

Chapter

7



Project Land Needs

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7.1 INTRODUCTION

Sakhalin is one of the largest islands in the world, with the total area of 76,400km². This long narrow island stretches 948km from North to South, with the maximum width of approximately 160km and the minimum width of about 30km. Siting of the Sakhalin II Project has been largely driven by the location of its oil and gas fields combined with the need for an ice-free year-around port from which to ship LNG and oil.

Oil and gas fields on the island are located primarily in the two northernmost districts of the island, Okha and Nogliki. Onshore development and commercial production of these fields has a long history dating to the early 1900s and has included both Russia and Japan. Oil from the island has historically been transported to the mainland via a sub-sea line extending from the Okha District to De Kastrî on the mainland and then onwards to Komsomolsk-na-Amure. Gas is also transported to the mainland where it is used for industrial and domestic purposes in the Russian Far East. The Sakhalin I Project oil pipeline will follow this established route.

The Sakhalin II Project is sited entirely on Sakhalin Island with the oil and gas pipelines roughly following the island's existing transportation corridor to the ice-free LNG/OET site on the south end of the island. The length of the route followed by the Sakhalin II pipelines is approximately 816km.

The island's North-South transportation corridor includes the Okha-Korsakov road/and the island's single rail line. If not located on the coast, most small rural communities (pop. 10-2,500) and District Centres (pop. 5,000-20,000) are located in this corridor. With the economic decline of the 1990s and a withdrawal of State support many of these communities no longer have a viable economic base. Most of the small rural communities are characterised by out-migration to larger District Centres, Yuzhno-Sakhalinsk, or to the mainland.

Sakhalin Island is sparsely populated - 584,000 people lived there as of January 1, 2002, 591,200 as of January 1, 2001 (Source: Federal Service of Statistics).² Much of the population is located in the city of Yuzhno-Sakhalinsk (pop. 186,600) Korsakov port (pop. 36,500) near the LNG/OET site and Southern Sakhalin port Kholmsk (pop. 39,300). Only three other communities have a population over 20,000 and include Nevelsk on the Southwest coast, Poronaïsk in Central Sakhalin and Okha in the North.

The EIA provides details on the existing environment and the project description specific to each project asset.

Volume 2: Platforms, offshore pipeline and landfalls,

Volume 3: OPF,

Volume 4: Onshore pipelines, BS, GDT,

Volume 5: LNG/OET, LNG Jetty and TLU, and

Volume 6: IUP.

² Compare with the Republic of Ireland, approximately equal in size (70,282km²), and the estimated population of 3,621,000 (in 1996).

7.2 PROJECT SETTING AND EXISTING LAND USE

This section describes Project land needs associated with construction and operations of the Project. Project land needs include:

TABLE 7-01: PROJECT LAND NEEDS TYPES

Type	Description
Upgrades of Public Infrastructure	<ul style="list-style-type: none"> • These plots of land are needed for the repair, upgrade, and development of the existing public infrastructure (roads, railways, ports, and airports) to support safe and unrestricted flow of personnel and material. • In most cases no new land is needed for this activity other than for very small temporary construction sites. Generally, these are immediately adjacent to the work area.
Temporary Construction Needs	<ul style="list-style-type: none"> • These plots of land are needed for temporary construction needs including camps, laydown yards, support bases, landfalls, and other ancillary facilities for use by construction personnel and for material handling and installations. • Access roads needed to these specific sites are included as part of the discussion.
Pipeline ROW	<ul style="list-style-type: none"> • These include the PL ROW needed during construction as well as the permanent land need during operations for block valves, pig trap stations, helicopter pads, tectonic faults (since they will be fenced), communication towers. • Temporary and permanent access roads needed for construction as well as permanent access to block valves are discussed.
Major permanent fixed facility sites	<ul style="list-style-type: none"> • These include land needs for facilities, which will operate for the life-of-the Project including the LNG/OET sites, Gas Disposition Terminal (GDT) the Castello Booster Station, and the OPF. • Only two access roads are associated with this construction including one road to the Booster Station and the 54km access road to the OPF.

A detailed summary of Project land needs is presented in Tables 7-20, 7-21, 7-22.

At the time this document was prepared final siting of construction camps had not been completed, however 10 sites have been pre-selected during the TEO-C process. These sites will be subject to verification during the detailed design process.

7.2.1 Basis for Land Use

7.2.1.1 Subjects of Land Relations

Article 5 of Russian Federation Land Code states that the parties of land relations can include Russian Citizens, legal entities, the Russian Federation, its constituents and municipal formations. It introduces the following concepts and definitions:

- Land owners - parties owning land plots,
- Land Users - parties occupying and enjoying a land plot by right of perpetual or indefinite use or by right of free fixed-term use,
- Land Occupiers - parties occupying and enjoying a land plot by right of lifelong inheritable possession,
- Land Lessees - parties occupying and enjoying a land plot under a lease or sublease contract, and
- Land Easement Holders - parties enjoying restricted use of a land plot belonging to others by virtue of an easement.

7.2.1.2 Forms of Land Ownership

Russian Regulations acknowledge the following *forms of land ownership*:

- Private property - land legally acquired by individuals or legal entities,
- State property - land not owned by individuals, legal entities or municipal formations. It is divided into Federal Property and that of Russian Federation Constituents, and
- Municipal property - land owned by municipal formations.

7.2.1.3 Types of Land Title

And the following *types of land use*:

- Permanent (unlimited) use - can be exercised by state and municipal facilities and enterprises, federal, regional and municipal authorities,

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- Lifelong Inheritable possession is exercised by the individuals who received it before the current *Land Code* came into force. This type of land use is not used anymore. Any transactions (including lease), other than transfer by right of succession are not allowed for this type of land title. Land Users - holders of this land title can register their land plots as private property,
- Lease, sublease - land plots are given to lessee at a fee for temporary use. Only land owners can lease land,
- Easement - restricted use of a land plot belonging to others. Private Easement is established following the procedures stipulated in the *Civil Code*. Public Easement can be established with due regard for the outcome of public hearings, and
- Limited use free of charge - land plots are given for temporary use free of charge. Term is defined by Russian regulations for State or Municipal land, by contract for private land, or by labour contracts for the employer provided garden.

Grey areas in the Russian land legislation are further detailed in Chapter 8.

7.2.2 Land Classification

Russian Federation *Land Code* divides land into seven major categories, based on their use:

- Agricultural Land,
- Land of Settlements,
- Land Used for Industrial Purposes, Transportation, Communication, Radio and TV Broadcasting, Computer Science, Space Research, Military Defence and Other Special Purposes,
- Land of Protected Territories,
- Forest Fund Land,
- Water Fund Land, and
- Reserve Land.

Ninety percent of land in the Sakhalin Region is either Forest Fund Land or State Reserve Land.

Table 7-02 lists the total area and percentage of each type of land on the island and classification of land.

The pipeline ROW crosses land in six of the eight classifications and in total results in direct impacts to less than 0.04% of the total land on the island.

