



**Preparation of Regional Pre-Investment Studies in the
Eastern Sector of the Russian Arctic**

**Waste and Contamination Inventory and Clean-Up
of the Wrangel Island Reserve**

Pre-Investment Study

April 5, 2010

FINAL REPORT

**Preparation of Regional Pre-Investment Studies in the Eastern Sector
of the Russian Arctic**

Final stage of consulting services provided under Contract No CS-NPA-
Arctic-08/2008 dated 20 August 2008

**Waste and Contamination Inventory and Clean-Up of the
Wrangel Island Reserve**

Pre-Investment Study

Project 0090016

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This Report has been prepared in accordance with the terms of the contract concluded with the Client and the generally accepted consulting practices in Russia and for intended purposes stated in the contract. The conclusions and recommendations made in this Report are based upon information obtained directly by ERM Eurasia Ltd., as well as information provided by third parties, which we believe to be accurate.

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SUMMARY

PROJECT NAME	Waste and contamination inventory and clean-up of the Wrangel Island Reserve
PROJECT SPONSOR AND PROPOSED BENEFICIARY	Wrangel Island State Natural Reserve
LOCATION	<p>Southern coast of Wrangel Island.</p> <p>The maximum amount of waste generated by historical economic activities is concentrated in 5 areas:</p> <ul style="list-style-type: none"> • Ushakovskoye village, Rogers Bay; • Weather station; • Zvyozdny village, Somnitelnaya Bay; • Rogers Bay spit; • Gavai Cape.
OBJECTIVES	Inventory of potential environmental pollution sources in the areas of historic economic activities and clean-up of the area including decontamination of potential hazardous and toxic substances, cleaning of empty drums, disposal / reuse of remaining oil products, and removal and partial burial of technogenic waste, scrap metal and empty drums
PROJECT CATEGORY	Priority 2: Clean-up of past environmental liabilities within a UNESCO World Heritage Site
DESCRIPTION OF THE PROJECT ACTIVITIES	<p>The main components of the Project are:</p> <ul style="list-style-type: none"> • Development and approval of a detailed Declaration of Intent based on this PINS; • Preliminary evaluation of scope and schedule of works; development of a detailed stakeholder engagement plan; • Detailed inventory and baseline environmental surveys and geological (geotechnical) surveys ; • Development and implementation of a monitoring programme for all stages of the Project; • Development of design and working design documentation, including environmental sections and plans; • Procurement of required licences, approval and permits; • Delivery of necessary equipment and vehicles; • Implementation of remediation and disposal activities, including removal and transportation of the scrap metal from the island; • Final clean-up and reclamation activities at

	all Project sites.
TECHNOLOGIES USED	<p>The Project includes the following components of scrap metal and empty drums disposal process:</p> <ul style="list-style-type: none"> • determination of condition and hazard class of the waste; • decontamination and separation of oil products and chemicals from water; • cutting and pressing of empty drums and metal structures <i>in situ</i>; • loading activities; • transportation, and • delivery of scrap metal to specialised organisations for recycling.
PROJECT PREPARATION LEVEL	<p>The latest data on waste types and volumes were received during an inspection in 2009.</p> <p>No technical solutions for the project implementation have been provided as of the time of preparation of this PINS.</p>
PRELIMINARY COST ESTIMATE	EUR 1,400,000
EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS	<p>As a result of the Project, disturbed lands of the Wrangel Island State Natural Reserve will be cleaned up and reclaimed and the source of oil pollution of the coastal area and the marine environment will be eliminated.</p> <p>Rehabilitation of the area will confirm Russia's international commitments to preserve a World Heritage Site.</p> <p>The Project's key performance indicators are:</p> <ul style="list-style-type: none"> • Restoration of the landscape's visual properties; • Minimisation of discharge of chemically polluted surface waters and groundwater to the sea; reduction of concentrations of critical pollutants to standard values.

1 INTRODUCTION

This document has been prepared by ERM Eurasia Ltd. (ERM) in accordance with Contract on Consulting Services No. CS-NPA-Arctic-08/2008 dated 20 August 2008 with the Executive Directorate of the National Pollution Abatement Facility (NPAF) within the framework of the Project "Preparation and Implementation of Regional Pre-Investment Studies in the Eastern Sector of the Russian Arctic".

This Project is Component 2 of the Project "Russian Federation - Support for National Programme for the Protection of the Arctic Marine Environment" (The NPA-Arctic Project) and is funded by the Global Environment Facility (GEF). The Executing Agency is the Ministry of Economic Development of the Russian Federation.

The main objective of the NPA-Arctic Project is to develop and establish a sustainable framework to reduce environment degradation of the Russian Arctic from land-based activities on a systematic basis by implementation of a Strategic Action Programme (SAP), which is being developed to comply with obligations of the Russian Federation under international conventions and agreements and taking into account decisions and programmes of the Arctic Council.

The ultimate goal of this Project was to prepare pre-investment studies (PINS) on the investment proposals selected by the NPA-Project in the Eastern Sector of the Russian Arctic, i.e. in the Republic of Sakha (Yakutia) and Chukchi (Chukotka) Autonomous Okrug.

2 *PROJECT DESCRIPTION*

2.1 *BACKGROUND AND OBJECTIVES OF THE PROJECT*

The Project includes inventory of potential environmental pollution sources in the areas of historic economic activities and clean-up of the area including decontamination of potential hazardous and toxic substances, clean-up of empty drums, disposal / reuse of remaining oil products, and removal and partial burial of technogenic waste, scrap metal and empty drums.

It should be noted that ruins of villages and military camps can be considered as monuments of the island's history. The ruins are local sites covering minor areas as compared to the total area of the island and do not cause significant adverse impact on the island's ecosystems. In this regard, it seems reasonable to remove all household waste, construction debris and scrap metal from those sites, but keep the ruins of main buildings for historical heritage purposes as they show the planning methods and infrastructure solutions used by former communities.

The Project objectives are to:

- 1 eliminate the source of current chemical contamination of the territory of the World Heritage Site;
- 2 prevent risk of increasing pollution of the land and marine environment;
- 3 clean up unauthorised waste dumps;
- 4 prevention adverse impacts on the Reserve's biodiversity, and
- 5 improve the sanitary and epidemiological situations in terms of chemical pollution.

2.2 *BACKGROUND*

Before the establishment of a permanent community in 1926, Wrangel Island was uninhabited. Only one archaeological site related to the island's early history was found which is a Paleoeskimo camp in the Chortovy Ovrage ravine estimated to be 3,200 years old. All other historical and cultural sites are dated back to the initial colonisation period between 1926 and late 1930s and further exploration and development of the island in the 1940-60s, and include three groups of sites, including traces of buildings erected by the first settlers (dug-outs); buildings of the hunting and deer breeding period; and ruins of buildings built during the period of industrialisation and militarisation of Wrangel Island.

