back-up option.

The OPF-C scope already includes incineration for the construction phase and the Company is investigating the option to keep the incinerator for the long-term operations phase. We understand that the Company has investigated opportunities to develop a Company-owned facility for the incineration of construction and operations waste in the south of the island, although any such facilities have been excluded from the Train 3 project design to reduce risks at the approval stage. Ramboll Environ stresses the value of Company-owned incineration facilities, particularly in the south of the island where the reliance on third party facilities and risk of reducing landfill capacity is greatest. Should the decision be taken to construct an incinerator in the south of the island, Ramboll Environ recommends that it meets GIIP and that measures are taken to avoid actual or perceived impacts to the population in the Dachas near the LNG plant.

The Company does not plan to construct any new landfill facilities. However, the Yuzhno-Sakhalinsk Oblast is expected to complete the construction of Phase 1 of the Yuzhno-Sakhalinsk

municipal landfill in Q4 2017. Construction of the Tymovsk municipal landfill, in the central part of the island, is scheduled for completion in Q4 2017. We note that there have been many delays previously in the development of additional landfill facilities by the Oblast, and hence the status of these developments needs to be carefully monitored by the Company.

Follow-up Item: Ramboll Environ is generally supportive of Sakhalin Energy's strategy of developing its own incineration facilities in order minimise risks associated with reliance on third-party facilities. Nonetheless, we note that these facilities should be designed to meet lender standards and that key elements of this are:

- Risk assessment should be applied to the design and location of the facilities
- The designs will need to meet IFC PS and IFC EHS Guidelines for Waste Facilities.

In addition, Ramboll Environ will follow-up on the status of the development of new landfill facilities by the Sakhalinsk Oblast.

9.1.2 Drilling Cuttings Reinjection

Drilling cuttings represent around 90% of the weight of all waste generated by Sakhalin Energy. Since Q2 2015, the Company has paid for drilling waste reinjection on a quarterly basis. The Company has always objected to such payments, arguing that drill cuttings reinjection into deep isolated strata is one of the best available techniques (BAT) for disposing of such wastes due to the lack of adverse environmental impacts (Ramboll Environ concurs that this disposal method represents BAT). Sakhalin Energy participated in the BAT Bureau Waste Working Group, which resulted in the inclusion of cuttings reinjection in the RF catalogue of best available technologies (from July 2017). RPN has acknowledged the absence of adverse environmental impacts based on monitoring conducted in 2016. Sakhalin Energy is now in discussion with RPN regarding offset of the payments made for injection of drill cuttings (approximately 100 million RUR).

9.2 Environmental Performance

9.2.1 HSE Management

<u>HSE Objectives</u>

Sakhalin Energy established a new HSE objective in 2016, known as "Goal Zero", which aims to achieve no harm and no leaks through four strategies:

1. Lead and engage: Actions include leadership HSE site visits and HSE training for senior management.
2. People: The focus is on enhancing process safety and HSE competence, especially for HSE critical contract holders.
3. Major Hazards: All incidents and unsafe acts are recorded and thoroughly investigated. The Company is encouraging staff to report more potentially unsafe acts and conditions to prevent them escalating into actual incidents. There are currently several ongoing programmes to manage major hazards such as a seven year project at the OPF to address corrosion under insulation, and a drilling rig maintenance improvement project.
4. HSE Hazards and Controls: Focus areas include improving compliance with the Lifesaving Rules, and improving HSE management of contractors.

Sakhalin Energy is ahead of target with its 2017 HSE Scorecard, which is structured around the four Goal Zero strategies.

<u>Internal Audit Programme</u>

An overview of the results of Sakhalin Energy's 2016 HSE audit programme was reviewed, which highlighted that the most commonly identified themes were personal safety, process safety and

contractor management. These themes have been reflected in the 2017 HSE audit programme. The audit programme and the Fountain system for managing corrective actions are robust, and no issues have been identified by the IEC.

ISO Certification

Sakhalin Energy currently holds two certifications for its HSE management systems:

- ISO 14001:2004 (environmental management system certification, valid until 4th May 2018); and
- OHSAS 18001:2007 (occupational health and safety management system certification, valid until 4th May 2018).

The most recent surveillance audit by Russian Register in February 2017 concluded that the HSE-SP MS conforms with both standards. A gap analysis against the new international standard for environmental management systems, ISO 14001:2015, and the draft international standard for occupational health and safety management systems, ISO 45001:2018, has been completed. Sakhalin Energy has reported that it is prepared for recertification to the new standards in February 2018.

HSESAP

The Company proposes to make a number of changes to its HSESAP in 2017-2018, all of which will need to be reviewed and agreed by the Lender group.

9.2.2 Flaring

Sakhalin Energy is committed to no continuous flaring or venting (HSESAP Air Emissions Standards Comparison, 0000-S-90-04-O-0257-00-E). As previously reported, Russian Federal Government Decree #7 came into force in 2012 and set a 95% utilisation limit for associated gas. Sakhalin Energy has agreed with the authorities that it only applies to associated gas defined as the gas produced at PA-A and PA-B (and therefore not gas produced at LUN-A).

Associated gas utilisation at PA-A and PA-B has consistently bettered the 95% target each month in 2017, ranging between 97.3% and 99.3% for PA-A and between 94.4% and 99.3% for PA-B. Data provided by Sakhalin Energy also indicates a decline in the quantity of gas flared each year since 2011 (a fall from 124.9 kton in 2011 to 78.7 kton in 2016).

The flaring data demonstrates the achievements made by the Company in flaring minimisation.

9.2.3 Sewage treatment plant

Previous IEC monitoring reports have described compliance issues with discharges from a number of Sakhalin Energy's onshore STP, including at its staff accommodation facilities in Yuzhno-Sakhalinsk (Zima) and Korsakov (KPA), at BS2 and PMDs. The Company is implementing action plans to resolve these issues, which are summarised below:

Zima:

Originally the Company planned a change of discharge from a fisheries class stream to a lower class stream (and hence with less stringent discharge criteria). However, the authorities have advised that the identified stream for the Zima STP discharge (the Pravy Stream) is also of fisheries class. In the short term, Sakhalin Energy has applied for a new wastewater discharge permit, but the discharge limits are expected to be as stringent as the previous permit. In the longer term, the Company plans to investigate the possibility of redirecting sewage to the municipal system (this will require a 2 km sewer connection) and using the newly constructed outlet into the Pravy Stream for a combined sewage and stormwater discharge.

KPA:

Develop a new water application package with the aim to agree less stringent discharge limits with the authorities.

BS2 and PMDs:

Develop STP improvement programmes to return the plant to compliance. The new STP at BS2 is under construction, with installation works taking place in September 2017.

Ramboll Environ will continue to monitor progress on the implementation of these plans.

The STP at the OPF was recently replaced but is having some issues meeting permitted discharge limits (see OPF audit report). The STP used for the OPF-C construction project, which also fails to meet some discharge limits, will be decommissioned in August 2018 and replaced with a new unit as part of the Petrofac EPC contract.

9.2.4 Discharge of treated water to land

A general permitting issue relating to discharge of treated water to land/soakaways has previously been identified and reported in September 2012 (see item WATER.08 in the Findings Log). A number of water discharges (e.g. treated surface water runoff) to ground were originally permitted by the applicable Russian authority, RosTekhNadzor (RTN). As previously reported, responsibility for environmental permitting has reportedly now moved from RTN to RosPrirodNadzor (RPN). However, RPN does not have a regulatory procedure in place to issue permits for these discharges. Sakhalin Energy's original RTN permits for discharge of water to land have expired and RPN has no legal basis to re-approve for such permits. As such, Sakhalin Energy still does not have valid permits for its ongoing discharge of treated water to ground at its onshore facilities.

The Company is evaluating alternative wastewater disposal options such as discharge to waterbodies to remove discharges to land. Ramboll Environ will continue to monitor this issue.

9.2.5 OPF Compressor NO_x Emissions Issue

Previous Ramboll Environ IEC monitoring reports have highlighted an issue in which the NO_x emission standard of 51 mg/Nm^3 (25 ppm) specified in the HSESAP is breached when the gas turbines at the OPF operate in certain firing modes. The OPF turbines are typically operated in F-24 mode, which meets the NO_x emission standard for around 50% of the overall runtime due to operational constraints (i.e. the requirement to provide safe and reliable operations).

Sakhalin Energy has been seeking a derogation to a 100% compliance with the NO_x emissions standard, which Ramboll Environ supports based on a number of environmental and technical considerations. Now, rather than seeking a derogation, the Company proposes to amend the HSESAP to more accurately reflect the full requirements of the EU Industrial Emissions Directive, upon which the Company NO_x standard was established (whereby the emission limit only applies to above 70% load).

Ramboll Environ supports the amendment to the NO_x standard in the HSESAP as there are no significant adverse environmental impacts (ambient air quality monitoring demonstrates that the NO_x emissions are well below the Maximum Permitted Concentration of 0.2 mg/m^3), and there are no significant adverse human health impacts due to the distance of the OPF to the nearest residential areas (Catangly village is 32 km away). Use of just three of the four turbines to increase load and thereby reduce NO_x emissions is not recommended as it could have adverse process safety and environmental consequences such as process shutdowns and flaring.