TABLE 7-02: SHARE OF SAKHALIN II ROW LAND NEED IN SAKHALIN REGION LAND CATEGORIES

Classification	Land Classification (January 1, 2002) ³		PL ROW Ha	Total ROW (%)	Total Region (%)
	Ha	%			
Forestry Fund Land	6,950,200	79.9	2,350	70.7	0.0270
State Reserve Land	993,400	11.4	233	7.0	0.0027
Land Used for Industrial Purposes, Transportation, Communication, Radio and TV Broadcasting, Computer Science, Space Research, Military Defence and Other Special Purposes	336,300	3.9	9	0.3	0.0001
Agricultural land	177,900	2.0	591	17.7	0.0066
Land of Protected Territories *	122,300	1.4	55	1.7	0.0006
Land of Settlements	83,200	1.0	95	2.9	0.0011
Water Fund Land	46,800	0.5	0	0.00	0.0000
Total Area of Land	8,710,100	100.00	3,333	100.00	0.0383

The pipeline runs through the Makarov Nature Reserve (4.9km 43m wide) and Izubrovij Nature Reserve (8.0km* 43m wide). Pipeline does not go via specially protected zones of these Natural Reserves.

Source: The Sakhalin Region at the turn of the 21st Century, Yuzhno-Sakhalin Region Committee of State Statistics, 2001

³ Source: Statistics Digest. The Sakhalin Region at the turn of 21st century, the year of 2001.

7.2.2.1 Forest Fund Land

According to the Russian Federation *Forest Code*, ref. # 194-FZ, *forest fund* consists of forest and non-forest land.

Forest land is land covered by forest vegetation, as well as land without it which is suitable for the forest restoration: cutting, burned out areas, dead forest stands, sparsely forested areas, wastelands, clearings, forest nurseries, areas with young forest with underdeveloped crowns, etc.

Non-forest land is land used for the needs of the forestry industry: narrow clearings, roads, agricultural land and other areas within the forest boundaries. They also include wetlands, stone-covered spreads and other land that is difficult to use.

According to the economic, environmental and social importance, location and functions forestland is divided into three groups. The forest group and the types of protection measures define the order of forestland use and allocation for industrial purposes. The first group is of utmost importance. It is further subdivided depending on the protective measures, such as:

- Limited use along the riverbanks, ravines slopes, habitats of protected animals and plants,
- Forbidden use for industrial purposes, and
- Other.

First group forests are forests used for the water protection, sanitary, recreational, etc., purpose, and the forests of the specially protected areas.

The group is further subdivided into the following categories of protection:

- 'Prohibited forest belts' on the river banks, lake and water reservoirs shores, other water objects,
- 'Prohibited forest belts' protecting spawning areas of industrially valuable fish species,
- Forests planted to prevent erosion,
- Protective belts along railroads, highways of federal and regional importance,
- State protective forest belts,
- Forests playing an important environment protection role,
- 'Green' areas around urban settlements and industrial objects, and
- Other.

Second Group forests are forests in densely populated areas and developed infrastructure. These forests are usually of a limited industrial value.

They play an important role in environment, water resources protection, sanitary protection and are usually used for recreational activities. This group also includes the forests in the areas with limited forest resources that require introduction of limitations of forest use to preserve the existing funds.

Third group forests are forests in the areas with abundant forest resources that have mostly industrial value. This group is subdivided into the developed and reserve forests.

Almost 80% of the land (6,950,200ha) on Sakhalin Island is classified as Forest Fund land; 89.4% of which is actually covered by forest. Forestland may also be used for agricultural purposes and form a major land reserve from which new agricultural land may be designated. Today 26,600ha of forestland is being used for agricultural purposes including plough land (0,500ha) and forage land (26,100ha).

Sakhalin Forest Fund land include: first group forest (18.5%), second group forest (13.5%), and third group forest (68.0%).

7.2.2.2 State Reserve Land

The second largest land classification and a major source of land is State Reserve Land, which can be declassified and used for other purposes. Uses of land in this classification are constantly changing due to an ongoing land allocation for various uses by individuals, institutions and enterprises.

Within this classification the following major groups are identified: *land used for other purposes* (37.6%; 373,500ha), *land covered by trees and shrubs* (23.1%; 229,500ha) and *agricultural land* (4.1%; 41,200ha).

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7.2.2.3 Land Used for Industrial, Transportation, Communication, Radio and TV Broadcasting, Computer Science, Energy Supply, Military Defence and Other Purposes

About 4% of land is classified for these purposes. Most is *land used for other purposes* (30.9%; 97,300ha) and *land covered by trees and shrubs* (58.3%; 183,900ha). Share of *agricultural land* within this category is comparatively small - 1.3%; 4,000ha.

7.2.2.4 Agricultural Land

Only about 2% of Sakhalin's land is classified as *agricultural land*. State and municipal agricultural enterprises and collective farms use the majority of it. Of the total area only about half is actually actively used for agricultural purposes including:

TABLE 7-03: TYPES OF USE OF AGRICULTURAL LAND

Sub-Type	Ha	%
Plowland	37,100	20.8
Perennial crops	6,200	3.5
Pastures	45,700	25.7

7.2.2.5 Land of Protected Territories

In the Sakhalin Region these are wild preserves, and land used for recreational, historic-cultural or health-improving purposes. The share of this land in the Sakhalin Region land fund is 122,300ha (1.4%).

7.2.2.6 Land of Settlements

The Sakhalin Region is an under-populated area. With the total amount of land of settlements being 83,200ha urban land makes 58,200ha and the land of rural communities makes up 25,000ha.

Within the land of settlements the share of agricultural land is 20,900ha, the share of forest and shrubs land is 26,100ha, the share of boggy land is 2,500ha, the share of land with structures is 21,000ha and the share of other land type is 12,700ha.

Total share of land of settlements in the region is 1%. More district specific information can be found in Section 4.4.

7.2.2.7 Water Fund Land

Sakhalin water pools (big streams and lakes) are mainly located on the state reserve land and some other land categories. The land with small-scale water objects is assigned to corresponding organisations and enterprises. That is why no water fund land has been registered on the island up to the year 1994 when some of the big lakes were re-registered as water fund land. Before re-registration these lakes formed part of the state reserve land category. Presently water fund land makes up 46,800ha in the Region.

This category is defined in the Russian *Water Code*.

7.2.3 Classification of Access Roads

Access roads as used in this report may range from existing major paved and unpaved public roadways to badly overgrown, rutted, and rarely used dirt tracks through woods. Since improved or new access roads could cause unwanted third party access to some areas, which is a community concern, this section will briefly describe the types of access roads and classifications. Under Russian law the ultimate use and ability to manage access is determined by the classification of the road.

For the purposes of this discussion major public roadways maintained by the Region will not be considered. Classifications of concern are described below. A single access road may include roads of several different types.

TABLE 7-04: TYPES OF ROADS

Type of Road	Example	Project Use	Requirement for Restoration at the End of Construction	Party Responsible for Long-Term Maintenance
Officially designated and legal access roads (No gates allowed)	Roads to fire and game warden watch towers, road to collective farms, hunt clubs.	Temporary	Same or better condition	Region and/or local authorities
		Permanent	Maintained as per Russian regulations	Project
New roads leased by Project (Gates allowed)	Project need for new road to gas system block valve station.	Temporary	Restore to natural condition, remove culverts, improvement	Not applicable
		Permanent	Maintain as per Russian regulation	Project

Russian regulations also stipulate the minimum level of maintenance and accessibility required for access. For example, for a construction vehicle of width 3.5 metres, the road needs to be 5.0 to 5.5 metres wide (Table 46 of the SNiP 2.0.5.0.7-91*). The road surface need only be gravel. No maintenance requirements for minor roads are stated in the SNiPs.