For over 50 years, the island hosted a reindeer farm and military facilities; various geological surveys took place on the island.

In 1992, a radar station was closed, and only one community, Ushakovsky village was left on the island.

Military and civil facilities located in various parts of the island left a lot of technogenic waste including empty drums previously containing fuel and lubricants, abandoned vehicles and spare parts, as well as ruined buildings.

Currently, there is an operational polar weather station on the island. It was built in 1926 and is now owned by the Russian Federal Meteorology and Environmental Monitoring Service (*Rosgidromet*). The station has greatly contributed to the amount of technogenic waste generated on the island.

The Wrangel Island State Natural Reserve (including Herald Island) is a protected nature area of federal significance. It was established by Decree No 189 of the Council of Ministers of the Russian Soviet Federative Socialist Republic (RSFSR) dated 23 March 1976. A protected water area five nautical miles wide was created around the reserve. At that time, the reserve covered 795,600 hectares. In 1997, the reserve was expanded after the Russian Government's Decree No 1623-r dated 15 November 1997 added a 12-mile water area. In 1999, Governor of Chukotka issued Decree No 91 dated 25 May 1999, establishing a 24-mile protected water area around the reserve's existing protected water area. Total area of the reserve is now 2,226,000 hectares including 1,430,000 hectares of water area.

In 2004, Wrangel Island Reserve was included in UNESCO's list of World Heritage Sites under two categories:

- Wrangel Island is a notable example of evolutionary development of various arctic ecosystems including mountain, plain and coastal ecosystems;
- The territory of the island has biodiversity exceptional for the Arctic, including rare and endangered species under both national and global classifications.

Generally, the issue of scrap metal and empty drums is one of the most acute environmental problems for the Russian Arctic, and Wrangel Island is not an exception here.

Decommissioned motor vehicles, industrial machinery, metal structures, empty drums and other types of scrap metal in the Eastern Sector of the Russian Arctic are mainly stored at unauthorised sites not meeting current storage requirements. At worst, scrap metal is simply abandoned resulting in small concentrations of scrap metal near former geologists' and gold miners' camps, settlements and terminal bases. While precious non-ferrous scrap was legally or illegally removed from the island over the past decades, ferrous scrap metal, including metal structures and empty drums cannot easily be removed to the mainland due to high transportation costs.

The isolated and remote location of the Wrangel Island and seasonal nature of deliveries of goods from the mainland, as well as lack of transportation infrastructure caused large amounts of fuel and lubricants to be delivered in drums. That is how former Schmidtovsky, Chukotsky, and Beringovy districts in Chukotka that did not have centralised supply of oil products from oil depots and fuel and lubricant terminals, accumulated a large number of drums.

Most drums are in poor condition and cannot be removed but need to be buried locally. It is often the case that drums are fully or partially (1 to 5 litres on average) filled with unused fuel and lubricants, oil sludge, technical oils (including PCB containing oils), technical fluids and other poisonous substances which spill on ground when drums decay and can migrate with stormwaters and flood waters to surface water bodies and affect biodiversity, marine environment and, ultimately, traditional foods of indigenous people.

2.3 NAME, LOCATION, TECHNICAL AND TECHNOLOGICAL DESCRIPTION OF THE SITE

Wrangel Island is located in the Arctic Ocean between the Chukchi Sea and East Siberian Sea. The Long Strait, which is 140 km wide in its narrowest part separates the island from the mainland. The island lies at a junction between the Eastern and Western hemispheres and is divided in two parts by the 180th meridian.

Currently, Wrangel Island, Herald Island and a 12-mile offshore strip are part of the Wrangel Island State Natural Reserve and are classified as a UNESCO World Heritage Site.

Detailed information about historic pollution areas is given in Section 1.8 below. The map showing the area is shown in Figure 1.1.

2.4 OVERVIEW OF RISK ANALYSIS AND ACCIDENT RISK PROBABILITY

During the PINS preparation process, no information was provided regarding previous emergency risk assessments.

As required by Russian regulations and guidelines of international organisations, a comprehensive risk assessment and an Emergency Preparedness and Response Plan should be done at the preparatory stage of the Project for all implementation stages.

2.5 PRIORITY OF THE PROJECT FOR NPA-ARCTIC

Priority 2: Clean-up of past environmental liabilities within a UNESCO World Heritage Site.

2.6 APPLICABLE NATIONAL AND INTERNATIONAL STANDARDS AND REGULATIONS

2.6.1 Federal laws of the Russian Federation

- Federal Law No.52-FZ dated 30.03.1999 “On Sanitary and Epidemiological Welfare of Population”;
- Federal Law No.68-FZ dated 21.12.1994 (as amended on 30.10.2007) “On Protection of Population and Territories against Emergencies of Natural and Man-made Origin”;
- Federal Law No 5151-1 dated 10.06.93 “On Certification of Products and Services”;
- Federal Law No.7-FZ dated 10.01.2002 “On Environmental Protection”;
- Federal Law No 33-FZ dated 14.03.95 “On Specially Protected Nature Areas”;
- Federal Law No 184-FZ dated 27.12.02 “On Technical Regulations”;
- Federal Law No 73-FZ dated 03.06.06 “Water Code of the Russian Federation”;
- Federal Law No 174-FZ dated 23.11.95 “On State Environmental Review”.

2.6.2 Decrees of the Russian Government

- Decree No 124 dated 21.02.02 ‘On safety declaration of potentially hazardous underwater facilities located in inland waters and the territorial sea of the Russian Federation’;
- Decree No. 240 dated 15.04.02 “On procedure of activities related to prevention and elimination of oil and oil product spills in the Russian Federation”;
- Decree No 45 dated 26.01.05 “On licensing of specific types of activities”;
- Decree No 20 dated 19.01.06 “On engineering surveys for development of design documents, construction and reconstruction of capital structures”;
- Decree No 145 dated 05.03.07 “On state expert review of design documents and engineering survey findings”.

2.6.3 *Other key regulatory documents*

Instruction No 241 of Ministry of Natural Resources dated 02.08.94
“Identification of a source of oil contamination of a water body”;

Instruction No 156 of Russian Ministry of Natural Resources dated 03.03.03
‘Guidelines for determination of lower level of oil and oil product spills to
classify accidental oil spill as an emergency”;

Instruction No 786 of Russian Ministry of Natural Resources dated 02.12.02
“Federal waste classification list (as amended on 30 July 2003)”;

Regulation on and requirements to the contents of sections in the design
documents (approved by Decree No 87 of the Russian Government dated
16.02.08).