It is expected that when the OPF-C facility enters operations phase, the increased electrical load will improve turbine efficiency, thereby reducing emissions.

9.3 4D Seismic Survey and Western Gray Whales

9.3.1 4D Seismic Plans

Sakhalin Energy provided an overview of the 4D seismic survey performed in 2015, including an overview of the development and implementation of the mitigation plan for the protection of Gray Whales. A key objective of the seismic campaign was to avoid disturbing the Gray Whales at the Piltun Bay feeding ground.

Monitoring and mitigation plans were described, including the use of shore-based and vessel-based marine mammal observers (MMOs), and real-time sound level monitoring. Mitigation measures included:

- Conducting the survey at the earliest possible time (before the arrival of Gray Whales in feeding areas);
- Careful scheduling to avoid completing seismic works at the same time as ENL;
- Use of source exclusion zones (2 km for Gray Whales);
- Suspending seismic work when whales were spotted near the 156 dB contour; and
- Gradual source ramp-up after inactivity.

Planning is underway for a 2018 4D seismic campaign. It is proposed that the survey uses a combination of streamers and ocean bottom nodes (OBN), which facilitate acquisition of data closer to platforms, for the survey. It is anticipated that there will be no simultaneous operations with ENL.

A draft ESHIA for the 2018 survey is scheduled for October 2017 and the final document should be completed in April 2018. Approvals are expected to be completed in May 2018 and the survey is scheduled for June to July 2018.

Sakhalin Energy maintains its active engagement with the Western Gray Whale Advisory Panel[17] (WGWAP), and is currently working closely with the WGWAP Noise Task Force on a range of noise-related issues. It is anticipated that the draft ESHIA will be reviewed at the next WGWAP meeting in November 2017.

An Independent Observer will be appointed by IUCN, who will check implementation of the monitoring and mitigation plan (MMP). In addition, Sakhalin Energy will appoint MMOs, including a Marine Environmental Consultant, who will act as the Central Commander for marine mammal mitigation issues.

The MMP for the 2018 survey will be based on the 2015 plan and will be finalised with input from the WGWAP. Ramboll Environ will attend the noise task force (NTF) meetings of the WGWAP at which the MMP will be finalised and will report its findings to Lenders in due course.

9.3.2 Gray Whale Monitoring Programme

The results of the Joint Sakhalin Energy / ENL Gray Whale Monitoring Programme for 2016 were presented, and it was concluded that no abnormalities of Gray Whale distribution or seasonal abundance were observed. The 2016 programme demonstrated that the most significant sources of anthropogenic noise were marine vessels supporting offshore platforms, and that the level of

[17] The WGWAP is managed by the International Union for Conservation of Nature (IUCN) as an independent advisory body of scientists. The overall goal of the WGWAP is to provide objective independent advice on the conservation of western gray whales with a focus on those that feed off Sakhalin.

anthropogenic noise at the Piltun and Molikpaq platforms decreased from 2015 to 2016. This reflects the efforts made by Sakhalin Energy to reduce noise generated on platforms and vessels, such as replacing an old accommodation vessel with a quieter one, and modifications to a pump on the PA-B platform to reduce noise.

Gray Whale monitoring has continued in 2017, but with some modifications to the programme, including changes in the timing of actions and the use of new technical equipment and methods such as unmanned aerial vehicles (UAV, or 'drones') for photo-ID surveys.

9.3.3 Marine Mammals Observation Programme

Sakhalin Energy has implemented a programme to reduce the risk of vessel collisions with marine mammals and to minimise the direct impact of offshore activities on cetaceans. The main collision mitigation measures employed in 2016 were to apply speed restrictions to vessels operating in crew boat corridors, navigation corridors, and to the west of corridors; to specify safe distances between vessels and marine mammals; and to use experienced MMOs.

At the 17th WGWAP meeting (November 2016, Moscow) Sakhalin Energy proposed an increase in the speed of the Company's two crew change vessels from 21 to 35 knots, based on the following considerations:

- Gray Whales were rarely sighted in the transfer corridors.
- A relatively large distance was recorded between vessels and whales.
- Vessel movements in bad weather/poor conditions were very limited.
- The vessels are designed to plane at 35 knots. When travelling more slowly they are more prone to engine failure through overheating and there are more cases of sea sickness.
- The technical ability of the vessels to respond safely, based on high manoeuvrability and rapid stopping was confirmed.

Additional mitigation measures related to the speed increase include:

- Installation of video systems for monitoring the sea surface area in front of each crew-change vessel;
- Use of equipment for recording position, speed and acceleration of crew-change vessels; and
- Simultaneous observation by two MMOs on the bridge.

The WGWAP concluded that *"an increase in speed from 21 to 35 knots would be acceptable from a gray whale conservation point of view for a provisional period of 2 years, pending more refined estimation of the risk"*.

10. OPPORTUNITIES FOR IMPROVEMENT

A number of opportunities for improvement (OFI) have been identified following the site visit and audits of PA-A and the OPF.

It is emphasised that **these do not relate to specific areas of non-compliance** and are therefore not classified as Findings (see Section 11), but are suggested for the benefit of either Sakhalin Energy and/or Lenders to either improve performance or, in some cases, avoid future instances of non-compliance.

These opportunities for improvement are summarised below, together with Sakhalin Energy's response for items where they are identified as the action party.

Opportunities for Improvement				
ID	**Topic**	**Opportunity for Improvement**	**Action Party**	**Sakhalin Energy Response and Action due date**
1	LNG – Spill prevention	Sakhalin Energy should ensure that all containers of oil and hazardous liquids are provided with secondary containment.	SE	Accepted 31.05.2018
2	LNG – Spill prevention	It is recommended that drip trays are provided for all chemical storage drums in Room 102.	SE	Accepted 31.05.2018
3	LNG – Spill prevention	It is recommended that refresher training on the requirements of the materials management manual is provided to warehouse staff. In particular, it should cover the procedures on acceptance of damaged chemical drums.	SE	Accepted 31.05.2018
4	Nogliki landfll – Audit and assurance	It is recommended that the scope of Sakhalin Energy's visits to this landfill and the report format are reviewed and made more structured and detailed. The reports should clearly show how the facility is complying with relevant licence, contract and HSESAP requirements. For the Level 3 audits, a review of the operator's environmental monitoring results should be conducted and a summary of the results provided in the audit report.	SE	Accepted 30.11.2018
5	Nogliki landfill – landfill best practice	Sakhalin Energy should seek confirmation from the operator of its intention to replace the studded roller and should use its influence to ensure a replacement is put into operation at the Sakhalin Energy Cell in a timely manner.	SE	Accepted 30.11.2018
6	Nogliki landfill – landfill best	In order to align with GIIP, Sakhalin Energy should use its influence over	SE	Accepted

Opportunities for Improvement				
	practice	the landfill operator to encourage more frequent application of cover, i.e. daily or within 24 hours of the deposition of fresh waste materials to the Sakhalin Energy cell.		30.11.2018
7	Nogliki landfill – leachate management	In order to meet requirements of the HSESAP and GIIP, the operator should maintain a log of all transfers of leachate from the Sakhalin Energy leachate pond (both in terms of pumping to irrigate the cell and tanker collections). These records should be checked by the Company during its periodic monitoring visits to the landfill and a physical demonstration of the pumping system should be requested by the operator to verify equipment is present and operational.	SE	Accepted 30.11.2018
8	Nogliki landfill – spill prevention	Sakhalin Energy should seek to use its influence to achieve improvements in the general standard of housekeeping applied in the facility's oil store, and improve the secondary containment up to a level commensurate with HSESAP requirements.	SE	Accepted 30.11.2018
9	Nogliki landfill - monitoring	Sakhalin Energy should conduct a thorough review of the operator's Environmental Monitoring Programme and the analysis results obtained to date. The review should verify that the scope of the monitoring is as per the approved plan and the HSESAP, and check all results against applicable RF standards/MPCs. Where exceedances are identified these should be investigated and assessment provided as to the potential environmental impacts.	SE	Accepted 30.11.2018
10	Nogliki landfill – leachate management	Sakhalin Energy should use its influence to ensure that the operating company re-initiates its investigation into this issue and designs and implements a permanent solution to the problem in a timely manner. In the meantime, Sakhalin Energy should closely monitor the extent of the 'bubble' and record it during each periodic monitoring visit to the site.	SE	Accepted 30.11.2018
11	Social – Community engagement	In order to optimise documents' layout on the holders and to simplify navigation, Ramboll Environ suggests keeping only up-to-date Russian-language versions of the materials on	SE	Accepted Q2 2018