7.2.4 Restriction of Land Use Within the Sanitary and Safety Protection Zones

7.2.4.1 Sanitary Protection Zones

Sanitary Protection zones are designated areas around industrial facilities separating them from living areas and are aimed at protecting the residents.

Land allocation for Sanitary Protection Zones of facilities is not required since this land is not withdrawn from land users and can be used with restrictions stipulated by relevant legislation.

The size of a Sanitary Protection Zone is also defined based on the sanitary classification of a company, plant or other facilities.

The size of a Sanitary Protection Zone is determined in compliance with Russian Federation SanPiN 2.2.1/2.1.1.1031-01 Sanitary Protection Zones and Sanitary Classification of Companies, Plants and Other Facilities in the process of Project design. Land within the boundaries of the Sanitary Protection Zones *cannot* be used for:

- Collective or individual gardens and dachas,
- Fresh water treatment and storage facilities,
- Food processing enterprises,
- Production of equipment, package, glassware, etc., for the food processing industry,
- Warehouses for manufactured goods, and
- Sports facilities, recreational parks, educational facilities, public health facilities, sanatoriums and the like.

Land within the boundaries of the Sanitary Protection Zones can be used for:

- Growing of technical crops not used in the food industry,
- Fire stations,
- Bathhouses, laundries, and
- Other enterprises that have a lower hazard class than the main enterprise.

According to Russian regulations, losses incurred by the land user due to the restriction of use of agricultural land is subject to compensation. Funds for the sanitary zone organisation and development, including resettlement, where necessary, are budgeted by the Project at the design stage.

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Resettlement issues in Sanitary Protection Zones are considered on a case by case basis. There can be several compensation options:

- Monetary - payment to the land user for the cost of facilities and constructions located on the territory,
- Subcontract for moving the affected structures and facilities to a new place.

A Sanitary Protection Zone or any of its parts may not be viewed as reserved territory of a facility. Any expansion of the production facility will require extension of Sanitary Protection Zone boundaries.

7.2.4.2 Pipeline Sanitary Protection Zone

Pipeline Sanitary Protection Zone is defined by SanPiN 2.2.1/2.1.1.1031-0. It equals minimum safety distances and may vary from 150 to 300m depending on diameter and safety class of pipeline sectors. See table 7-12 for minimum safety distances. The width of the sanitary protection zones will be finalised at the work design stage.

The minimum safe distances are calculated based on the SnIP 2.06.06-85*.

TABLE 7-05: MINIMUM SAFETY DISTANCES FOR SAKHALIN-II PROJECT PIPELINE SPANS

	From Piltun-Astoch shorecrossing to OPF	From Lun-A shorecrossing to OPF	From OPF to LNG/OET site
Cities and other settlements, dacha cooperatives and/or collective gardens; agricultural and industrial enterprises, garages and open parking spaces, individual public buildings (schools, hospitals, recreation centres, railroad stations, airports, ports and harbours.	150m	200m	300m

The minimum safety distance specified in Table 7-05 could be reduced provided the Special Technical Conditions for Sakhalin II Project are followed.

Because of the lack of harmful emissions from the pipeline the following regulations and requirements are to be implemented in the sanitary protection zone:

- No objects specified in SNiP 2.05.06-85 are to be located within the sanitary protection zones limits,
- Safety protection zones will be established to avoid pipeline damage. These will extend 25m from the pipeline axis on either side. There will be no physical boundary to demarcate these zones,
- For the water crossings safety protection zones will extend 100m from either side of the pipeline,
- According to the *Rules of Protection of Gas Distribution Networks* any activity that could affect pipeline operation are forbidden in the safety protection zones, and
- Agricultural works, including crop growing, is allowed in the sanitary protection zone are allowed following the notification of the pipeline operator.

7.2.4.3 Safety Protection Zones

Safety Protection Zones are created along the gas distribution networks, trunk pipelines and other facilities in order to provide for safe operations and avoid the pipeline damage. The procedure for determining the size of Safety Protection Zones is regulated by Rules of Protection of Gas Distribution Networks (approved by the Decree of the Russian Federation government dated November 20, 2001 No. 878) and Rules of Protection of Trunk Pipelines (in edition of Russian Federation Gosgortekhnadzor dated November 23, 1994, No. 61).

TABLE 7-06: TYPES OF SAFETY PROTECTION ZONES MARKING

Facility	Way of use	Type of Marking	Size
Single or multiple pipeline route(s)	As a plot of land	Bounded by lines that extend X metres on each side of the pipeline axis.	50m
	Agricultural land		25m
Around main and intermediate transfer pumping and booster stations, tankages, compressor and gas-distributing stations, gas flow observation centres, oil cargo piers, underground gas storage stations, oil and petroleum products heating stations, liquid ammonia distributing stations	As a plot of land	Delimited by a closed line.	100m away from the boundaries

Like sanitary zone areas, pipeline Safety Protection Zone land is not withdrawn from land users, and does not require land allocation. Safety protection zone land can continue to be used for agricultural or other needs, with the following restrictions applied by Russian regulations:

- No structures of any kind within the Safety Protection Zone,
- No collective gardens and/or living premises,
- No planting of trees or shrubbery,
- No storage/warehouses, and
- No car parking areas, etc.

If there are other engineering communications belonging to other companies within the boundaries of the Safety protection zone, the operating company signs a contract determining joint actions aimed at providing safe operation of these facilities with the owner of the above communication. Besides, each case of gas pipeline crossing of Safety Protection Zones of motor and railroads, engineering communications, rivers, water reservoirs, farms, etc. should be approved by the affected organisations and land users.

The operating company pays losses incurred by the land users due to the limitations of allowed activities and/or land deterioration due to the restrictions imposed by Safety protection zones. Calculation of the amount of losses is part of the land allocation file and is guided by the Russian regulations.

7.3 INFRASTRUCTURE UPGRADE PROJECT

The current infrastructure on Sakhalin Island is unable to support the planned level of onshore and offshore oil and gas development. As a result SEIC is planning to invest several hundred million US\$ in infrastructure improvements. These will include road, bridge and culvert upgrades and replacement. Forty-four bridges and about 150 kilometres of public roads will be upgraded, repaired, or replaced during the Project and similar stretches of new roads will be built, some to replace roads that will no longer be accessible because of the Phase 2 Project. Ports and railways will also be upgraded where required. In many cases, work will be done on public or publicly used assets in partnership with the local authorities. The infrastructure upgrade programme is also a way of providing long-term benefits to the island and its communities.

Infrastructure Upgrade Project is described in detail in the EIA (Volume 6, Chapter 2).

7.4 PIPELINE

7.4.1 General Description of the Pipeline Corridor and Uses by Individuals, Collective Farms, etc.

The pipeline corridor, 816km in length, is the Project's single largest temporary land need with just over 3,300ha for actual construction and another 12,000-24,000ha for sanitary protection and safety protection zones. Just over 70% of this corridor is forested. The term 'forested' includes areas historically logged, denuded by the major forest fires of the 1980s and 1990s, as well as areas which would best be described as open Taiga.

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Most of the district centres are located along the Okha-Korsakov road that crosses the island from the South to the North, winding through the valleys between mountain ridges. A railway line from Nogliki in the North to Korsakov stretches almost parallel to the main road. Flora and fauna between the two has been significantly changed by human industrial activity.

The pipeline route, to the extent possible, follows the existing footprint, running parallel to the railway and the road for a substantial part of the route (except for in the Makarov area), avoiding communities. It maintains a minimum separation from existing structures of 300m as required by Russian Federation Sanitary Regulations - SNIiPs. More information about the Russian Regulation can be found in Section 7.2.