2.7 *ANALYSIS OF ALTERNATIVES TO THE PROJECT*

Zero Alternative

As a result of non-implementation of the Project, the current level of adverse
environmental impacts associated with unsafe storage of chemical substances will
remain the same. There will also remain risks of increasing adverse environmental
impacts due to corrosion of containers. Thermal abrasion of the shore and impacts
of other hazardous natural processes further increase the threat for regional and
transboundary environmental situation.

Retaining the unauthorised waste dumps in the territory of a World Heritage Site
contradicts the status of the Site.

2.8 *CURRENT STATUS AND ENVIRONMENTAL AND SOCIAL IMPACTS OF THE SITE*

The maximum amount of waste generated by historic economic activities is
concentrated in 5 areas:

- Ushakovskoye village, Rogers Bay;
- A weather station;
- Zvyozdny village, Somnitelnaya Bay;
- Rogers Bay spit;
- Gavai Cape.

1. **Ushakovskoye village** together with an operational polar station in Rogers
Bay, a former radio navigation station located on the outer spit of the bay, and
the area of a former frontier outpost in the village have the highest
concentration of empty drums and abandoned motor vehicles (diesel
generators, cars, tractors etc.)

A number of drums are filled with water and various fuel and lubricants. The Reserve personnel uses fuel from the drums. Therefore, oil products need to be separated from water before disposal.

In the 1980s, the population of Ushakovskoye was around 200 people, and the village had a diesel power station. Fuel and lubricants were brought once a year by sea, approx. 5,000 drums at a time. Another 2-3 thousand drums were delivered annually to the polar station.

Following the inventory taken by the Reserve's employees in 2009, the territory of the village has:

- Metal drums in stacks and drums lying separately - approx. 9,000 (270 tonnes);
- Old non-operational heavy vehicles, diesel and petrol generators - 48 (120 tonnes);
- Scrap aluminium alloys - 1 tonne;
- Ruined buildings beyond repair - 26 (including 4 stone buildings).

2. The territory of **Rosgidromet's weather station** has:

- Metal drums in stacks and drums lying separately - approx. 6,000 (180 tonnes);
- Old non-operational heavy vehicles, diesel generators - 14 (56 tonnes);
- Six empty 40-tonne reservoirs - 6 tonnes;
- For demolished and two burned buildings, an aerology station, and two brick buildings of diesel power stations.

There are plans to relocate the weather station in the nearest future, while the currently operational hostel, the third building of a diesel power station, two warehouses and a residential house will be abandoned without use.

3. A site located in **former Zvyozdny village** in central part of the Southern Plains along Somnitelnaya Bay (where the Reserve' cordon is located).

Technogenic pollution was caused by the operations of a military airport in the 1960s and a civil airport in the 1980s. The area currently has thousands of drums and remains of old and long non-operational vehicles (automobiles, rollers, graders, etc.). As reported in 2009, the area has:

- Metal drums in stacks and lying separately - 8,500 (255 tonnes);
- Old non-operational heavy vehicles (automobiles and tractors) and diesel generators - 17 (60 tonnes);
- Ruined and demolished buildings - 11.

4. **Rogers Bay spit** contains approx. 6,500 metal drums (45 tonnes) in stacks and lying separately across 6 km.

5. The area of a former air defence military camp (operational in 1970-80s) at **Gavai Cape**. The area contains significant numbers of empty drums and old

vehicles. This technogenically polluted area requires prior inventory and subsequent clean-up.

An area covering 4 square kilometres contains technogenic and household waste and construction debris, including:

- Ferrous scrap – 300 tonnes (metal frame of a burned building);
- Scrap aluminium alloys – 5 tonnes;
- Old non-operational heavy vehicles and diesel and petrol generators – 130 tonnes.

The total approximate amount of metal scrap on the island is:

- **Ferrous scrap – 1,422 tonnes;**
- **Scrap aluminium alloys – 6 tonnes.**

Drums containing leftovers of oil products and technical (including toxic) liquids are partly corroded which results in contamination of soil and vegetation and pollution of waterways and the sea. Scrap metal and remains of barbed wire are a potential injury hazard to wild animals.

Therefore, existing scrap metal and empty drums on the island are a potential significant risk to the Reserve's biodiversity.

2.9 PROJECT PREPARATION LEVEL

In 2004-2007, the administration of the Reserve and Environmental Review and Licensing Unit of the Regional *Rospirodnadzor* had filed to the authorities a number of requests with regard to the Reserve's scrap metal issue.

The latest data on waste types and volumes were received during an inspection in 2009.

No technical solutions for the project implementation have been provided as of the time of preparation of this PINS.

2.10 PROPOSED ACTIVITIES

The Project comprises the following components:

- 1 Development and approval of a detailed Declaration of Intent based on this PINS;
- 2 Preliminary evaluation of scope and schedule of works; development of a detailed stakeholder engagement plan;
- 3 Detailed inventory and baseline environmental surveys and geological (geotechnical) surveys ;
- 4 Development and implementation of a monitoring programme for all stages of the Project;

- 5 Development of design and working design documentation, including environmental sections and plans;
- 6 Procurement of required licences, approval and permits;
- 7 Delivery of necessary equipment and vehicles;
- 8 Implementation of remediation and disposal activities, including removal and transportation of the scrap metal from the island;
- 9 Final clean-up and reclamation activities at all Project sites.

2.11 APPLIED TECHNOLOGIES AND PROJECT LOGISTICS

2.11.1 Applied Technologies

The Project includes the following components of scrap metal and empty drums disposal process:

- determination of condition and hazard class of the waste;
- decontamination and separation of oil products and chemicals from water;
- cutting and pressing of empty drums and metal structures *in situ*;
- loading activities;
- transportation, and
- delivery of scrap metal to specialised organisations for recycling.

2.11.2 Equipment and Material Requirements

The following equipment and materials are needed to complete the inventory stage and support expedition and field works:

- Field work gear;
- Survival gear and protective equipment including communication means;
- Field work equipment including special samplers and chemical glassware for sampling;
- Rapid testing devices;
- Fuel, lubricants and other consumables.

Main equipment

- Duplicated autonomous power generating system (types PSM AD2, Cummins C33 D5, AKSA AC-55 (400W) (<http://www.powerunit.ru/AD-12.htm>) in portacabins or similar);
- Oil product separator (type Aquatekh (<http://www.basicresour.com/param/param.html>) or similar);

- Vertical enforced press (drum presser) (type HSM FP 3000 (<http://www.hsm.eu/service/downloads/brochures/baling-presses/hsm-fp-1500-3000>) or similar);
- Compact oily effluent treatment plants equipped with sand traps, coalescent filter separators, and outtake automatic shutoff valves (type SWOK (<http://www.epcs.ru/doc/price/price-ochistka-neft.doc>) or similar (http://www.bep-tibet.ru/production_02))
- Air and flame cutting device (type POWERCUT ® 1500 (http://www.gazss.ru/esab_powercut1500.htm) or similar).