Opportunities for Improvement				
		the information holders and archiving/storing separately the old and/or English-language papers.		
12	Social – Community Engagement	In order to get the most out of the information collected by/from the Company ICs, Ramboll Environ suggests the following: • Register not only those requests that result in use of one or another Project document, but also verbal queries, • Add a separate column on Grievance Procedure requests to the visitors register; • Review the existing columns to avoid potential overlapping of topics that may confuse the IC consultants. Refresher training on filling in the visitors register during the 2017 workshop would be beneficial.	SE	Accepted Q1 2018
13	Grievance Procedure – paperwork	Currently, grievance forms are attached to the GP brochures. The brochures describe the GP step-by-step and are available in the ICs. As per the information provided by IC consultants, some visitors tend to take the GP brochures home, to have more time for filling the grievance forms in. This may lead to the situation when an IC has run out of the GP materials. To avoid this situation, Ramboll Environ recommends printing out the grievance forms separately from the GP brochures, and sending additional copies to the ICs when needed. This would also be beneficial from the environmental perspective as less paper will be required.	SE	Accepted Q4 2017
14	Grievance Procedure – paperwork	In case any changes to the current version of the brochure are planned, it is recommended to put a date of publishing on the title page, to avoid mixing of old and new versions.	SE	Accepted Q1 2018
15	Grievance Procedure – paperwork	Reportedly, IC consultants give the GP brochures to the readers to take away. Ramboll Environ suggests to ensure that at least one 'master copy' of the brochure is always available at each IC.	SE	Accepted Q4 2017
16	OPF-C	Sakhalin Energy should seek confirmation from Petrofac on how air emissions, noise, environmental	SE	Accepted 01.06.2018

Opportunities for Improvement				
		management and reporting, reinstatement, grievance management, and worker accommodation standards will be addressed in the construction phase environmental management plans. In addition, a Simultaneous Operations (SIMOPS) procedure should be developed to manage environmental risks (e.g. roles and responsibilities for incidents) during the period when ZPGS and Petrofac are both working at the OPF-C construction site.		Since the monitoring visit, Sakhalin Energy has confirmed that no SIMOPS are planned because the OPF-C site has been handed over by ZPGS back to SE. This part of the OFI has been be closed.
17	OPF-C	Environmental management plans should be defined for the waste incinerator, and made available to the IEC for review.	SE	Accepted 01.11.2018
18	OPF-C – Spill prevention	A drum of hypochlorite in the water treatment plant has no secondary containment. Ground staining indicates that leaks have occurred. It is recommended that a trip tray is provided at this location.	SE	Accepted and actioned – evidence provided. OFI closed
19	OPF-C – Chemicals management	The MSDS for hypochlorite in the water treatment plant is only available in Russian language. The HSESAP requires a copy of the MSDS in English and Russian for all chemicals used.	SE	Accepted and actioned – evidence provided. OFI closed
20	OPF-C – Spill prevention	It is recommended that metal bunds are tested for water-tightness and repaired or replaced where necessary and that all portable plastic bunds are inspected daily.	SE	Accepted 15.03.2018
21	OPF-C – Waste Labelling	Two drums of waste oil, one in a waste storage area and one adjacent to a generator at the OPF-C Project site were noted to have incorrect labels. Waste oil is stated as being Class 4, not Class 3.	SE	Accepted and actioned – evidence provided. OFI closed
22	OPF-C - Drainage	Sakhalin Energy should ensure that stormwater runoff ditches are installed to a standard equivalent to those at the existing OPF site and that sediment and erosion control measures are incorporated into the design. Where damage to habitats has occurred from excess sediment run-off, it is recommended that these areas are restored as soon practicable.	SE	Accepted 01.10.2018
23	OPF-C – H&S	It is recommended that Sakhalin Energy clears all illegal structures and debris from the BLF area (which	SE	Accepted 01.10.2019

Opportunities for Improvement				
		presents an environmental and a health & safety hazard), and secures access to the site to prevent further environmental degradation. Following completion of construction of the OPF-C, it is recommended that the laydown area is fully decommissioned and a programme of habitat restoration is completed to return the area to its original sand dune habitat. It is also recommended that the gap in the dunes is closed post-construction and its natural vegetation restored.		
24	OPF-C – Worker Accommodation	Sakhalin Energy should ensure that Petrofac prepares and executes an accommodation standard that meets GIIP. It should include a contingency plan for rapid assessment and upgrade of the alternative camp if there is a realistic chance that the main construction camp cannot accommodate all the construction phase personnel.	SE	Accepted 01.03.2018
25	OPF-C	It is recommended that in future, the construction area is clearly demarcated on the ground (e.g. using high-visibility tape) and that plant operators are provided awareness of the importance of limiting the construction zone to avoid damage to habitats.	SE	Accepted
26	Train 3 - Monitoring of Invasive Species	With respect to the environmental monitoring programme, it is understood that one of the sample locations is the rocky shore shown in Photo 39. A transect of survey points is made down the shore profile between high and low tide. Given the local use by people for harvesting seafood, any colonisation of the area by non-native invasive species introduced by ballast water could cause significant impacts. Therefore, it is recommended that a large area of the rocky shoreline is monitored for signs of alien invasive species as part of the monitoring programme.	SE	Accepted Q1 2019
27	Train 3 - Monitoring of Invasive Species	A similar observation to the above OFI is made in relation to the existing jetty. A single monitoring location is used on the jetty (albeit with multiple sampling points in the water profile). Given the large size of the jetty, invasive species could colonise and	SE	Accepted Q1 2019

Opportunities for Improvement				
		not be evident at the sampling location. Therefore, it is recommended that a larger area of the jetty is monitored for alien invasive species, although possibly not every year and it may not require the same level of detail as the existing fixed point monitoring location. The new jetty to be built as part of the Train 3 project will also require careful monitoring for signs of colonisation by alien invasive species.		
28	OPF-C	It is recommended that losses of natural habitats from the peat storage area will need to be taken into account by the Project BAP and assessed in terms of the IFC PS6 requirement of no net loss of natural habitats. Monitoring of the water quality of the unnamed tributary of the Vatung River should assess whether run-off from the peat storage area is causing a deterioration in water quality, pH, oxygen or organic matter. In addition, if monitoring results show that the peat is drying out, decomposing, washing out during high rainfall or snow melt, or causing deterioration in the nearby water course, Ramboll Environ would like to understand what rectifying measures can be taken, including the potential for redesign and reconfiguration within the conditions of the current permit.	SE	Accepted 01.06.2018
29	PA-A – HSE Case	Whilst the previous version of the Platform HSE Case had been available in both Russian and English, the latest version of the document (2016) was only available in English. The necessary technical resources should be provided in a timely manner to ensure an up-to-date Russian version of this important document is available.	SE	Accepted Due date to be confirmed
30	HSESAP	There appears to be a significant discrepancy between the HSESAP Project Specifications for air emissions from the main combustion plant on the Platform and the permit emission limits for the same units, which Company uses for its compliance checks and regulatory reporting. The Company should look	SE	Accepted 30.06.2018

Opportunities for Improvement				
		into this discrepancy, taking into account relevant IFC standards as well, and revise the Project Specifications in the HSESAP where appropriate (noting that all updates to the HSESAP would need to be agreed by Lenders).		
31	HSESAP	There appear to be discrepancies between the discharge limits referenced in the current version of the HSESAP for discharges of treated sewage effluent from PA-A and the discharge limits stated in the Platform's latest discharge permit. It is also stated that "*Existing treatment plants were installed before 1st January 2010*"; this is no longer the case following the installation of STP3 on PA-A. These disparities should be investigated and clarified in a timely manner and the HSESAP and monitoring programme adjusted accordingly (noting that all updates to the HSESAP would need to be agreed by Lenders).	SE	Accepted 30.06.2018 SE will propose how to reflect compliance with RF permits in HSESAP
32	PA-A – Waste Disposal	The Auditor noted approximately five spent batteries stored temporarily outside of the storage area for waste lamps, not in a container and not protected from the elements (in contravention with RF waste law and HSESAP requirements for hazardous waste storage). The Platform's Waste Management Procedure states that spent batteries should have been stored in Compartment A7 of the box girder deck in a contained area. Therefore, it is recommended that a toolbox talk (or similar) be provided to electrical technicians to remind them of appropriate waste disposal practices.	SE	Accepted 30.09.2018
33	PA-A – Waste Limits	There appeared to be a general lack of understanding as to the purpose of the waste limits, the Platform's performance YTD against its limits, what actions should be taken when a potential or actual exceedance is flagged by Central HSE, and lastly, what the consequences were of exceeding the limits. It was evident that key individuals including the HSE Supervisor, OSS and Stores Supervisor would benefit from some training in this area.	SE	Accepted 30.11.2019

Opportunities for Improvement				
34	PA-A – Chemicals management: MSDS	Whilst the provision of MSDS was generally very good and in accordance with the HSESAP (including in dual language), two minor deficiencies were noted that should be easily and quickly rectified: • In the Power Generation Module, the MSDSs at one location were only available in English. In the main chemical storage container on deck, the MSDS register indicated two substances, a grease and an adhesive, present in the store did not have MSDS available. It was not clear if the substances were still present in the store, or if the record in the register was out of date. A thorough review of the register is recommended.	SE	Accepted 30.03.2018
35	PA-A – Work Control	The routine Work Control Certificate template for bunkering activities should include a written reminder to deploy drip trays and to empty both the drip trays and the secondary containment system of rainwater prior to commencement of bunkering.	SE	Accepted 28.02.2018
36	PA-A - Asbestos	In the absence of documentary evidence, and given the date of construction of the original platform structure as well as the open comment in the HSE Case (2016), the potential presence of asbestos containing materials (ACM) on-board PA-A cannot currently be discounted. Efforts should be made to track down all relevant documentation, including the previous ACM survey report, and review the scope, any limitations and methodology against current international standards. If documentation cannot be found, or the recovered documentation is not comprehensive, the Company should seek specialist advice and give consideration to a fresh survey to current GIIP standards.	SE	Accepted 20.02.2018
37	PA-A – Trip Hazards	Following the identification of two trip hazards, it is recommended that PA-A places additional emphasis on checking for potential trip hazards prior to commencement of maintenance tasks and during routine workplace HSE inspections and walk-arounds.	SE	Accepted 30.03.2018