The pipelines cross the road and the railroad at a number of locations. In several locations the pipeline route will run parallel to existing or planned overhead power lines. Suitable mitigation measures will be installed in each case to protect both pipelines.

About 18% of the pipeline ROW (591ha) is classified as agricultural land although less than 5% crosses land under active cultivation with food crops. Due to the harsh climatic conditions Sakhalin is classified as an area of risk farming. There are no commercial gardens. Only 2% of the total island area is classified as agricultural land, which includes tillage, haylands, pastures and reindeer pastures in the North.

The limited impact on agricultural land is not surprising. Historically Sakhalin was developed for use as a penal colony (colonial Russia), for oil exploration (the USSR and Japan), natural resources exploration such as coal and lumber (USSR and Japan) and as a strategic military outpost (USSR) for the Pacific region.

7.4.2 The Pipeline Route and Traditional Land Use

The pipeline ROW roughly parallels the Okha-Yuzhno-Sakhalinsk and railway corridor south to the LNG site in Korsakov. Many Sakhalin communities are situated in this transportation corridor, among them communities with small but significant concentrations of indigenous people.

The pipeline comes onshore in the northernmost edge of Nogliki District and the southeastern corner of Okha District in an area used by Uilta (Orok) reindeer herders as summer reindeer pasture from about mid-May to August. These pastures extend north of the pipeline ROW to the southeastern shores of Piltun Bay and south of the ROW to the Botasino and Khantuza rivers. Between these points, much of the pipeline ROW and access roads cut across spring reindeer pastures. Some of these pastures were severely damaged in major fires in 1989 and 1998 and herders are currently using the remaining intact pastureland.

In addition, the area near Piltun Landfall is used for fishing, both by the reindeer herders and by indigenous (Nivkh) clan enterprises, particularly in the south of Astokh Bay, on the Panitu Lakes, and in the north of Chaivo Bay. This area is also used for hunting.

Close to Val, several areas for berry-picking will be impacted by construction of the pipeline and improvement of existing access roads, while a temporary workers' camp in Val itself may block access to a local berry ground. The pipeline ROW crosses the rivers Val, Askasay and Evay, which are used by indigenous residents of Val for subsistence fishing.

Further south the pipeline crosses the rivers Malye Veni and Bolshie Veni, where local residents and clan enterprises fish. Close by, another clan enterprise has its hunting grounds. Around Venskoye (Veni) a number of berry grounds will be impacted by pipeline and access road construction. Berry grounds on the marshy land along the rivers Malye and Bolshie Veni is important to local users as it survived the 1998 forest fires that destroyed other berry grounds in the area.

Project related construction may impact the fisheries of Nyisky Bay since the pipeline ROW will cross several of its tributaries. Several clan enterprises fish on Nyisky Bay and Nivkh families come to this area for seasonal fishing. Indigenous residents of Nogliki practice recreational fishing for personal use on the Tym River, which will be crossed by the pipeline ROW. Construction works are also likely to impact certain berry grounds close to Nogliki.

7.4.3 Users Within the Direct Construction Zone

The pipeline route crosses the land of 39 state agricultural enterprises, co-operatives and rural administrations.

TABLE 7-07: AGRICULTURAL ENTERPRISES WITHIN THE PROJECT DIRECT CONSTRUCTION ZONE

#	Name of Agricultural Enterprises	Community
Tymovsk District		
1	Molodezhnoye collective farm	Ado-Tymovo
2	Kirovskoye collective farm	Voskresenovka
3	Krasnaya Tym collective farm	Krasnaya Tym
4	Voskhod village administration	Voskhod
Smirnykh District		
5	Gorban Farm	Smirnykh
6	Polyana agricultural company	Buyukli
7	Buyuklovskoye collective farm	Buyukli
8	Onor administration	Onor
9	Roschino village administration	Roschino
10	Pobedino village administration	Pobedino
11	Buyukly village administration	Buyukli
Poronaisk District		
12	Zarya collective farm	Malainovka
13	Malinovskiy collective farm	Zabaykalets
14	Gastello village administration	Gastello
15	Vostok village administration	Vostok
Makarov District		
16	Makarovskoye collective farm	Novoye
17	Ekor-Sakhalin company	Zaozernoye
18	The Novoye village administration	Novoye
19	Gornoye village administration	Gornoye
20	Pugachevo village administration	Pugachevo
Dolinsk District		
21	Dacha Cooperative Rucheyok	Dolinsk
22	Sokolovskoye collective farm	Sokol
23	Dolinsk collective farm	Oktyabrskoye
24	Sovetskoye collective farm	Sovetskoye
25	Pokrovka administration	Pokrovka
26	Vzmorye administration	Vzmorye
Yuzhno-Sakhalinsk		
27	Leninskoye Znamya state farm	Dalneye
28	Farm of V.I.Gorbunov	Yuzhno-Sakhalinsk
29	Komsomolets state farm	Lugovoye
Aniva District		
30	Troitskoye village collective farm	Troitskoye
31	Novotroitskoye village collective farm	Novotroitskoye
32	E Chen Bek Farm	Yuzhno-Sakhalinsk
33	Troitskoye village administration	Troitskoye
Korsakov District		
34	Federal Unitary Agricultural Enterprise 'Sovkhoz Korsakovsky'	Chapaev
35	P.I.Melnichenko, farmer	Korsakov
36	V.I.Bogomazova, farmer	Korsakov
37	Administration of Chapaev village	Chapaev
38	Katsubo, farmer	Prigorodnoye
39	Emeev, A.S., farmer	Prigorodnoye

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7.4.4 Major Characteristics of the Pipelines

The following table summarises the key characteristics of the pipeline in relation to land needs, except for access roads and block valve station. As will be described in Section 7.5, the width of the right-of-way is set by regulation on the basis of the type of line (gas or oil) and the size of the pipe. In most cases the primary determinant of right-of-way width is the size of the gas pipeline. The pipeline ROW width from Piltun to OPF is set by the requirement for the Fiber-Optic Cable (FOC).

TABLE 7-08: RIGHT-OF-WAY WIDTH

Location	Km	Right-Of-Way	Width (m)	Gas Line		Oil Line	
				Inches	mm	inches	mm
Piltun-Astokhskoye to OPF (Total 172km)	2	Shoreline to Pig Trap Station	53.0	2x14	2x356	2x14	2x356
	158	Pig trap station to 12km upstream of OPF	36.0	20	508	20	508
	[12]	12km upstream to OPF	66.0				
OPF to LNG/OET (Total 637km)	[12]	OPF to 12km downstream	66.0	48	1219	24	610
	625	12km downstream to LNG/OET	Agricultural Land Non-Agricultural Land	55.00 43.00			
Lunskoye to OPF	7	Shoreline to OPF	57.50			30*	762*
Total Length	816						

Note: Shaded area represents a combined corridor, which is 12km in length and includes the 2 x 20" pipelines from Piltun shoreline and the 48" gas and 24" oil lines to the LNG/OET site.

* Gas and condensate

The oil and gas that flows from the Piltun-Astokhskoye A and Piltun-Astokhskoye B platforms comes onshore via four offshore 14" pipelines at the Piltun landfall. Two of the pipelines transport oil from the Piltun-Astokhskoye A and Piltun-Astokhskoye B platforms and two transport the gas from the platforms. The four pipelines are terminated just inland of the landfall at scraper receivers (pig trap station) and a manifolding arrangement that allows the oil and gas to be directed into two 20" pipelines. One of the 20" pipelines will be dedicated to gas transport and one to oil transport.