Materials

- Consumables and fuel;
- Geotextile sheet;
- Insulating films.

Chemical agents

- Biosorbents (type Uni-Rem (http://www.bep-tibet.ru/production_02/07.html), Devoroil, Naftox, Pseudomin or similar - according to project intentions).

2.11.3 Workforce requirements

Component	% of total financing, EUR*	Personnel qualification	Number of vacancies	Number of man-days
Development and approval of a detailed Declaration of Intent based on this PINS	0,17/2 400	Lead	1	2
		Senior	1	3
		Technical	1	3
Preliminary evaluation of scope and schedule of works; development of a detailed stakeholder engagement plan	0,68/9 600	Senior	1	5
		Technical	1	10
Detailed inventory and baseline environmental surveys and geological (geotechnical) surveys	8,57/120 000	Lead	1	20
		Senior	2	30
		Subcontractor	2	30
Development and implementation of a monitoring programme for all stages of the project	0,43/6 000	Senior	1	2
		Technical	2	10

Development of design and working design documentation, including environmental sections and plans	8,57/120 000	Senior	2	60
		Technical	2	60
		Subcontractor	4	120
Procurement of required licences, approval and permits	0,43/6 000	Lead	1	3
		Senior	1	5
		Technical	2	5
Delivery of necessary equipment and vehicles	12,86/180 000	Senior	1	5
		Subcontractor	1	20
Implementation of remediation and disposal activities, including removal and transportation of the scrap metal from the island	48,57/680 000	Lead	2	30
		Senior	3	120
		Technical	5	200
		Subcontractor	5	200
Final clean-up and reclamation activities at all Project sites	19,71/276 000	Lead	2	30
		Senior	3	120
		Technical	5	120
Total	100/1 400 000		50	1243

* The RUB/EUR exchange rate used in the calculation is 45/1.

Project personnel will be involved in works related to preparation to the Project, clean-up and remediation works and reporting.

In addition, logistics personnel will be hired.

Personnel will be recruited under both service agreements with legal entities and individual contracts.

2.11.4 Water Requirements

Limits for technical water consumption will be determined in accordance with established procedures.

2.11.5 Energy Requirements

Autonomous supply of electricity generated by 40 kW units.

2.11.6 Land Requirements

Works will be performed at local sites. Temporary land allotments will be determined in accordance with established procedures.

2.11.7 *Transport Support*

Expedition and field works, and remediation works envisage regular air transportation and leasing of off-road / all-terrain vehicles and helicopters. Carriers will be selected in accordance with the Contractor's Health and Safety Policy.

Also required will be:

- Tractors and hoisting (loading) vehicles;
- Oil pumps;
- Small all-terrain vehicles.

2.11.8 *Accommodation and Social Services*

Accommodation and social services provided to personnel are based on the semi-mobile scheme and include mobile field camps which can accommodate up to 10 personnel including engineers, workers and operational staff.

2.11.9 *Wastewater Management*

Water will be treated using compact mobile water treatment systems (FIL D'EAU, http://www.vseslav-eco.ru/FIL_DEAU or similar systems).

2.11.10 *Waste Management*

Generation of solid and liquid household waste is expected in relation to the functioning of a residential area. The design documents will provide for a detailed description of the waste management process for all stages of the Project.

Waste will be sorted and disposed into special packaging. Most of solid household waste generated will be removed from Wrangel Island.

3 ENVIRONMENTAL AND SOCIAL ASPECTS OF THE PROJECT IMPLEMENTATION

3.1 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS IN THE AREA OF PROJECT IMPLEMENTATION

3.1.1 *Environmental and Geographical Characteristics of the Area*

The island covers around 7,670 square kilometres, of which 4,700 square kilometres are occupied by mountains. The coastline is low and is dissected by lagoons which are separated from the sea by sandspits. The northern part of the island is occupied by lowland Academy Tundra. The central part of the island is mostly mountainous. There are a number of small glaciers on the island.

The region is fully located in the permafrost area.

Mountain ridges are separated by valleys with numerous rivers. There are over 140 rivers and streams over 1 km long and 4 rivers over 50 km long on the island. The island hosts around 900 small lakes, most of which are located in the Academy Tundra, and only 6 are over 1 square kilometre in size. The average depth of the lakes is less than 2 m. Most of the lakes belong to the thaw and lagoon types.

Wrangel Island has severe climate. The region is blanketed by masses of dry and cold Arctic air for most of the year. Warmer and more humid air can reach the island from the south-east during summer. Dry and heated air from Siberia comes to the island periodically.

Polar day lasts from the second decade of May to around the last decade of July; polar night starts from the second decade of November to late January.

Winters are long and are characterised by steady frosty weather and high northerly winds. The average temperature in January is -22.3°C. February and March are the coldest months; during this period the temperatures usually stay below -30 °C, with frequent snow-storms with wind speeds of 40 m/s or above.

The summers are cool, with occasional frosts and snowfalls. The average temperature in July ranges from +2°C to +2.5°C. Warmer and drier weather are experienced in the centre of the island which is separated from the sea by mountains and because the interior's topography encourages better warming of air and foehn winds.

Annual precipitation is around 180 mm.

Wrangel Island has the biggest species wealth in the Arctic Region for both flora and fauna and is characterised by a combination of typically Arctic and relatively South Asian and American species. The plant communities are represented by partially landscape-forming Pleistocene relicts.

The island has unique types of plant communities and endemic soil types including around 40 endemic types and subtypes of Tracheophytes, insects, birds and mammals.

It is the key territory for a whole range of rare and protected birds and animals including the largest rookeries in the Eastern Arctic Region and a unique population of snow geese.

3.1.2 Socioeconomic Characteristics of the Area

The island is a specially protected nature area. Economic activities are currently not allowed on the island. The only economic facilities include the administration of the Reserve and an operating polar station in Rogers Bay. Heat and electricity is generated locally using diesel generators and a heating plant.

Although administratively Wrangel Island is part of the Iultinsky District, the administration of the Reserve is located in the town of Pevek in the Chaunsky District. Personnel of the scientific department and the reserve security service mostly work on a rotational basis. During the summer field season (July to August), specialists of external organisations visit the island to conduct scientific studies.

3.2 CURRENT ENVIRONMENTAL AND SOCIAL ISSUES TO BE ADDRESSED BY THE PROJECT

The Project will address the following potential significant environmental and social issues:

- 1 Environmental impact of waste; chemical contamination of soils and sea water;
- 2 Proliferation of contamination through sea water and air;
- 3 Direct influencing factors of influence on health and well-being of the Reserve's personnel and visitors; exacerbation of the sanitary and epidemiological situation;
- 4 Unfavourable mental and emotional environment due to the worsened visual and aesthetic properties of the landscape, and
- 5 Impacts of chemical substances on the local biodiversity.