Opportunities for Improvement				
38	OPF – Waste Storage	Ramboll Environ notes that the temporary hazardous waste store has been used since OPF operations commenced and that upgrades have been made such as improvements to ventilation. However, we recommend that a purpose-built hazardous waste storage area is developed to further improve waste containment.	SE	Accepted. Use of the purpose-built hazardous waste storage area (as per design) will be possible when contractors' relocation from this area is implemented (long-term action)
39	OPF – Chemicals management: MSDS	It is recommended that the OPF conducts a systematic review to ensure that MSDS for all chemicals and oil products used at the site are available near their point of use in English and Russian (see OPF Audit report for specific instances of note).	SE	Accepted. Following the audit, SE reports that all MSDS are now available in both languages in storage places and near the points of use of these materials. OFI closed.
40	OPF – Refrigerant replacement	It is recommended that Sakhalin Energy develops and implements detailed plans for the replacement of R22 refrigerants in air conditioning systems at the OPF.	SE	Accepted. 31.12.2019 Replacement of R22 refrigerants in air conditioning systems is planned for 2018-2019. List of new equipment and that requiring replacement has been prepared.
41	OPF – Groundwater Monitoring	All groundwater quality parameters specified in the HSESAP (section 8.9 of the HSE Monitoring and Reporting Standard, 0000-S-90-04-O-0009-00-E, Appendix 6) are monitored every six months except for organoleptical properties, which are not monitored. It is recommended that organoleptical properties are included in the groundwater monitoring programme.	SE	Accepted. 31.05.2018 Contractors should notify a Company representative of any organoleptic properties deviation, however this notification was only a verbal agreement. Asset work orders for onshore pipelines state that the Contractor must inform the Company in the event of recording an exceedance three times the permitted limit for a controlled substance. Also, any abnormal changes such as colour, odour, fobbing, out-gassing must be reported. For OPF work orders, the Contractor is only

Opportunities for Improvement				
				required to notify the Company of an exceedance three times the permitted limit for MEG or phenols. Starting from 2018, all work orders will be updated to include the requirement for Company notification of all abnormal changes in water wells assessed organoleptically. This requirement will also be included in the HSESAP.
42	RoW	It is recommended that the method for disposal of tree cuttings is reviewed to find the optimal methodology in terms of environmental impacts, including minimising organic matter being sent to landfill.	SE	Accepted. Due date to be confirmed. Firstly, the following activities are to be carried out: • Review of existing methods for disposal of trees; • Environmental risk assessment; Determination of the optimal method.

11. FINDINGS LOG

The IEC has previously documented all observations, issues and recommendations arising from its environmental monitoring visits and audits in the associated reports. The resolution and/or close-out of these issues is tracked by Ramboll Environ and Sakhalin Energy through the Findings Log, which includes:

a) All Issues[18] not closed out at the date of the previous report plus new Findings identified during that visit;

b) All actions from the Rivers, Erosion and Wetlands Remedial Action Plan (RemAP) 2007 for completeness;

c) HSE issues raised in regular reports to lenders since the date of the last IEC visit (i.e. from October 2014 to date) and still having open actions;

d) Actions arising from HSESAP revision process.

Only new, open and recently closed items are presented in the Findings Log.

Findings are listed in the **Findings** column, and have been categorised and given a reference number (AIR.01, AIR.02 etc.). Items have also been ranked according to Sakhalin Energy's Methodology[19], and where applicable, a reference to the relevant HSESAP, RemAP or other stakeholder commitment has been provided.

The **Action Progress Review** column shows recent progress made towards resolving or closing the outstanding items, and any RemAP status updates.

[18] Note that issues/incidents shall be reported to the Lenders and tracked via regular reports in accordance with the Loan Agreement, and are not separately included in this Findings Log. If a new RemAP is subsequently agreed in relation to any issue/incident, then this will be included in the Findings Log because it includes formally agreed actions. Where a RemAP is not required, the issue/incident should carry over to the next report until its status is shown as closed. Lenders can request additional information on any issue/ incident at any time (as per Loan Agreement).

[19] Assessed as per Risk Assessment Matrix

Findings Log – October 2017								
Ref[20]	**Rank[21]**	**Status**	**Date**	**Topic**	**HSESAP Ref**	**Finding**	**Action Progress Review**	**Action #**
Air Emissions and Energy Management								
AIR.13	Low Amber	**Open**	Dec-15	Emissions to Atmosphere	Air & Energy Emissions Standards Comparison IFC EHS Guidelines/ PS3	Sakhalin Energy has notified the IEC that compliance with IFC NOx emission requirements by the OPF power station gas turbines is not practicable at some OPF operation modes on the basis of balance between environmental impact, power system dynamic stability and production safety. The Company has provided a summary of the issue and risk analysis, which concludes while that while optimum NOx performance (within IFC limits) is possible by operating fewer turbines with high loading, this introduces potential major impacts including process safety risks, increased flaring and loss of production in the event of a trip. Note that exceedances of IFC NOx emissions requirements at the OPF have previously been identified (AIR.11).	**18.12.15**: Ramboll Environ has reviewed the initial summary note and requests further information regarding (i) the proportion of time the turbines are currently operating in each configuration/operational mode, (ii) the percentage of time they are out of compliance with IFC NOx emissions limits, and (iii) what (if any) effect the OPF Compression Project is likely to have on the future OPF turbine power generation requirements. **16.05.16**: Firing mode, run times and power output data provided for review in tabular and graphical format. **Sept 17**: During meetings with the IEC and Lenders as part of the September monitoring visit, Sakhalin Energy presented its justifications for changing the NOx emissions limit in the HSESAP to bring it in line with the full requirements of the EU Industrial Emissions Directive, upon which the Company NOx standard was established (the emission limit only applies to above 70% load). Ramboll Environ agrees with the Company's proposals.	863290

[20] This Findings Log includes all Findings that were open at the date of the previous report (October 2013 in this case), plus newly identified findings.

[21] **Ref**: Finding number. **Rank:** RAM: Red / High Amber / Low Amber / Blue. **Status:** New (Finding raised during this visit), Open (Finding from a previous visit or review), Closed (recently closed, since previous IEC report) **Date:** date of report or review in which the Finding was initially raised. **HSESAP Ref.:** Reference to relevant HSESAP document and requirement number, or stakeholder commitment. **Action Progress Review:** new information confirmed at this visit. **Action#:** Fountain database action reference number(s).

Findings Log – October 2017								
Water Use								
WATER.03	Low Amber	**Open**	Apr-10	Water – effluent quality – phenol (OPF)	0000-S-90-04-O-0255-00-E App 1	The six most recent monthly compliance checks on process water discharges show significant exceedances of phenol over permitted levels. Part of the problem is that process water is filtered through a single filter rather than the three filter system originally in the plant design. The current system filters total suspended solids but still requires the addition of freshwater to avoid exceeding the hydrocarbon ppm discharge limits. This water is obtained from local surface water sources that are generally from peaty, iron-rich sources which frequently contain naturally occurring phenolic compounds.	**Action**: Install a permanent treatment system able to control suspended solids, hydrocarbons and phenol while not requiring additional dilution to achieve discharge consents. If the phenol source cannot be eliminated Sakhalin Energy needs to consider putting an activated carbon filter in-line to deal with this problem. **Action**: Status of existing issues and concentrations, and any future issues to be reported via monthly/ quarterly reporting as per WATER.02. **07.06.11**: Treatment system to control suspended solids and hydrocarbons: Project is currently being developed, and FEED is in progress to define technical and economic parameters. Investment decision will be considered later this year. If investment decision is taken, then implementation would take approximately two years. **Action**: Sakhalin Energy to advise on progress towards installing the permanent treatment system. **02.09.12**: OPF still using temporary disposable TSS filter system, but acknowledges this is OPEX intensive. Also looking to further understand the well capacity to determine whether discharge licences remain appropriate. **Oct 13**: The current timeline for an upgraded system to be ready to operate is January 2018. In the interim, SE is assessing whether it would be appropriate to request that the discharge limits for TSS and dispersed hydrocarbon set in the licence for the disposal well be increased. **Sept 17**: Sakhalin Energy is working with the research contractor TymenNIIGiprogaz to improve the treatment of process water injected to the disposal well. It is also negotiating with the regulators to seek a less stringent hydrocarbon limit of 50 mg/l.	467657 - CLOSED 28/6/11 618507 - CLOSED 15/11/12 **NOTE**: WATER.03 will not be closed until permanent treatment system is in place.
WATER.08	Low	**Open**	Sep-12	Water use	Permit	An issue has been identified with	**Action**: Resolution of this issue is required.	Not advised