From the Piltun landfall manifold the 20" pipelines proceed south for approximately 41km to the Boatasyn GDT. At this point a spur from the gas pipeline will be tied-into the terminal to allow supply of gas to the mainland of the Russian Federation. The pipelines then continue south for approximately 85km towards Nysh and turn east to the OPF for a total distance from Piltun landfall of approximately 172km.

The gas flow from the Lun-A platform comes onshore via two offshore 30" pipelines at the Lunskoye landfall. The pipelines proceed east for approximately 7km to the OPF. A 4.5" pipeline is also installed in this corridor transporting a corrosion inhibition agent, mono-ethylene-glycol (MEG).

From the OPF a 48" gas pipeline and a 24" oil pipeline exits in a westerly direction for approximately 42km towards Nysh and then turns south towards the LNG Plant for a total distance OPF to LNG of approximately 637km.

In order to maintain flow in the pipelines pumps and compressors are required. The first gas compressors and oil pumps are located at the first Booster Station (BS#1) which is co-located with the OPF. A second gas compression and oil pumping station will be located approximately mid way between the OPF and the LNG Plant. This station (BS#2) is approximately 320km south of the OPF and is located just north of the settlement of Gastello). The installation of the gas compressors and oil pumps is not scheduled until 2008 or later. However an intermediate pig trap station will be located adjacent to this future compressor and pump station.

7.4.5 Pipeline Route Description

7.4.5.1 Piltun Field Oil to the OPF

The pipelines cross relatively flat terrain. However, there are significant areas of class 1, 2 and 3 marshland, stream and river crossings. The pipelines cross approximately 60 water bodies, mostly drying up brooks, brooks and ponds, but they include some five major rivers. The EIA has details about the SEIC River Crossing Strategy.

The Val, Tym, Nabil and Vazi rivers will be crossed by means of the Horizontal Directional Drilling (HDD) Method. A fibre optic control/telecommunications cable will also share the same ROW as the oil and gas pipelines.

The pipelines run parallel to, and cross several existing oil and gas flowlines and pipelines operated by Rosneft-Sakhalinmorneftigas. The main Nogliki to Okha road and narrow gauge railway also parallel the pipelines and are as close as 200m from the ROW in places.

The proposed pipeline route will run through other oil and gas companies operating areas. It is also possible that construction of a planned pipeline by Exxon Neftegas Ltd. will be under construction at the time of construction of this pipeline and will necessitate crossing of the planned pipeline.

7.4.5.2 OPF to LNG/OET

The route of the main oil and gas trunk lines from the OPF to the OET/LNG Plant at Prigorodnoye is described below. The route description is common to both 24" and 48" oil and gas pipelines. A fibre optic control/telecommunications cable will also share the same ROW as the oil and gas pipelines.

The pipelines cross a variety of terrains, ranging from flat to hilly to mountainous in the Makarov District. The route through the Makarov mountain range encounters peaks of up to 400m with steep ascents and descents.

There are significant areas of class one, two and three marshland, stream and river crossings. The pipelines cross approximately 1,043 water bodies, mostly drying up brooks, brooks, ponds, irrigation canals and minor rivers which are not important for the salmon fishing industry, but they do include some 91 salmon spawning rivers. The Nabil, Vazi, Tym (second crossing), Buyuklinka, Firsovka and Naiba rivers will be crossed by means of the HDD Method.

7.5 REGULATORY BASIS

The Russian Federation has an extensive body of regulatory requirements covering almost every aspect of the siting of pipelines and pipeline corridors. Major requirements are described or set by:

- *Land Code* of Russian Federation,
- SNiP 2.05.06-85*, *Trunk Pipelines*,
- SN 452-73, *Land Allocation Norms for Trunk Pipelines*,
- *Rules of Protection of Gas Distribution Networks* (approved by the Decree of the Russian Federation government dated November 20, 2001 No. 878),
- *Rules of Protection of Trunk Pipelines* (in edition of Russian Federation Gosgortekhnadzor dated November 23, 1994, No. 61), and
- Requirements of the Regional and District authorities.

7.5.1 Distances Between Pipelines

Distances between pipelines, widths of construction corridors, siting requirements, numbers of required block valves, etc. are set by regulation. The practical result of compliance with this regulatory basis makes the project comparable to the vast majority of pipelines now being built elsewhere in the world:

- Construction corridors are wider,
- More block valves are installed, and
- More permanent access roads are required.

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7.5.2 Construction Corridor Width

The width of the construction corridor is one of the major determinants of environmental impacts. Key components of the final width are described below.

7.5.3 Treatment of Multiple Parallel Pipelines

Regulations state that the width of land, allocated for temporary short-term use during the construction period of two and more parallel trunk buried pipelines will be taken as that equal to one pipeline ROW (Table 7-09) plus the distance between the axes of the outermost pipelines.

7.5.4 Distance between pipelines in a single corridor

The Project consists of one oil and one gas line in a single construction corridor. Russian regulations stipulate the minimum distances between pipes to be constructed in a single corridor. These requirements are set forth in SNiP 2.05.06-85* Trunk pipelines and SN 452-73, Land Allocation Norms for Trunk. (Note: Onshore pipeline PSTS refers to SNiP 2.05.06-85* on the minimum distances between pipelines.)

In the case of the Sakhalin II Project this varies between nine and 18 metres.

The Sakhalin II pipelines also have FOC running parallel to them. The FOC will be used as the telecommunications backbone for the Sakhalin II Project and will transfer command and control information between Project sites. Russian Regulations require that the cable is maintained at a distance of nine metres from the edge of the nearest pipeline. This has the effect of increasing the construction corridor by around four metres.

7.5.5 Width of the Right-Of-Way

The width of the right-of-way is set by the size of the pipe and the land classification as described in SN 452-73. Table 7-10 lists the required right-of-way widths for a single pipeline based on type of land crossed. The required minimum distances between the two pipelines and the FOC further expanded the final width of the Sakhalin II ROW.

TABLE 7-09: LAND ALLOCATION NORMS FOR TRUNK PIPELINES

Width of ROW for One Buried Trunk Pipeline	Inclusive Pipeline Diameter, mm		
	426-720	720-1,020	1,020-1,220
Type of land			
Land of non-agricultural designation or non-suitable for agriculture, and land of the State Forestry Fund	23	28	30
Land of agricultural designation inferior in quality (when removing and restoring fertile soil layer)	33	39	42

7.5.6 Siting Criteria

One of the most important siting criteria, and the basis on which most impacts to communities are avoided is the siting requirements described in SNiP 2.05.06-85.

During the original pipeline route and setting out of surveys requirements, the surveyors were directed to attempt to avoid existing settlements by a minimum of 300m taking into consideration not only the minimum distances required but also those of the specific Safety Protection Zones.

Table 7-10 below lists some of the key siting criteria which established the minimum distances to settlements, houses, and schools, and a variety of public facilities and utilities. In most cases the pipeline is sited at much further distances than the minimum specified. In areas where this was not possible the thickness of the pipeline wall has been increased to offer additional safety factor.