3.3 *ASSESSMENT OF ENVIRONMENTAL RISKS ASSOCIATED WITH THE CURRENT CONDITION*

The risks occurring in relation to potential environmental damage are assessed as **low to moderate**, and non-resolution of this problem can result in **local** consequences.

3.4 *PRELIMINARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROJECT*

In the course of Project implementation, the maximum environmental impact is expected to be caused by hot works during dismantling of metal structures and handling/loading operations. Impact of air emissions from vehicles and diesel engines is also expected. However, taking into account strong local winds, it is expected that those impacts will be minimal.

Local spills of technical fluids from drums are possible. Works will be performed at specially prepared sites using geotextiles and insulating films.

3.5 *EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS OF THE PROJECT*

As a result of the Project, disturbed lands of the Wrangel Island State Natural Reserve will be cleaned up and reclaimed and the source of oil pollution of the coastal area and the marine environment will be eliminated.

Rehabilitation of the area will confirm Russia's international commitments to preserve a World Heritage Site.

The Project's key performance indicators are:

- Restoration of the landscape's visual properties;
- Minimisation of discharge of chemically polluted surface waters and groundwater to the sea; reduction of concentrations of critical pollutants to standard values.

3.6 *NATIONAL AND INTERNATIONAL ENVIRONMENTAL PRIORITIES ADDRESSED BY THE PROJECT*

Project activities agree with the two key areas of the Strategic Action Program for Protection of the Russian Arctic Environment (SAP-Arctic):

- Prevention and abatement of pollution of the coastal and marine environments in the Russian Arctic, including the transboundary transport of pollutants with aquatic and atmospheric flows oil, chemical, and radiation contamination;

- Conservation and improvement of the quality of the environment, living conditions of the indigenous small-in-numbers peoples and conditions for traditional nature use by native small nations of the North.

Under the first component, the Project follows the following objectives:

- Improving the system of the state environmental control and monitoring, of assessment of anthropogenic contamination levels of the Russian Arctic seas, strengthening control over the transboundary transport of pollutants in the Arctic;
- Reducing the negative environmental impacts in the hot spots in the Russian Arctic;
- Developing/improving financial and economic mechanisms for attracting investments to solve environmental problems in the Russian Arctic;
- Expanding fundamental and applied research related to the spread and impacts the critical pollutants on man and the environment in the Arctic;
- Raising the level of environmental education and awareness; ensuring public access to information concerning the environmental pollution in the Russian Arctic;
- Developing international cooperation among the Arctic countries in the area of environmental protection in the Russian Arctic.

Under the second component, the following main objectives will be reached:

- With respect to remedying past environmental damage on land and in the coastal zone of the Arctic seas:
 - Expanding public-private partnerships to improve effectiveness of environmental protection;
 - Developing and implementing investment projects aimed at remedying past environmental damage on land and in the coastal zone of the Arctic seas;
 - Using the existing and developing new international instruments for attracting investments into the implementation of environmental projects in the Russian Arctic.
- With respect to improving the surface and ground water quality in the coastal areas of the Russian Arctic:

- Ensuring environmentally sound utilization of liquid and solid wastes in the areas adjacent to water intakes;
- Establishing and developing water-protection zones and shoreline protection belts at water bodies;

The Project also agrees with the main objectives of the Government Policy in the Arctic defined in the Basic Provisions for the National Policy of the Russian Federation to 2020 and onwards (approved by President on 18.09.2008). In particular, in the field of environmental safety the Project aims at one of the main objectives of the Russian Arctic Policy, i.e. conservation and protection of the natural environment in the Arctic, elimination of environmental consequences of human activities under the conditions of intensification of economic efforts and global climate change. The Project shall ensure the following measures in order to reach the goals of the Russian Arctic Policy in the field of environmental safety in the Russian Arctic region:

- Remediation of natural landscapes;
- Processing of toxic industrial wastes;
- Ensuring of chemical safety.

The need for measures aimed at clean-up of environmental liabilities and remediation of areas in critical environmental condition, efficient control of threats to environmental safety and establishment of economic instruments for environmental liability clean-up is defined in the Programme of Socioeconomic Development of the Russian Federation on a Medium-term Perspective (2006-2008) approved by the Government Decree No. No.38-r dated 19.01.2006. The Programme sets out the following essential objectives of the governmental environmental policy:

- Efficient control of threats associated with deterioration of the environmental situation in connection with an increase in industrial waste generation;
- Implementation of measures for remediation of the areas in critical environmental condition, including governmental support for any work aimed at reducing the past environmental liabilities;
- Creation of economic instruments and mechanisms for clean-up of past environmental liabilities and appropriate compensation.

In general, as a World Heritage Site the Wrangel Island Reserve falls under the provisions of the UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage. The status of a World Heritage Site has a number of benefits in terms of environmental protection and full support of areas included in the List of World Heritage Sites, including financing preferences.

3.7 STAKEHOLDER ENGAGEMENT PROCESS

3.7.1 Administrative and supervisory bodies

- **Ministry of Natural Resources and Environment of the Russian Federation**

Managing agency of the Reserve

- **Administration of the Chukchi Autonomous District, Chaunsky District and Iultinsky District**

Approval of land-related issues.

- **Regional department of *Rosprirodnadzor***

Supervisory activities, approval of survey programme, permitting, expert review, environmental monitoring.

- **Regional department of *Rospotrebnadzor***

Supervisory activities, approval of survey programme, expert review, sanitary and epidemiological reports, participation in surveys, project support.

- **Regional department of *Rostekhnadzor* in Moscow**

Supervisory activities, approval of survey programme, licensing, permitting, expert review.

- **Regional department of the Subsoil Use Agency**

Approval of survey programme and design documents, expert review.

- **Regional department of Amur Basin Water Agency**

Approval of survey programme and the design, water use and disposal permits.

- **Chukchi Hydrometeorology and Environmental Monitoring Agency**

Hydrometeorological and environmental monitoring licensing; hydrometeorological expert review, supply of weather station reports, supply of hydrometeorological data, hydrometeorological surveys, participation in the monitoring programme.

- **Regional department of the Federal Service for Veterinary and Phytosanitary Supervision (*Rosselkhozadzor*) in the Chukchi Autonomous District**

Approvals and supply of information about biological and food products.

- **North-Western Regional Department of the Federal Fishery Agency (*Rosrybolovstvo*)**

Approvals and catch quotas for scientific purposes as part of surveys, participation in gathering of information related to the condition of water biological resources.

- **Chukchi branch office of FGU Territorial Information Fund in the Far Eastern Federal District of Ministry of Natural Resources**

Supply of archive data.

- **Regional department of the Federal State Statistics Service (*Rosstat*) in the Chukchi Autonomous District**

Supply of archive statistical data.