Findings Log – October 2017								
	Amber			permit	compliance	the validity of valid environmental permits has been identified, which relates to water discharges to land. A number of water discharges (e.g. treated surface water runoff) to ground were originally permitted by the applicable Russian authority, RTN. Responsibility for environmental permitting has now moved from RTN to RPN. However, RPN does not yet have a regulatory procedure in place to issue permits for these discharges. Sakhalin Energy's original RTN permits for discharge of water to land have now expired and applications to obtain new permits from RPN cannot be legally approved due to the current absence of an applicable regulatory procedure for these discharges. In the interim, Sakhalin Energy is continuing to operate in line with the previous (expired) permits issued by RTN, including reporting of monitoring results versus limits and payment of normal fees.	**27.02.13**: Sakhalin Energy has duly developed application packs and submitted these to RPN, however the applications have now been rejected due to the above mentioned gap in the existing regulations. In these circumstances a particular decision can only be reached in the court. Meanwhile, the Company cannot dispute the rejection by RPN to issue the discharge permits to the Company as there are no legal grounds to acknowledge such rejection as unlawful. Thus the dialogue with RPN is ongoing on possible ways to legitimately regulate the matter. In the interim, Sakhalin Energy is continuing to operate under the previous permits issued by RTN, including reporting of monitoring results versus limits and payment of normal fees. This is a state-wide issue and does not affect Sakhalin Energy specifically but all industrial enterprises in the Russian Federation. **27.02.13**: Sakhalin Energy proposes to track the progress through half-year reports leaving the Finding open. It is beyond Sakhalin Energy control and no specific action can be developed. RE agrees with this approach. **Oct 15**: New environmental legislation is coming into force from January 2016, which the Company has interpreted as not expressly prohibiting discharge to land. The Company will apply for new permits for the continued discharge of treated water to land under the new legislation, although is also considering alternative wastewater disposal options such as discharge to waterbodies in case permits are not granted. **June 16**: The new legislation reportedly still provides no explicit allowance for discharges to land. Sakhalin Energy is therefore in the process of developing and assessing options to remove existing discharges to land. Progress on this issue will be monitored by Ramboll Environ. **Sept 17**: Work continues on assessing the alternatives to	

Findings Log – October 2017								
							discharging to land.	
WATER.15	Low Amber	**Open**	Oct-14	Sewage treatment	GIIP	At the time of the site visit, unit one of the permanent STP units was under maintenance. During the maintenance period untreated sewage was being diverted to one of the older BR-200 treatment units via an aboveground temporary divert hose. This arrangement is not ideal as it leads to increased risk of leak to the environment.	Sakhalin Energy has already developed plans for a permanent underground pipe network to enable transfer of incoming sewage between the different units during maintenance periods. **Action**: Remove the temporary above ground hose. **26.01.15**: Sakhalin Energy advises that this has been completed. Project to install permanent pipe is still at approval stage. **25.02.15**: Action closed, however Finding remains open until a more robust connection between the two treatment plants is in place. **Oct 15**: During the October 2015 audit, the temporary divert hose was still in-situ, and was observed to be exhibiting signs of wear and tear. The temporary hose crosses a number of storm water drainage ditches. The Company reports that as part of the Capital Expansion Projects planned for 2016, an upgrade of the Effluent Treatment Plant and Dehydration Unit is scheduled. **Action**: Sakhalin Energy to provide update on planned works and timescales as appropriate. **14.01.16**: Sakhalin Energy advises that the hose is only in place during summer and only used during STP shut down or minor maintenance activities. It is reportedly visually inspected for damage before use and replaced if defects are found, and removed during the winter period. This finding will remain open until completion of the permanent underground pipework between the treatment units, due for implementation in 2018. **Sept 17**: The hose is still used when the STP has operational issues. It is likely to remain in use as required until around 2020, when a new STP is built as part of the Train 3 Project.	846171 - CLOSED 25/2/15

Findings Log – October 2017								
WATER.16	Low Amber	**Open**	Oct-14 - LNG	Water treatment at LNG	Water Use Standard Comparison Specification 0000-S-90-04-O-0255-00-E App 4	Some discrepancies were identified in the parameters being monitored in the discharge from the water treatment plant at the LNG site against the monitoring requirements laid out in the HSESAP. Sakhalin Energy recognises these discrepancies and proposes to apply to the authorities to include all HSESAP parameters within its water use permits to ensure compliance with lender standards and consistency across the Company's monitoring programme. Any specific parameters/issues will be discussed with ENVIRON on a case by case basis. Sakhalin Energy also proposes to review and update the HSESAP Water Use Standard Comparison Specification in May 2015.	**Action**: 1) Revise the Company's monitoring programme for the unification of monitoring requirements (#846244). 2) Review and update the HSESAP Water Use Standards Comparison Specification. (#846246). **21.06.16**: Part 2 above (#846246): SE advises that the Water Use Standards Comparison specification has been updated in compliance with IFC EHS Guidelines: Environmental Wastewater and Ambient Water Quality. Revised specification (Appendix 4) provided for review and we confirm that this effectively addresses this action which may be closed. (We note that more generally the HSESAP Water Use Standard is being merged with the Soil and Groundwater Standard, and this is currently under iterative review between RE and Sakhalin Energy, although this does not preclude closure of this finding now.) **08.09.16**: Revised Water Use standard – now "Water Use and Groundwater Protection" – provided for review. **09.12.16**: Clarification that soils management will move to newly created "Land Management and Soil Standard", to be finalised June 2017. RE notes that <u>both</u> the above documents must be reviewed to complete this action.	846244 CLOSED 846246 CLOSED

Findings Log – October 2017								
							Action #757382: To review SE Requirements stated currently in Soil and Groundwater Standard to provide general guidance on hazardous materials management including secondary containment requirements. **09.12.16**: Sakhalin Energy provided chemicals handling documentation, including flammable, explosive and dangerous materials. SE requests documentation regarding leak collection and containment on platforms. **16.10.17**: PA-A Chemical Storage Procedure (for platforms) provided for IEC review. SE plan is to roll out the procedure to the other platforms following lessons learned from the PA-A pilot.	757382
WATER.19	Low Amber	**Open**	Oct 15	Onshore STP performance	Water Use Standard Overview Doc. 0000-S-90-04-O-0255-00-E App 1, Rev 05	Sakhalin Energy has reported compliance issues with discharges from a number of its onshore STP, including at its staff accommodation facilities in Yuzhno-Sakhalinsk (Zima) and Korsakov (KPA), at BS-2 and PMDs. The Company has developed action plans to resolve these issues, which include: Zima: change of discharge from a fisheries class stream to a lower class stream (and hence with less stringent discharge criteria) KPA: Develop a new water application package with the aim to agree less stringent discharge limits with the authorities BS-2 and PMDs: Develop STP improvement programmes to	**Action**: To undertake the action plans as developed to bring all STP discharges back into compliance.	
							Action #913148: Zima: change of discharge from a fisheries class stream to a lower class stream (and hence with less stringent discharge criteria) – due 31.08.2016 **14.01.16**: The authorities have reportedly advised since the site visit that the stream identified for future Zima STP discharge – the Pravy Stream – is also of fisheries class. Sakhalin Energy is therefore continuing to discharge to the original stream until its discussions with the authorities regarding the Pravy Stream's classification are resolved. If the classification is amended, the Company aims to change the discharge point and obtain new permits by the end of 2016.	913148 (Zima)
							Action #913149: For LNG (KPA): Make a final decision on developing a new water application package with the aim to agree less stringent discharge limits with the authorities. **28.06.16**: SE will develop a new water application	913149 (KPA) – CLOSED 28/7/16

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						return plant to compliance.	package with the aim to agree less stringent discharge limits. The discharge limits are under discussion with MNR (Ministry of Natural Resources). Action #913149 closed.	
							Action #927449: SE to obtain new water application package KPA STP from MNR and notify RE accordingly.	927449
							Action# 913150: BS-2: Replace STP; PMD's: Develop STP improvement. **2016**: SE advises that technical scope for STP repair is in place. PMD improvement plans are developed. Some organisational actions are planned for 2016 and technical actions planned for implementation in 2017. **Sept 17**: *BS-2 STP*: New STP (BR-30) delivered to site; commissioning and start-up is planned for Q3 2017. Dismantlement of existent STP to commence following OPF shutdown (26 July 17). *PMD improvement plans*: Due to PMD STPs reaching end-of-life and RF legislation still unable to regulate discharge to land, SE proposes to continue to operate its PMD STPs in accordance with current Facility Operation Permits and undertake a detailed inspection of each unit to decide whether to repair or replace.	913150 (BS-2, PMDs)
WATER.20	Low Amber	**Open**	Jun-16	Wastewater Mgmt	GIIP	During a site inspection of the KPA STP it became apparent that the discharge from the STP is comingled with the site storm water prior to discharge to the Korsakovka river and also prior to the regulatory sampling point that is located at the discharge point into the river. This means that regulatory monitoring undertaken during periods of heavy rainfall is		