TABLE 7-10: MINIMUM SAFETY DISTANCES SET BY SNIP 2.05.06-85* FOR TRUNK PIPELINES

Type of Pipeline	Gas		Oil and Petroleum Products	
	OPF to LNG	To OPF	OPF to OPF to	To To
Relative Pipeline Diameter (mm)	1,000-1,200	300-600	500-1,000	300-500
<ul style="list-style-type: none"> Cities and other types of populated centres; suburban settlements Green-house facilities and farms; collective garden plots with garden houses Separately placed buildings intended for large gathering of people (such as schools, hospitals, clubs, kindergartens and day nursery establishments, passenger terminals, and the like) Separate industrial or agricultural enterprises Railway stations, airports, sea and river ports and wharves 	300	150	150	100
Th following separately located facilities: <ul style="list-style-type: none"> 1-2 floor residential houses Suburban recreation houses Cemeteries Farms and fenced cattle pastures 	225	125	75	50
Separately placed non-residential and auxiliary buildings	175	50	30	30
Highways, Roads, and bridges depending upon types	175-225	50-150	30-150	30-100
Permanent roads made adjacent to the right-of-way intended for servicing the pipelines only	No LT 10	No LT 10	No LT 10	No LT 10

Notes: Distances specified in the Table will be taken as follows:

- For cities and other population centres - starting from the design city boundary for the design period of 20-25 years,
- For separate industrial enterprises, railroad stations, aerodromes, sea and river ports and wharves, hydroengineering structures, warehouses for combustible and flammable materials, artesian wells - from boundaries of the allocated sites with due account of their future expansion,
- A separately placed building or structure will be understood as a building or structure located beyond a population centre at a distance of no less than 50m from the nearest buildings or structures,
- Minimal distances from the axes of gas pipelines to buildings and engineering structures, where the pipeline is laid above ground, specified will be increased by a factor of 1.5-2. Applies to sections of above ground pipeline more than 150m long,
- Onshore pipeline PSTS allows to decrease the distances specified in the table up to 50% provided that safety class for such pipeline section will be assumed one class higher than determined in table 2.1 of the PSTS, and
- Onshore pipeline PSTS for gas pipelines installed in the forest areas allows the minimum distance from the rail and motorway is acceptable to be decreased up to 30% without increasing the safety class of the pipeline section.

7.5.7 Block Valves

About 150 block valve stations will be constructed along the pipeline. Block valves are designed to shut down the flow of gas or oil in the event of a pipeline rupture. They will be distributed as follows:

TABLE 7-11: NUMBER OF BLOCK VALVES

Location	Number of Block Valves	
	Gas Pipelines	Oil Pipeline
Piltun-Astokh - OPF	10	27
OPF to LNG/OET	35	82
Lunskoye-OPF	5 total	

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Each valve station will occupy an area of about 100m by 100m and are sited directly over each pipeline. The number of block valve stations and locations are also stipulated under Russian regulation. In general block valves are installed as follows:

TABLE 7-12: BLOCK VALVES INSTALLATION REQUIREMENTS

Type of Pipeline	Installation Requirement
Gas	<ul style="list-style-type: none"> • At about 30km intervals. • Seismic fault crossings.
Oil	<ul style="list-style-type: none"> • Crossings of water bodies which are of high importance to the salmon fishing industry. • Seismic fault crossings. • In no case more than 30km apart.

As per Russian regulations each block valve must be accessible by construction of permanent access road or helipads where no access by road is possible.

Size of block valve sites will exceed the one stipulated in Russian regulations, due to the following:

- Installation of the block valves of two pipelines on one site,
- Installation of Power Generation Equipment, and
- Installation of control devices.

7.5.8 Pig Trap Stations

Pig trap stations will be constructed at the Piltun Landfall and within facility sites at the OPF, Castello booster station, and OPF.

TABLE 7-13: PIG TRAP STATIONS

Location	Traps
Piltun Landfall	<ul style="list-style-type: none"> • Four incoming 14" offshore oil and gas pipelines. • Two outgoing 20" onshore oil and gas pipelines to the OPF.
OPF	<ul style="list-style-type: none"> • Two incoming 20" onshore oil and gas pipelines from the Piltun landfall. • Two incoming 30" onshore multiphase pipelines from the Lunskeye landfall. • Two outgoing 24" oil and 48" gas pipelines to the OET/LNG Plant.
Castello Booster Station	<ul style="list-style-type: none"> • One OPF-OET 24" oil pipeline. • One OPF-LNG Plant 48" gas pipeline.
LNG	<ul style="list-style-type: none"> • One incoming 48" onshore gas pipeline from the OPF.
OET	<ul style="list-style-type: none"> • One incoming 24" onshore pipeline from OPF.

7.5.8.1 Piltun Landfall Site and Pig Trap Station

The northernmost pipelines will be pulled ashore at the Piltun landfall. It will also be the site of a permanent pig trap station, block valve site, and telecommunication tower. This facility is located within the summer pastures of the Uilta Reindeer herders and has been the focus of extensive consultation. Existing access road OA1/NA1 will be used to access the site.

In general construction activities in the Piltun shore area will run more or less continuously from October 2003 to summer 2005. The shore pull for the offshore pipelines will be done over a 40-day period in 2004 or 2005. The construction for the pig trap stations and telecommunication tower will take significantly longer as will the preparatory works for the shore pull.

There will be increased traffic on the access road to carry quarry materials and pulling equipment at the start of construction. About 50 pieces of equipment are expected to be used including cranes, bulldozers, excavators, cat loaders, and dump trucks.

Around 40-50 workers will be involved for the shore pull works. For onshore pipelines it can be expected that 200 to 300 workers will be in the area at peak construction periods. As currently planned they will be based in the temporary construction camp in Val. Workers will be transported to the site in three shifts per day since construction will take place 24 hours a day, seven days a week. The preliminary schedule of construction is illustrated in the table below.

TABLE 7-14: PILTUN LANDFALL PRELIMINARY SCHEDULE OF CONSTRUCTION

Time Period	Length of Work	Activity
Summer 2003		Site preparation (grubbing, grading, etc.) for construction pad.
June 2004 or 2005	10 days	Excavation of 247m long pipeline trench (not fenced).
Mid-July	6-7 days	Pipeline pulled on shore and the welds tested.
Early August	20 days	Trench back filled.
Late August/early September	17 days	Pre-commissioning activities begin.

7.5.9 Pipeline Access Roads

As part of the pipeline construction effort both temporary and permanent access roads will be built. For a discussion of the actual classification and permitted uses see Section 7.2.4. To the extent possible, existing access roads will be used.

7.5.9.1 Permanent Access Roads to Fixed Facility Sites and Pipeline

Permanent access roads will be constructed and maintained to the following locations:

- Piltun Landfall and Telecom Tower (OA1/NA1),
- Gas Disposition Terminal - only very short spur road about 50m long is required from the existing road,
- OPF (South Access Road), and
- Block valves and pig trap stations.

The roads to block valve locations will be designed and constructed in accordance with SNiP 2.05.07-91* *Industrial Transportation Permanent access roads* will be category (IV-B). All other roads will be Category V.

TABLE 7-15: PERMANENT ACCESS ROADS

Road Designation	Location	District	Length (km)
PA OA1/NA1	Recently upgraded by Sakhalin I Project.	Okha/Nogliki	21.5
PA OA2	Existing access to ROW, no culverts required if construction is carried out in winter.	Okha	10.0
PA NA28	Route is well graded and maintained. Could not continue beyond the security post at 12.5km (Vostokneftgaz). May need work beyond that point.	Nogliki	31.0
NA35	Southern access road, work in progress.	Nogliki	54.0
MA18	Road is on good material but is rough and in need of grading.	Makarov	16.2
Total			132.7

Extensive fieldwork has been completed on identifying access roads which could be used during construction. In most cases already existing roads will be used and/or upgraded.