- **Far Eastern department of the Federal Service for the Cultural Heritage Legislation Compliance Supervision (*Rosokhrankultura*)**

Approvals and supply of archive data.

- **Border Service of the Russian Federal Security Service**

Approval of surveys and other activities; entry permits for foreign nationals.

3.7.2 *Non-governmental social and environmental organisations operating in the area affected by the Project*

International and Russian organisations:

- Bellona;
- Greenpeace-Russia;
- WWF-Russia;
- The International Union for Conservation of Nature (IUCN), Russia;
- The International Social and Environmental Union;
- The Civil Centre for Nuclear Non-Proliferation;
- The Environmental Safety and Protection Commission of the Public Chamber;
- Public Organisations Union 'Russian Environmental Congress';
- Green Patrol;
- The Russian Society for Ecological Economics (RSEE);

- The International Society for Ecological Economics (ISEE);
- The International Ecological Engineering Society (IEES);
- Service Civil International (SCI) – volunteer centre (Antwerp, Belgium);
- Environmental and Educational Centre ‘Zapovedniki’ (Moscow).

Regional organisations:

- Chukchi regional charity environmental public movement ‘Caira-Club’ (Anadyr).

3.7.3 Potential Sponsors

- **United States Agency for International Development (USAID)**

Possible co-financing of the Project.

- **Nordic Environmental Finance Corporation (NEFCO)**

Fund Manager of the Arctic Council’s Project Support Instrument which is likely to be used to finance development of pre-feasibility studies, environmental impact assessments, business plans, financing plans, technical projects, tender documents or supplies of equipment and services for the project.

4 DESCRIPTION OF THE PROJECT INITIATOR / BENEFICIARY

The Project Initiator and proposed beneficiary is the Wrangel Island State Natural Reserve (the 'Reserve'). The Project was thrashed out with the administration of Chukotka and the federal Ministry of Natural Resources and Environment.

The Reserve was established by Decree No 189 of the Council of Ministers of the Russian Soviet Federative Socialist Republic (RSFSR) dated 23 March 1976.

The Reserve has the following objectives:

- to preserve and study unique ecosystems of arctic islands, including polar bear, walrus and the only nest population of snow goose in Russia, and
- to provide environmental education.

Contact information:

Full name	State institution 'Wrangel Island State Natural Reserve'
Legal address	27, Obrucheva St., Pevek 689400, Chukchi Autonomous District, Russia
Postal address	38, Obrucheva St., Pevek 689400, Chukchi Autonomous District, Russia
Telephone / fax	Tel / fax +7(427 37)415 35
E-mail	wisnr@rambler.ru islandwrangel@chukotnet.ru
INN	8708000203
KPP	870601001
Director	Alexander Rudolfovich Gruzdev
Chief Accountant	Tatiana Vladimirovna Shpak

Total area of the Reserve

The total area of the Reserve is 5,661,600 hectares including 795,650 hectares of land (794,520 hectares for Wrangel Island and 1,130 hectares for Herald Island) and 4,865,950 hectares of water (1,430,000 hectares of the island's water area and 3,435,950 hectares of the protection zone). Communities and individual residential and production buildings occupy 1,200 hectares.

Land use entitling documents

Land plots within the Reserve are registered in FGU State Land Cadastre of the Chukchi Autonomous District, cadastral number 87;03;01 0004;0003. There is no available cadastral map.

Description of lands available to the Reserve for unlimited utilisation:

Description parameter	Total in the Reserve	
	Area, hectares	%
Total land area	795650	100
Forest lands	0	0
Lands covered with forest vegetation	0	0
Lands not covered with forest vegetation	795650	100
Non-forest lands - total	795650	100

Reserve headcount

As per staff list	Actual	
	Total	Including employees with higher education
37	26	11

Information about historical and cultural heritage sites located in the Reserve

The Reserve contains historical monuments dating to the period of discovery and exploration of the island. However, the monuments are not recognised sites of historical and cultural significance.

Category 1 - archaeological monuments

- In August 1975, an archaeological expedition led by N. Dikov discovered a camp of Paleoeskimo hunters called 'Chortov Ovrage'. The camp stands on a dry cape in the south-western part of the island along Krasin Gulf, 15 km from Somnitelnaya Bay. Employees of the Reserve conduct annual inspections of the camp to monitor its condition.
- At midday, 20 August 1924, the Soviet flag was raised at Proletarsky Cape in front of Rogers Bay. Members of the expedition travelling in Gunboat 'Red October' installed a tall mast with the national flag of the Soviet Union. Before heading towards Vladivostok, the members of the mission apprehended a group of Canadian poachers. The iron flag has since fallen to the ground, while the mast with a memorial sign is still in good condition. The monument is subject to reconstruction.

Category 2 - remains of buildings erected by the first settlers (camps and dug-outs):

- Remains of Skurikhin's dug-out;
- Remains of a dug-out complex at Burunnaya Spit;
- Place of installation of the Soviet flag in the mouth of River Thomas;
- Dedushka Kmo camp in the mouth of River Sovetskaya;
- Remains of a dug-out at Mushtakov Spit.

Category 3 – buildings dating back to the period of commercial hunting and deer breeding:

- A hunting lodge in Popov camp – a group of buildings of a hunters' camp;
- Camp at Jack London's lake;
- A group of buildings of a former mobile weather station at Cape Blossom (now used as a Reserve's field station);
- Ruins of Nanauna hunters' house at Vaigach Spit;
- Nanauna hunters' dug-out near Mt. Thomas;
- Deer hunters' hut at River Neozhidannaya (now used as a Reserve's field station);
- Hunters' house Chaivuna at Lake Komsomol – a group of buildings of a hunters' camp (the house is now used as a Reserve's field station);
- Nanauna-Chaivuna hunter's dug-out at Nanauna Lagoon;
- Hunter's dug-out at Tayana Lagoon;
- Pavlov's House in former Somnitelnaya village;
- Ulvelkott's House in former Somnitelnaya village. Under reconstruction for the last 2 years;
- Ruins of military barracks and support structures of a military air base on River Somnitelnaya (Zvyozdny village);
- Ruins of Pavlov's House (under reconstruction for the last 2 years) and Pavlov's Grave near Somnitelnaya Bay;
- Deer hunters' house in the mouth of River Khishchniki;
- Hunter's house in the mouth of River Lyulyak.