Findings Log – October 2017								
						likely to produce low pollutant concentration levels as the STP discharge will be diluted. In this regard we note that: • Monitoring of STP discharges should be made prior to any comingling/dilution (we note that Sakhalin Energy does also undertake sampling at the exit of the STP but this is not used for permitting purposes) • If the (low) concentration levels monitored during rainfall periods are used by the regulator to set the permit discharge limits then it is unlikely that these limits can be achieved during dry periods (when the STP discharges are not diluted with storm water). We recommend that these factors are considered within any proposed permit amendments.		
WATER.21	Low Amber	**Open**	Jun-16	Wastewater Mgmt	GIIP	Following review of monitoring data made available during the site visit (graphs showing pollutant concentrations before and after treatment at the STP were provided) and a visit to the Zima STP plant and discharge area, we make the following observations and recommendations: • Inspection of the available	**Sept 17**: SE is awaiting data calculation results. Data calculation for new permit (based on dilution by Zima river) will be provided by SE's contractor in September. These data will form the Company's decision regarding the improvement its sewage treatment plants (STP). Scope of Work for STP upgrade project will be prepared once the calculation is ready.	932560 / 932561
							The inspection of utility drainage pipe (till the shutdown valve of the pipe directing an effluent into the river) is planned.	932562 / 932563

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						monitoring data does not appear to show a strong correlation between the pollutant input and output concentrations for several parameters. This indicates the variability of the discharge concentrations (including exceedances of permit limits) may, at least in part, be driven by inconsistent system performance and we recommend that this be investigated by Sakhalin Energy to confirm whether operational improvements can be made. • The STP operator team identified a concern about the integrity of the drainage system that directs sewage water to the STP potentially resulting in additional water ingress into the sewage drainage system. We recommend that this is further investigated by Sakhalin Energy (e.g. by use of tracers or CCTV). • Works were underway at the time of the site visit to change the location of the discharge outfall to the Pravy brook. Based on visual inspection it appears that the STP discharge will be comingled with stormwater drainage prior to discharge to Pravy brook. We note that this		

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						has to potential to lead similar problems to those raised above for the KPA STP and we recommend that discussions are held with the regulator to confirm that the permit compliance monitoring point be located prior to comingling.		
Waste Management								

WASTE.21	High Amber	**Open**	Oct-14	Waste Mgmt	HSESAP Waste management Standard	Medium term actions as revised waste strategy in light of loss of access to Nogliki and Smirnykh landfills from Nov 2014 and limited capacity at Korsakov (combined with additional wastes to be generated by future projects such as the OPF Compression project):
						• Undertake a detailed waste generation assessment for the OPF Compression project to:
						  • Understand the volume and types of waste to feed into waste strategy
						  • Consider waste minimisation opportunities as a priority
						• Start geotechnical studies into OPF site to assess its suitability for the construction of waste facilities and the
							Waste Generation Assessment: Information is included in ESHIA and is available for internal calculation of waste volumes and types together with waste minimization opportunities. Updates if any will be provided within the review of the updated ESHIA for OPF Compression Project. *[Geotechnical Studies: Sakhalin Energy has informed ENVIRON (after the October 2014 site visit) that it has reviewed available data and not identified major geotechnical issues at the site but that detailed surveys will be undertaken as part of the facility design. ENVIRON will review this data when available. This action is ON HOLD: SE project team and approach has not yet been identified; information on the action cannot be compiled currently.]*
							Oct 15: Updated OPF Compression Project ESHIA provided to Ramboll Environ for review on 28.10.15. Ramboll Environ has provided its review comments to Sakhalin Energy and awaits its response.
							18.01.16: SE advises that the ESHIA was updated with the latest waste volume estimates and SE's new waste management strategy, which calls for disposal of waste class IV – V at the mainland landfills.
							21.01.15: Ramboll Environ considers that the ESHIA does not address in sufficient detail the important issue of
								846201

Findings Log – October 2017								
						associated design implications	waste minimisation or give specific details on which landfills will be used (and confirming that construction wastes will be permitted at these landfills – a specific concern raised by Sakhalin energy during the last site visit). This information should be included in the Company and EPCC waste management plans for the OPF-C Project. Action kept open until waste management plans are developed. **June 16**: We understand that WMP is available in Russian, but that the English version is yet to be produced. RE will review the English version of the document when available. **July 17**: Accurate waste generation assessment will be included in EPC contractor's WMP, due Q4 2017. **Sept 17**: Sakhalin Energy has updated its waste management strategy to include incinerators in the EPC scope for the OPF-C and Train 3 projects, and proposes to retain incineration facilities for the operations phases of both projects. The Nogliki landfill is now available to Sakhalin Energy again, and is currently being used for disposal of OPF-C construction wastes.	
WASTE.24	High Amber	**Open**	Jun-16	Non-hazardous Waste Mgmt Strategy	HSESAP Waste Management Standard	The revised strategy of using existing and new municipal waste facilities poses a number of risks including uncertainty over whether: 1. The existing landfill facilities at Nogliki and Smirnykh can be approved for inclusion in the GRORO in the timeframes anticipated 2. The proposed new waste facilities in Yuzhno and Nogliki,	**Sept 17**: Sakhalin Energy is committed to the use of on-site incinerators during the construction of the OPF-C and LNG Train 3 Projects. Incinerator has been included as a mandatory requirement in the OPF-C project EPC contract; SE is also investigating the possibility of including a contractual provision for OPF-C EPC contractor to incinerate other SE waste (e.g. from OPF and other sites). The Company is also investigating the potential use of incinerators located at the OPF site and Prigorodnoye in the south of the island.	932553

Findings Log – October 2017								
						and the expansion of the Korsakov waste facility, will be completed in the timeframes anticipated 3. All municipal facilities will be constructed and operated to appropriate standards The significance of the above risks would be mitigated by the development of the Company's own incineration capacity. We recommend that this be formally included in the written waste management strategy. The development of such facilities is very much more likely to be possible from a permitting perspective if it is included as part of the OPF-C and Train 3 projects. This is therefore now an urgent issue for the OPF-C project and we recommend that the Company confirms the status of the permitting status for the OPF-C project and whether it is still possible to include permanent incineration facilities within the RF approvals for that project.		
WASTE.25	High Amber	**Closed**	Jun-16	Construction Waste – OPF Compression Project	HSESAP Waste Management Standard	A specific issue raised during Ramboll Environ's previous site visit was uncertainty as to whether construction related wastes (for example of the OPF-C project) would be permitted for	**Sept 17:** Sakhalin Energy confirmed that it now has access to the Nogliki landfill again, which is being used for OPF-C early-works wastes. An on-site incinerator will be constructed as part of the OPF-C EPC contract, which will be used for disposal of construction phase and potentially operations phase waste.	932555 CLOSED

Findings Log – October 2017								
						disposal at the available municipal landfills; at that time Sakhalin Energy had indicated that this may not be allowed. During the June 2016 site visit, Sakhalin Energy verbally informed Ramboll Environ that such construction wastes could be disposed of to the municipal landfills, although it was not clear how or why this position had changed and, given the commencement of OPF-C Project construction works, we recommend that the Company provides lenders with written confirmation of this.		
WASTE.26	High Amber	**New**	Sept-17 (OPF)	Waste Storage	HSESAP Waste Management Standard Appendix 10 (Waste Containers, Labeling and Transport)	Six nominally empty 205 litre plastic drums were noted on the hardstanding at the OPF, near upturned empty drums. Upon closer inspection at least two of the drums contained a significant amount (c. 10-20% of a drum's volume) of liquid, presumed to be residual corrosion inhibitor (thioalcohol solution, labelled as an environmentally hazardous substance). The drums are not labelled as waste, which is a non-compliance with Requirement 4 of Appendix 10 of the Waste Management Standard.	**Action**: Ensure correct labelling and storage of wastes.	

Findings Log – October 2017								
Soil and Groundwater								
S&GW.11	Low Amber	**Open**	Oct-15 (OPF)	Surface water Management	Water Use Standard – 0000-S-90-04-O-0255-00-E App 7	Rivulets of silt-laden water were observed to be flowing across the fly camp area (OPF Compression temp accommodation) and into surrounding drainage ditches. These drainage ditches were not properly constructed and the check-dams in place were not frequent enough, nor properly formed. Furthermore, there was no settlement pond in place, nor any de-watering procedures or other measures in place to reduce the silt load into the ditches. Silt-laden water was observed to be exiting the OPF site to the north and entering what appeared to be a natural stream.	**Action**: Develop ASAP Drainage & Erosion Control Plan covering the entire camp area describing such arrangements as surfacing of the camp area (i.e. expanding the area covered by hardcore), use of silt fencing, protection of drainage ditch side-walls, and installation of at least one settlement pond, etc. **June 16**: Ramboll Environ notes during its June 2016 monitoring visit that drainage channels around the accommodation camp area have been cleaned up and enhanced since the previous monitoring visit (Oct 2015), with new culverts constructed under roadways and dense tree regrowth removed to allow a clearer flow. All channels appeared clear of pollutants and some contained low levels of water. Surface water from the fly camp currently drains to the north to permitted discharge point. A discharge point is planned for the OPF-C site by the early works contractor. The camp will likely require at least a settlement pond, which is currently proposed for the northeast corner of OPF-C site. A drainage ditch will surround the soil storage area and a settlement pond is proposed prior to the discharge point. It is likely that further measures will be required by RF authorities. Such measures should be included in the Drainage and Erosion Control Plan (DECP) that we understand is being developed for the OPF-C Project. **Sept 17**: The settlement pond at the northeast corner of the OPF-C site is poorly constructed and has insufficient capacity to accommodate runoff from a storm. It is also evident that large quantities of sediment have washed off the construction site and entered the surrounding bog vegetation.	XXXXXX