The following table is summarised from a master list of potential access roads for pipeline construction and operations developed in mid-2002.

Roads were classified as existing or new based on field observations made. Existing roads included public roadways (in some cases major roads), and those that need improvement to be suitable for use during construction.

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TABLE 7-16: ACCESS ROADS CLASSIFICATION

Roads	Examples	Total		Construction		Permanent	
		No.	Km	No.	Km	No.	Km
Existing	Good condition-Includes Public roads.	42	114.4	42	114.4	28	75.3
Existing	Needs improvement to facilitate construction traffic.	79	154.2	79	154.2	30	114.1
Existing/New	Mixed existing/track.	13	19.2	13	19.2	4	10.1
New		31	33.4	5	4.6	27	31.3
Total		165	321.2	139	292.4	89	230.8

Twenty-two of the new permanent access roads (total length 26.7km) are not needed for construction but will be required during operation of the pipelines to secure access to block valve stations for maintenance purposes.

7.6 SITES FOR TEMPORARY PIPELINE CONSTRUCTION CAMPS, LAYDOWN YARDS, AND OTHER ANCILLARY FACILITIES

7.6.1 Introduction to the Site Selection Process

Site selection for pipeline construction-related facilities has been a complicated, time-intensive process, which was started in 1998. For planning purposes, the pipeline was divided into segments called work areas or spreads. Each spread covers a linear distance of between 154 and 180km.

For design purposes, a five-construction spread was the basis for campsite selection purposes. The number and locations of spreads will be finalised once the construction contracts have been awarded to suit the construction contractors' logistics and construction planning. However, based on review of site proposed by contractors during the tender process it is anticipated that the vast majority of the sites described below will be used as described.

At the time this report was prepared SEIC was proceeding with acquiring land for potential use for pipeline construction camps, pipe laydown yards, and other ancillary facilities. Final siting is not yet completed in a few communities. Preliminary Land Allocations had been submitted for ten camps and 12 laydown yards.

Locations for camps and storage areas were selected based on criteria of efficiency, community considerations, and guidelines or regulations that govern the proposed type of construction usage. Initially locations in as many as 25 of the 52 communities along the pipeline route were considered.

7.6.2 MAJOR TYPES OF FACILITIES

7.6.2.1 Construction Camps

Construction camp is a site designed for medium term occupation of about six months to a number of years (more for major onshore construction sites such as OPF and LNG/OET). The camps will be installed prior to the construction period of these facilities and will have facilities for personnel such as living accommodation, catering, social facilities and sanitary conveniences, including water supply and distribution system, a wastewater collection and treatment and disposal. There will be an onsite temporary waste storage, fuel will be stored and generators will be operated. The sites will have vehicle access to the main road, a helicopter pad for emergency use and a peripheral security fence.

Camp units will arrive pre-fabricated and be placed on designated points on the site. As part of camp closure, the units and mobile wastewater treatment units are removed.

7.6.2.2 Laydown Yards

Pipe lay-down yards are areas designated and prepared to accept pipes for temporary storage before they are finally transported to the pipeline corridor and laid. The pipes will be transported via the existing rail network from the port of landing to the lay-down yards. Rail spurs will be built to access the lay-down yards. The pipes will be offloaded from the wagons and stored on site.

7.6.2.3 Support Bases

Support bases are not expected to have any facilities erected, but will be used for mobile equipment and pipes storage.

7.6.3 Siting Criteria for Construction Facilities

Pipeline routing alternatives (as well as the project alternatives considered so far) are discussed in the EIA Volume 1, Chapter 4.

7.6.3.1 Project Siting Criteria

Project needs were one of the primary siting criteria and were largely determined by the configuration allowing local workers to walk to work.

The most important criteria for laydown yards in Nogliki and south of Nogliki were the distances to the railroad. This was due to the fact that pipe will be transported by rail to laydown yards, where two segments will be welded and then transported to the construction corridor.

Distances to the main roadway and pipeline ROW were also important criteria. Others included:

- Distance to communities allowing local workers to walk to work,
- Distance to power transmission line,
- Availability of a surplus water supply,
- Land classification and ease of acquisition,
- Previously used (but not contaminated) brown field sites,
- Land types,
- Any physical barrier available between a camp and a community (e.g. railway), and
- Scope of work for area clearance activities.

Transportation issues were important considerations at some sites. Attempts were made to site the facilities in such a manner as to by-pass (or allow to be by-passed) roads through communities. Noise and dust was also considered.

7.6.3.2 Siting Criteria Under Russian Regulations

Russian regulations related to the siting of facilities are stringent, and determining whether sites meet these criteria often limited the number of potential sites in communities to one or two locations. For example, siting criteria require substantial setbacks from salmon spawning rivers and hatcheries, minimum distances are required from community water supplies, facilities must have ground-water monitoring systems, etc.

By meeting Russian regulations, many actions which are typically included in environmental documents as mitigation measures for potential impacts are already taken into consideration under Russian law.

Community considerations related to Project land needs were taken into account, following the baseline collection and Impact and Mitigation consultations (Section 5.6.1).

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7.7 SITES FOR PERMANENT FACILITIES

Project Permanent Facilities for each asset are described in detail in the Project description chapters in the EIA (Chapters 2 of Volumes 2, 3, 4, 5 and 6).

7.8 REMEDIATION AND RETURN OF LAND AFTER CONSTRUCTION⁴

In accordance with normative and legislative base of Russian Federation, remediation of disturbed land and land under disturbance should be carried out in two stages:

- Engineering remediation (technical stage), and
- Biological remediation (biological stage).

Engineering remediation of land under disturbance includes the following measures:

- Project permitting, remove fertile soil layers from some areas of construction sites and store them,
- Construction completed, return previously removed fertile soil layers to construction areas, and
- Load vehicles with fertile soil layers and transport the layers to low capacity land. Cover the area of low capacity land with the delivered fertile soil layers.

Biological redemption implies the following measures:

- Agro-engineering measures to increase soil fertility - mechanised application of mineral fertilisers and organic manure to restore soil structure, complete cultivation of soil to cover the land with fertilisers and restore soil structure, pre-plant soil compacting, and
- Sowing of perennial plants to restore natural and anthropogenic cover.

The actual process depends upon a variety of environment, soils, and degree of construction disturbance among others. A detailed Soil Reclamation and Erosion Protection Plan is required as part of the FLA. For more information consult the EIA Volume 1, Chapter 6.

TABLE 7-17: COMMON USE ROAD BRIDGES - STAGE 1

Item	Bridge Location	Crossing	Scope Category	Length of Bridge (m)	Length of Approaches (m)
Yuzhno-Sakhalinsk to Korsakov Road					
1	33.997	Chkalovka River	Culvert		50
2	34.662	Ulitovka River	Culvert		50
Yuzhno-Sakhalinsk to Okha Road					
3	445.217	B. Taoulan River	Replacement	59	500
4	456.289	Sergeevka River	Culvert		400
5	466.093	Krasnaya River	Replacement	41	470
6	513.366	Perviy Skop Creek	Replacement	21	730
7	517.221	Berezoviy River	Culvert		500
8	580.542	Verveli River	Replacement	47	500
9	594.619	Chibri River	Replacement	77	1,330
10	119.628	Railway Crossing	Replacement	61	0
11	145.694	Railway Crossing	Repair	40	
12	145.834	Travyanaya River	Repair	50	
13	310.500	Leonidovka River	Repair	182	
14	328.659	Matrosovka River	Repair	137	
15	438.736	Daldagan River	Replacement	21	400
16	451.673	Zaprudnaya River	Replacement	18	490
Total					5,420

⁴ Source: As per Sakhalin II Project. Preliminary Design Materials. Assessment of Condition of Soil, Land Resources and Remediation of Land.