Current agreement entered between the Reserve and external research organisations for scientific support and other services

No.	Scope	Organisation	Duration
1	Research of the level of genetic polymorphism in hoofed mammals caused by long-term isolation on Wrangel Island	Severtsov Institute of Ecological and Evolutional Problems of the Russian Academy of Sciences	2007-2010
2	Analysis of nutrition of and assessment of competitive nutritional relations between reindeer and musk ox on Wrangel Island	Severtsov Institute of Ecological and Evolutional Problems of the Russian Academy of Sciences	2007-2010
3	Ecology of marine mammals and polar bear on Wrangel Island and Herald Island	Chukchi department of FGUP TINRO-CENTRE	2007-2010
4	Fauna structure and biocenotic relations between terraneous arthropods on Wrangel Island	Severtsov Institute of Ecological and Evolutional Problems of the Russian Academy of Sciences	2005-2008
5	Bird flue proliferation monitoring	International Scientific and Technical Centre	2008

5 INVESTMENT FEASIBILITY AND FINANCING PLAN

5.1 TOTAL COST OF THE PROJECT

The total project cost is estimated at EUR 1,400,000 (non-budgetary financing only). However, there is potential opportunity of co-financing of the Project under the federal project ‘Elimination of Past Environmental Liabilities in the Russian Federation’ and sub-programme ‘Developing the Arctic’ of the Federal target Programme ‘The World Ocean’.

5.2 PRELIMINARY PHASES FOR PROJECT IMPLEMENTATION AND BUDGET BREAKDOWN

The Project will be implemented in three stages:

- Stage 1 (1st year of Project implementation) – Inventory, surveys and development of design documents;
- Stage 2 (1st -2nd year of Project implementation) – Development of design and working documents; completion of preparatory activities;
- Stage 3 (3rd -4th year of Project implementation) – Delivery of equipment and materials; clean-up and reclamation works.

No	Period	Component	% of total financing, EUR*
1	1 st year of Project implementation	Development and approval of a detailed Declaration of Intent based on this PINS	0,17/2 400
2	1 st year of Project implementation	Preliminary evaluation of scope and schedule of works; development of a detailed stakeholder engagement plan	0,68/9 600
3	1 st year of Project implementation	Detailed inventory and baseline environmental surveys and geological (geotechnical) surveys	8,57/120 000
4	1 st year of Project implementation	Development and implementation of a monitoring programme for all stages of the project	0,43/6 000
5	1 st -2 nd year of implementation	Development of design and working design documentation, including environmental sections and plans	8,57/120 000
6	1 st -2 nd year of implementation	Procurement of required licences, approval and permits	0,43/6 000
7	3 rd - 4 th year of implementation	Delivery of necessary equipment and vehicles	12,86/180 000
8	3 rd - 4 th year of implementation	Implementation of remediation and disposal activities, including removal and transportation	48,57/480 000

		of the scrap metal from the island	
9	3 rd – 4 th year of implementation		19,71/276 000
		Total	100/1 400 000

* The RUB/EUR exchange rate used in the calculation is 45/1.

5.3 SOURCES OF FINANCING IDENTIFIED

In identifying potential sources of financing for the Project, a number of factors critical for potential sponsors were taken into consideration as follows:

- Non-commercial nature of the Project which is basically unprofitable from the perspective of potential investments;
- Gaps in legal and regulatory base for the public finance of measures on elimination of environmental liabilities in Russia at the moment of preparation of the PINS;
- Lack of a uniform methodology for the risk assessment of environmental liability sites, and
- Limited regional budget financing.

5.3.1 Sources of Budget Financing

According to the local officials, due to the fact that the regional budget is heavily subsidised the regional Administration has not considered financing of this Project from the regional budget for the short term.

During the meeting with Mr. Andrei Peshkov of the Russian Ministry of Natural Resources and Environment and Mr. Vassili Rodionov of the World Bank in the World Bank office in Moscow on February 11, 2010 regarding potential funding of the Project under the Elimination of Past Environmental Liabilities in Russia project, it was noted that evaluation of this PINS was necessary using criteria of environmental liability inventory that are currently being developed in the framework the Elimination of Past Environmental Liabilities in Russia project.

In case priority PEL elimination measures are considered necessary as a result of such evaluation, budget funding for the Project can be made available in the course of 2011 to 2012.

5.3.2 International Financing Sources

During the meeting with Mr. Jess Bratton and Mr. Yury Kazakov of USAID in the USAID Russian office in Moscow in January-February 2010 it was confirmed that USAID is interested in co-financing of the Project.

This PINS has been submitted to USAID and is currently under review.

Following discussions with Mr. Henrik Förström and Mr. Amund Beitnes of NEFCO held in August 2009 to February 2010, it was confirmed that the Project is in line with the priorities of the Arctic Council's Project Support Instrument which will be managed by NEFCO as soon as the PSI is commissioned in the first half of 2010.

This PINS has been submitted to NEFCO and is currently under review in the PSU Unit headed by Amund Beitnes.

5.4 CONTRACTORS

The Customer (Beneficiary) acts through a Contractor, or the Project Coordinator who engages subcontractors to implement individual components of the Project on the terms and conditions of a government contract:

I. During Stages 1 and 2 licenced research and design organisations will be engaged in inventory, preparation for surveys and development of design and working design documents.

Below is the recommended list of participants in Stages 1 and 2 of the Project:

- **An international specialised environmental consulting company**

International project finance arrangements; organisation and coordination of baseline surveys and engineering and environmental surveys, development of environmental protection sections of design documents of both Russian and international formats.

- **Wrangel Island Natural State Reserve**

Participation in surveys and design development; engineering and environmental assessment, sampling.

- **NPO Typhoon (belongs to the Russian Federal Hydrometeorology and Environmental Monitoring Service)**

Participation in chemical and analytical programme of engineering and environmental surveys.