Findings Log – October 2017								
Land Management								
LAND.16	Low Amber	**Open**	Oct-11	Land mgmt. – re-instatement of sandy and steep slopes	0000-S-90-04-O-0254-00-E App 6	Progress on re-vegetation of sandy and certain steep slopes remains slow and continued efforts on reinstatement are required. A number of recommendations to how biological reinstatement can be improved have been identified by the IEC in the October 2011 Site Visit report and these should be actioned by Sakhalin Energy.	**Action**: Incorporate IEC recommendations on biological reinstatement improvements into RoW plans. Action: Develop an Action Plan for sandy and steep slope revegetation. **Sept 12**: Action 612568 for 2012 closed. New action(s) to be opened for 2013 season. **Oct 13**: General improvements in re-vegetation were identified but continued further efforts are still required. **Oct 14**: General improvements in re-vegetation were identified but continued further efforts are still required. **Oct 15**: Erosional channels and poor/partial vegetation cover were observed during the monitoring visit; additional re-vegetation efforts and maintenance of drainage and erosional control are still considered required. **June 16**: Sandy slopes visited in June 2016 (KP127-128) indicated significantly improved vegetation cover, although bare areas were still evident. **Sept 17**: Previously visited sandy slopes revisited in September 17 are now well vegetated and show no signs of erosion. However, low naturalness of vegetation compared to pre-construction baseline. Poor vegetation observed at other areas with sandy soil, including Fault Crossing #1ALT and KP14 (LUN-A to OPF). Specialist vegetation restoration programme would be required to restore natural vegetation types such as dune vegetation, lichen mats and biogenic crusts.	612568 – CLOSED Sept 12
LAND.19	Low Amber	**Open**	Oct-13	Wetlands	RemAP	The limited visual observations of wetland areas made during the October 2013 site visit identified differing levels of recovery between different wetland areas,	[Summarised for brevity – further detail in previous monitoring visit reports] **SE Actions**: • Develop and approve Action Plan to remediate the issue	846204 – CLOSED for report 2/4/15

Findings Log – October 2017								
						and this is consistent with both the findings of the September 2012 site visit and also Sakhalin Energy's own ongoing wetland monitoring programme. In cases where weaker recovery was identified, this is likely to be attributed, at least in part, to the residual presence of imported materials (e.g. soils and stone imported during construction) and depressions left on the RoW following construction that have resulted in water ponding/ waterlogging. ENVIRON recognises that measures to remove the remaining imported materials and infill depressions would require the use of heavy equipment, which in turn may result in damage to recovering areas as they access the wetland. Nonetheless, if continued poor rates of recovery are identified by Sakhalin Energy's future wetland monitoring programme, then we recommend that such measures may need to be considered.	(#846203). • Execute the project of installation of the drainage system under the temporary access road (#846204). • Install additional transect closer to KP231 to look at the effects of the mitigation (#846207). • Continue monitoring of wetland condition at transect #22 for comparison of 2 transects' wetland condition (#846209). **24.03.15**: "WETLAND AREA AT PIPELINE CROSSING AT KP 230 – KP 231" Report provided for review (#846204). ENVIRON agrees that report identifies the issue and sets out the actions the Company plans to take. **30.03.15**: "Wetland Monitoring – Assessment of Condition" Report provided for review (#757372). Report found acceptable, action closed. **10.08.15**: Update to report provided: new chapter and link to map with proposed culverts. RE finds this acceptable. **01.10.15**: #846204: The Project of installation has been executed according to "Wetland area at pipeline crossing at KP 230 – KP 231" report and photos provided. Ramboll Environ satisfied with the installation of new culverts. **June 16**: The newly installed culverts at KP230-231 were observed during the June 2016 site visit and found to be working well in transferring water to the east side of the access road. However, there is now considerable pooling of water on the west side of the road and to alleviate this more culverts should be installed and the northernmost of the three recently installed needs to be replaced at a greater depth to collect more water. We suggest three more culverts evenly spaced between that culvert being replaced and the KP 230 marker post **Sept 17**: Additional installed culverts observed.	CLOSED for culverts 20/10/15 757372 – CLOSED 9/4/15

Findings Log – October 2017								
							Functioning of water flow was not viewed due to recent low rainfall. It is understood that the wetlands are part of longer term monitoring and it is recommended that this is continued to verify that the hydrological linkage between either side of the RoW has been restored and the wetland vegetation maintained. The wetland vegetation within the RoW is unlikely to restore to pre-construction conditions due to the loss of peat topsoils during construction.	
LAND.21	Low Amber	**New**	Sept-17	Erosion control – BS3	Land Management Standard 0000-S-90-04-O-0254-00-E App 6	Vehicle movements and other forestry operations have removed the covering of vegetation in many areas, exposing bare soil. The proposed site of BS3 is located on a relatively steep slope and signs of soil erosion are already present. The run-off of sediments poses a significant risk to the adjacent retained forest habitats and nearby water courses unless a robust monitoring and control plan is instigated.		
Biodiversity								
Oil Spill Response								
OSR.27	Low Amber	**Open**	Oct-11	Non-Mechanical Response Options and Capability	0000-S-90-04-O-0014-00-E Appendix 15	Non-Mechanical Response Options and Capability – Just prior to PCCI's visit, Sakhalin Energy had met with and briefed the Russian Federation officials in an attempt to move forward the planning for non-mechanical	[Summarised for brevity – further detail in previous monitoring visit reports] **Action:** Report progress in **half-yearly** (or earlier if relevant) to Lenders regarding non-mechanical OSR options (dispersants, in-situ burning). Communications with authorities, status of planning/pre-approval, and establishment of company capabilities for use of these	594741 - CLOSED 7/8/12 Expect six-monthly updates in

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						response options for oil spills. With the assistance of a visiting Spill Response Specialist/ Environmental Scientist from Shell Global Solutions (US) Inc, Dr Victoria Broje, Sakhalin Energy highlighted the effectiveness of in-situ burning and dispersants as response techniques to the Deepwater Horizon oil spill in the U.S. Gulf of Mexico last summer. Significant progress was made in convincing the Russian Federation that in-situ burning and dispersants should be considered as response options. Much work remains to be done in getting pre-approvals for the rapid use of these response techniques during a spill, and then in establishing the capability for deploying these response techniques during an actual incident. This is a high priority issue. As further discussed in the Offshore Exercise Evaluation, Sakhalin Energy's offshore mechanical containment and recovery capabilities are very limited, and non-mechanical response techniques such as dispersants and in-situ burning may be the only response options available to them during most wave and weather conditions.	options. **June 16**: During the 2016 monitoring visit, Sakhalin Energy reported that Russia does not yet have maximum permissible concentration limits for the use of dispersants in the marine environment; its fisheries and environmental organisations are working to establish temporary limits by the end of 2016 and final limits by the middle of 2017. In the meantime, Sakhalin Energy has used the Net Environmental Benefit Analysis (NEBA) approach required by the Russian dispersant standards to identify those areas and conditions were dispersant use is a viable option. The Company has also received government sign-off on this approach and their designated use areas and conditions. Sakhalin Energy intends to procure volumes of the dispersant Corexit 9527 in 2017 and 2018 to be able to meet their internal stock requirement of 200 m^3. We recommend that Sakhalin Energy confirms the latest situation with RF approval of different dispersants and confirms that its approach is both in line with RF and GIIP requirements. At-sea in-situ burning standards and regulations are under development, and will also require a NEBA-based approach for permitting and use. Sakhalin Energy's OSR contractor is developing a similar approach and standard to that used for dispersants to seek government approval, or pre-approval, for in-situ burning offshore. Currently, there is no allowance in Russia for in-situ burning of on-shore oil spills as a response option. **Sept 17**: Not addressed IEC during site visit; Lenders' oil spill consultants to discuss in November 17.	half-yearly HSESAP reports