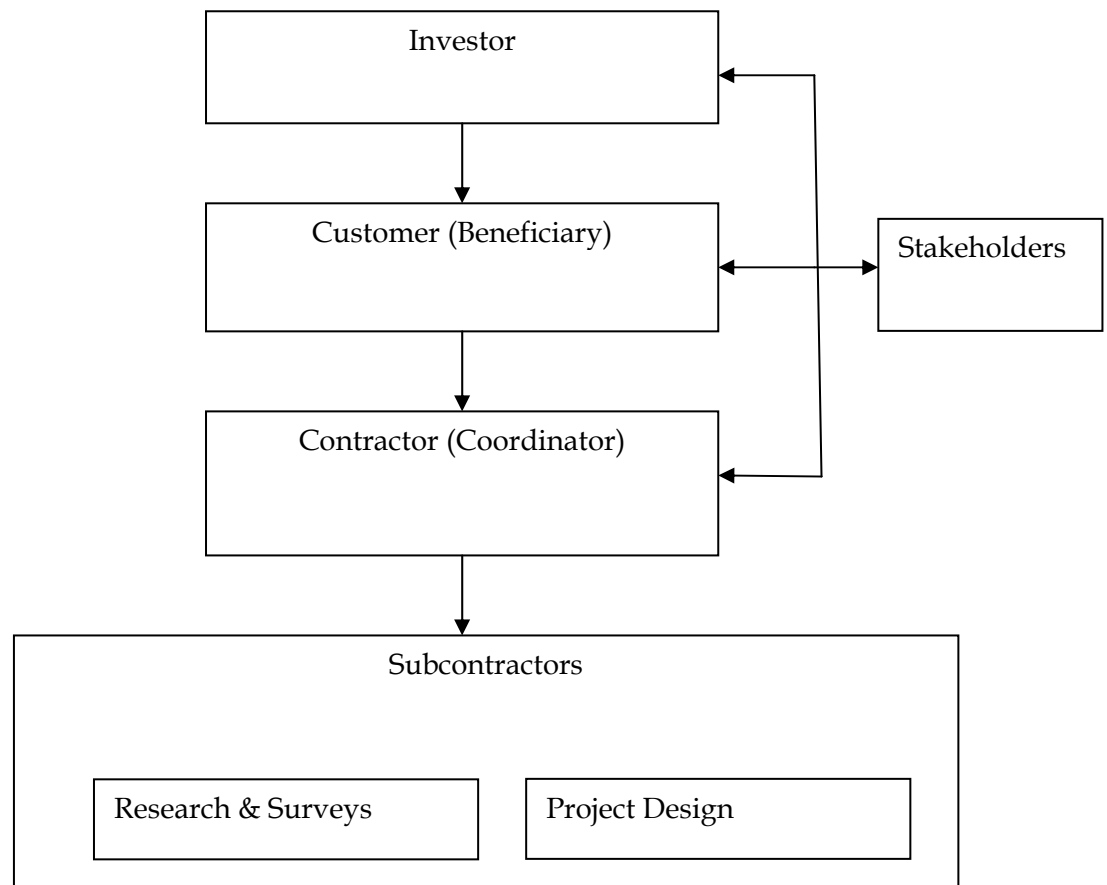
- **Khabarovsk Innovation and Analytical Centre of the Kosygin Institute of Tectonics and Geophysics of the Far Eastern Branch of the Russian Academy of Sciences**

Participation in chemical and analytical programme of engineering and environmental surveys.

II. For Stage 3, specialised licensed organisations will be engaged to perform a complex of preparatory and engineering activities.

II.I. A tender will be held for engineering and technical activities.

The project management diagram is shown in Fig. 4.1.



6 *BENEFICIARY'S FINANCIAL AND ECONOMIC INDICATORS*

This information can be obtained from the NPA Arctic Project Office or from the Executing Agency

7.1 ISSUES REQUIRING SPECIAL ATTENTION IN THE PROCESS OF THE PROJECT PLANNING

7.1.1 Financial and Economic Aspects

- High transportation cost and seasonal character of logistics plans;
- High operating costs;
- Optimal overhead and current operating expenses while using vehicles and equipment taking into account the remoteness of the project implementation areas.

7.1.2 Technical Aspects

- Remoteness of the project implementation area;
- Communication difficulties with the Reserve;
- Extremely severe operating conditions for materials, mechanisms and equipment;
- Technical complexity of the Project;
- Navigation periods;
- applied materials and agents;
- Compliance with health & safety requirements.

7.1.3 Institutional Aspects

- Legitimacy and administrative procedures for project activities;
- Borderland regime in the project implementation areas; requirements to obtain necessary permits and perform necessary procedures;
- Specially protected natural area regime of the Reserve.

7.1.4 Environmental Aspects

- Low stability of tundra and sea-coast ecosystems;
- Current weather conditions.

7.1.5 *Social Aspects*

- Qualification of personnel engaged in the project implementation;
- Living and labour conditions of personnel.

7.2 *KEY RISKS AND MITIGATION MEASURES*

7.2.1 *Key Risks*

Below are the key risks related to potential implementation or non-implementation of the Project and capable of causing significant effects on the outcomes of the Project:

Financial and economic risks:

- Lack of interest of identified potential donors;
- Withdrawal of one or more sponsors from the Project;
- Changes in the logistical plans and, subsequently, the schedule of payments, deficit and of the original budget and unpredicted increase in the Project cost.

Technical risks:

- Impossibility to reach the target areas;
- Breakdown of equipment, vehicles and mechanisms;
- Personnel sickness and accident rates;
- Impossibility to meet the project implementation schedule.

Institutional risks

- Refusal of regulatory and supervisory bodies to grant a permit for the expedition and field works;
- Delays in the delivery of cargo during the preparation to the expedition and field works; delays in the removal of equipment and samples.

Environmental risks:

- Damage to the environment when travelling outside roads;
- Damage to the environment caused by accidents while neutralising waste on site.

Social risks:

- Lack of qualified workforce among the permanent residents of the region;
- Extreme living and labour conditions caused by the remoteness and weather factors resulting in::
 - Failure to retain the required quality of work due to the human factor.

7.2.2 *Risk Mitigation Measures*

The Project proposes the following measures aimed at mitigating the identified risks:

Financial and economic measures:

- Consultations with a large number of potential donors with regard to the geographical coverage of their financial support (conducted by ERM at the PINS preparation stage);
- Development and approval of an acceptable schedule of payments; development of the procedure for and timely adjustment of Project financing;
- Expansion of mechanisms for partnership between the state and private businesses; promotion of engagement of Russian and international investors.

Technical measures:

- Use of certified vehicles and equipment, tested technologies, materials and chemicals;
- Compliance with procedures and technical requirements to the use of equipment, materials and chemicals;
- Retaining certified and licensed contractors during the project implementation;
- Engagement of corporate and individual contractors with good reputation for the project implementation and supply of equipment.

Institutional measures:

- Timely procurement of all necessary permits;
- Establishment of stable relations with administrative, supervisory and regulatory authorities.

Environmental measures:

- Compliance with all established rehabilitation procedures (mandatory reclamation of the area of works; compliance with design requirements to the disposal process); non-use of all-terrain vehicles outside temporary roads without a real need.
- Imposition of strict measures on personnel guilty of violating environmental requirements.

Social measures:

- Retaining qualified personnel for the project implementation;
- Creation of optimal living conditions for personnel.

FIGURES



Fig. 1.1. Location of historical contamination areas in the Wrangel Island Reserve

PHOTOLOG

Picture 1 Tractor T-130



Picture 2 Truck ZIL -157



Picture 3 *Truck ZIL-131*



Picture 4 *Diesel engines K169M1*



Picture 5 Diesel engine



Picture 6 Tractor DT76B



Picture 7 *Off-road truck GAZ -71*



Picture 8



Picture 9 Skoda



Picture 10 Truck crane MSK -10



Picture 11 Powerboat



Picture 12 Abandoned building



Picture 13 Non-ferrous Scrap metal



Picture 14 Diesel engine (empty drums in the background)



Photo 15 Empty drums at Ushakovskoye village



Picture 16 Empty drums at former Zvyozdny village (Somnitelnaya Bay)