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OSR.39	High Amber	**Open**	Jun 16	OSRP	GIIP	Worst Case Spill Scenarios	Ramboll Environ/PCCI have previously raised the issue of worst case spill scenarios not being included in the OSRPs (see Action OSR.05). At that time it was agreed that such worst case scenarios could not be added into the OSRP as they had been already approved by the authorities, but that this deficiency against Good International Industry Practice (GIIP) would be overcome by the Company including worst case scenarios within its oil spill exercise schedules. On this basis finding OSR.05 was closed. However, review of oil spill exercises suggests that worst case scenarios have yet to be exercised. We recommend that such scenarios be included in the exercise schedule. We further recommend that worst case scenarios be included in the ongoing updates/re-approvals of the OSRP. We also recommend that the results of the QRA update being undertaken as part of the Well Control Contingency Plan (WCCP) be used as input to the update OSRPs (see also follow-up Item 6 in Ramboll Environ's June 2016 Site Visit report). **Sept 17**: Not addressed by IEC during site visit; Lenders' oil spill consultants to discuss in November 17.	
Health & Safety								
H&S.16	High Amber	**Closed**	Oct 14 (LNG site visit)	Health & Safety (NORM)	GIIP	Sakhalin Energy to revise its NORM procedures. The revised procedures will be reviewed during the next site visit.	**Action**: Sakhalin Energy should confirm the following in relation to the recorded LSA on the PIG in 2010: a. The actual levels of LSA recorded by the PIG contractor on the equipment; b. How sludge/debris generated at the LNG during the 2010 PIG activity was handled and disposed of; c. Whether any investigation or actions into the reported LSA levels were undertaken at that time (i.e. in 2010). In addition Sakhalin Energy should confirm: a. Its NORM monitoring procedures for PIG equipment, including PIG activities on both the gas and oil pipelines;	846195 – CLOSED 16/11/17

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							b. Whether it has PIG treatment facilities at the OPF. **02.03.15**: Sakhalin Energy advises that it conducts annual monitoring for ionizing radiation on all equipment deemed to be at risk of exposure (e.g. Well Work-over equipment and at Separation equipment at Platforms and OPF). Results of such monitoring have reportedly never revealed any exceedances of RF or International limits (OGP) and in fact are far below limits. The Company has decided to formalize various control measures by updating its procedure on management of NORM. **Dec 16**: SE advises that monitoring of non-ionising radiation (generated by NORM) is being carried out under the Sanitary Monitoring Programme, and no exceedances have been recorded. **Sept 17**: NORM management procedure 1000-S-90-04-P-0062-00-E has been drafted and is being reviewed by the IEC. **10.11.17**: The fate of the NORM waste is not included in the procedure. RE can agree to closure of this action on the basis of (i) clarification of the Company's NORM waste disposal arrangements, and (ii) that the NORM specialist will consider our [minor detailed] comments at the next document revision opportunity. **16.11.17**: Clarification provided on 13.11.17 regarding NORM waste handling and update of the procedure. RE agrees to closure of this Finding and Action #846195.	
Social								
General								
GEN.11	High	**Open**	Jun 16	OPF-C Project		Under the CTA/HSESAP the HSE Management Plan(s) for the OPF-	**Action #932547**: SE to provide for Lenders' review Biodiversity Action Plan (BAP) (as Chapter in the	932547

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	Amber			management plans		C Project will need to be reviewed by Ramboll Environ and formally agreed by lenders. We recommend that these plans are provided as soon as possible and as a minimum sufficiently prior to commencement of main construction activities to allow for review by Ramboll Environ, update as necessary by Sakhalin Energy, and approval by lenders.	Company-wide BAP). **01.06.17**: Draft version of the BAP provided. **05.06.17**: RE reverted to SE with a number of comments and improvements. The whole document needs a fundamental reworking as part of the inclusion of OPF-C and Train 3 elements. It was agreed that amendments to the BAP would be discussed further during the September monitoring visit.	
							Action #932548: SE to provide for Lender's review OPF-C Project Road Safety Plan. **07.02.17**: OPF-C Road Safety Plan provided. **17.05.17**: RE queried whether SE had considered installing a wheel wash facility at the quarry sites to reduce the transfer of debris onto roads, and requested that a number of acronyms be defined in the Plan. **01.06.17**: SE advised that consideration had been given to a wheel facility, but was deemed inappropriate for the following reasons: 1) the quarries are arranged in such a manner as to limit the transfer of dirt; and 2) the SAR is gravel surfaced, is mainly used by the Company and maintained by a sub-contractor. SE provided a revised, updated version of the Plan for review. **02.06.17**: Action #913149 closed.	932548 – CLOSED 2/6/17
							Action #932549: SE to provide for Lenders' review Industrial Environmental Control Programme for Early Works. **19.12.16**: 'Environmental Production Control Program for Site Preparation Works for OPFC' provided for review. **06.01.17**: RE reverted with a number of comments. **15.06.17**: SE provided a finalised version for review, in response to RE's comments.	932549

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							Action #932550: SE to provide for Lender's review Sanitary Industrial Control Program for Early Works. **07.02.17**: Sanitary Industrial Control Program for Early Works provided for review. RE concluded that the plan appeared to cover a range of health-related issues required by Russian legislation and the HACCP food safety assessment was comprehensive. **17.05.17**: Action #932550 closed.	932550 – CLOSED 17/5/17
							Sept 17: Petrofac was awarded the EPC contract in September 2017. They have prepared a list of environmental management plans and procedures for the main construction phase, which will be reviewed by Sakhalin energy in a pre-mobilisation audit in December 2017. It is not clear from the list whether the following topics will be covered: air emissions (e.g. waste incinerator off-gases, combustion products from generators and vehicles etc. and dust); noise; environmental monitoring and reporting; reinstatement; grievance management; and worker accommodation standards. Relevant management plans will be provided for IEC review upon their readiness and new actions will be opened accordingly.	
GEN.12	Low Amber	**Closed**	Jun-16	Train-3 Scoping Assessment		Overall, we conclude that the Company has made good progress in the development of the Train 3 Scoping Report. However, we have noted some residual gaps in the Scoping Report, the most significant of which relate to consideration of associated facilities, particularly in relation to the upstream gas	**Sept 17**: The Train 3 Scoping Report has been completed and progress is being made with the full ESHIA. The IEC notes that further assessment may be required when the source of gas for the project has been finalised.	932558 – CLOSED Sept 17

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						supply facilities. In addition, the important project updates described above have not been included in the latest version of the Scoping Review. These changes in the project concept materially affect the scope of the ESIA and hence the Scoping report will need to be updated to reflect these changes. In doing so, particular regard will need to be paid to: • Any synergies, conflicts and cumulative impacts between the new northern elements of the Train 3 project and the OPF-C project. • Ensuring that both IFC and RF standards are considered in the project design (e.g. for emission standards for gas turbines etc.) • The need for a specific GHG alternatives assessment (this includes, e.g. turbine/compressor efficiency and assessment of the viability of CO_2 sequestration rather than venting from the AGR unit etc.)		
GEN.13	Low Amber	**Closed**	Sept 16	Maritime Risk Ranking	Marine Operating Procedures & Guidelines (MOPAG) -	Section 11.3 of the Marine Assets Quality Assurance Procedure makes reference to the reporting of "high potential risk" incidents / near misses, but does not include	**Action #938831**: RE recommends adding a suitable cross-reference / foot note to Section 11.3 of the Marine Operating Procedures and Guidelines (MOPAG) re Incident Reporting and Follow-Up Standard Appendix 1 - Risk Assessment Matrix.	938831 – CLOSED 7/6/17

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					Section 11.3	a reference for the definition of the risk classification / determination.	**23.01.17**: Sakhalin Energy accept RE's finding. The next revision of the MOPAG is scheduled for Q3 2017. The reference will be added at this stage. **07.06.2017**: Sakhalin Energy provided a new version of the MOPAG to RE for review. RE noted a cross-reference had been incorporated in Section 11.3 to the "Incident Reporting and Follow-Up Standard and Risk Assessment Matrix". This had been incorporated in the form of a link.	

12. FOLLOW-UP ITEMS

This section summarises the follow-up items identified throughout this report, which are neither Findings nor Opportunities for Improvement, but a list of topics or issues that Ramboll Environ (RE) intends to follow up on, either as part of future audits or monitoring visits or by requesting further information from the Company (as and when available).

Follow-Up Items			
ID	**Topic**	**Description**	**Mechanism**
1	RoW tree cutting	Tree control on the RoW remains an ongoing issue, the while Company appears to have maintained the issue of tree growth at a steady level, it remains an ongoing agenda item for future IEC monitoring visits.	Future IEC monitoring visits
2	Waste Management Strategy	While generally supporting Sakhalin Energy's strategy of developing its own waste management facilities, we note that these facilities should be designed to meet lender standards and that key elements of this are: • Risk assessment should be applied to the design and location of the facilities • The designs will need to meet IFC PS and IFC EHS Guidelines for Waste Facilities In addition, Ramboll Environ will follow-up on the status of the development of new landfill facilities by the Sakhalinsk Oblast.	SE to provide updates and RE to review
3	Stack emissions (PA-A)	A sample of stack emissions monitoring data from July 2017 relating to the main combustion units on the Platform (i.e. gas compressors and main generators) was provided to the Auditor and reviewed following the audit. The data indicated a good level of compliance with permit emission limits for NO_x CH_4 and CO, however indicated exceedances in relation to CO and CH_4 on the GT5501X unit. Clarification of any exceedances or details of action taken could not be obtained at the time of writing; this topic will therefore be followed-up via email.	SE to provide response to RE's email request for clarification
4	OPF STP	Ramboll Environ has requested and received effluent monitoring data following replacement of the OPF STP and will review these against HSESAP requirements as part of a follow-up item.	Ramboll Environ to review data

APPENDIX 1
TERMS OF REFERENCE AND VISIT SCHEDULE

Monitoring Report September 2017

Sakhalin-2 Phase 2 Lenders' Environmental Consultant