TABLE 7-18: COMMON USE ROAD BRIDGES - STAGE 1A

Item	Bridge Location	Crossing	Scope Category	Length of Bridge (m)	Length of Approaches (m)
<i>Yuzhno-Sakhalinsk to Okha Road</i>					
1	20.177	Kolka River	Repair	30	
2	118.226	Manoui River	Repair	52	
3	134.729	Railway crossing	Repair	50	
4	433.797	Berezovka River	Temp + Replacement	12	500
5	442.932	M. Taoulan River	Temp + Replacement	12	500
6	456.855	Izvestkovaya River	Temp + Culvert		200
7	464.538	Creek	Temp + Culvert		200
8	501.654	Creek	Temp + Replacement	21	500
9	528.160	Creek	Temp + Culvert		200
10	542.887	Creek	Temp + Replacement	21	200
11	544.545	Vos' River	Temp + Replacement	48	500
12	546.344	Creek	Temp + Culvert	12 ?	500
13	547.331	Kouvi River	Temp + Replacement	36	600
14	549.377	Gogy River	Temp + Culvert	12 ?	500
15	552.372	Khuma River	Replacement	36	500
16	555.464	M. Irkirka River	Temp + Replacement	24	500
17	556.743	B. Irkirka River	Temp + Replacement	36	500
18	559.597	Shiryaev Creek	Culvert	24 ?	200
19	563.266	Paga Creek	Replacement	24	500
20	565.666	Arga River	Replacement	36	500
21	568.897	Chkharnka River	Temp + Replacement	36	500
22	584.198	Vezli Creek	Replacement	36	500
23	587.517	Bezymyannyi Creek	Replacement	36	500
Total					8,600

TABLE 7-19: ROW LAND NEED AND TOTAL DISTRICT AREA

District	Area, ha	ROW, ha	%
Okha	1,481,590	72	0.005
Nogliki	1,379,500	750	0.054
Tymovsk	631,270	542	0.086
Smirnykh	795,900	448	0.056
Poronaisk	728,490	313	0.043
Makarov	214,800	576	0.268
Dolinsk	244,160	423	0.173
Yuzhno-Sakhalinsk	91,250	47	0.052
Aniva	269,000	211	0.078
Korsakov	260,450	100	0.038
Total	6,096,410	3,482	

Note: Total does not agree with Table 7-02 as the used reference documents were made at various stages of PLA and Project design. However, figures provide a good understanding of the ratio of the affected types of land and use.

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TABLE 7-20: PROJECT LAND NEEDS- PIPELINE AND PERMANENT FACILITIES*

District	Description	Pipeline	Permanent Facility	Camp (plus IUP)	Laydown Yard	Support Base	Permanent Access Roads/Bridges	Direct Impact Area (ha)**	Sanitary and Safety Zones (ha)***	Distribution by Land Type (ha)		
										Agricultural	Forest Fund	Land of Settlements
Pipeline (life-of-Project lease; reuse with restrictions)												
Okha	N/A	Y						72	360-720	-	49	-
Nogliki	N/A	Y						750	3,180-6,360	-	617	-
Tymovsk	N/A	Y						542	1,875-3,750	33	418	11
Smirnykh	N/A	Y						448	1,545-3,090	57	371	23
Poronaisk	N/A	Y						313	1,035-2,070	80	138	14
Makarov	N/A	Y						576	2,500-4,500	160	421	16
Dolinsk	N/A	Y						423	1,350-2,700	73	247	15
Yuzhno-Sakhalinsk	N/A	Y						47	150-300	15	7	-
Aniva	N/A	Y						211	255-510	146	4	13
Korsakov	N/A	Y						100	345-690	7	78	3
Total								3,482	12,595-24,690	571	2,350	95
Permanent facilities (used/maintained for life-of Project)												
Nogliki	Piltun Landfall		Y					6	-	-	-	-
Nogliki	OPF		Y	Y				103	120	-	103	-
Nogliki	Lunskoye Landfall							8			8	
Nogliki	Helipads (4)		Y					6	-	-	6	-
Nogliki	GDT		Y					1	10	-	1	-
Tymovsk	Helipad		Y					2	-	-	2	-
Poronaisk	Gastello Booster Station		Y	Y				35	154	-	35	-
Korsakov	LNG/OET (includes construction camp and laydown yard)		Y					487	459	356	3	16
Total								648	743	356	158	16

*Totals of the columns Direct Impact Area, Distribution by Land Types and Distribution by Types of Use do not agree as the used reference documents were made at various stages.

**Reroute is not taken into account.

***According to SanPIN 2.2.1/2.1.1.1031-0, pipeline sanitary protection zones equal minimum safety distances and may vary from 150 to 300m depending on diameter and safety class. Sanitary protection zones maps, available in November 2002. Estimate is approximate and might be subject to change.

****First Total gives numbers for pipeline ROW and Permanent Facilities.

*****Data based on the sensitive areas survey. Might change after the land marking is completed.

*****Number of structures, including houses, barns, cow sheds and green houses.

*****Preliminary data, might change after the land marking is completed.

Distribution by Land Type (ha)			Type of Use (ha)							Number of Land Users in Direct Impact Zone****					Assets	
Transport, Industry, Military, Other	Protected Territories/ Recreational	State Land Reserve	Tillage	Hayfields	Pastures	Forests and Bushes	Reindeer Pastures	Other land	Individual Land Users****	Agricultural Enterprises	Forestry/Timber Processing Enterprises	Enterprises and Organisations (non-agricultural, non-forestry or timber processing)*	Land of the Administration	Number of Structures *****	Kitchen Gardens, Orchards, Dachas *****	
-	-	10	-	-	-	49	18	10	-	-	1	2 ⁺	-	-	-	
-	-	47	-	-	-	617	80	41	1	-	1	3	1	-	-	
0	-	34	48	4	6	418	-	62	24	3	2	2	2	-	2	
2	-	22	1	3	-	371	-	51	5	3	2	2	5	-	-	
3	-	48	7	14	29	138	-	109	5	3	1	3	3	-	2	
1	21	2	3	123	-	421	-	68	2	2	1	3 ⁺	5	-	2	
2	-34	15	24	14	23	247	-	107	7	5	1	2	2	3	3	
1	-	16	50	27	1	7	-	47	-	4	1	2	1	1	-	
0	-	28	29	12	26	4	-	52	3	4	1	2	2	-	-	
-	-	11	7	-	2	92	-	-	9	1	1	-	2	16	15	
9	55	233	169	197	87	2,364	98	547	56	25	12	18	23	20	24	
-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	
-	-	-	-	-	-	103	-	-	-	-	1	-	-	-	-	
-	-	-	-	-	-	6	-	-	-	-	1	-	-	-	-	
-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	
-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	
-	-	-	-	-	-	35	-	-	2	-	1	-	-	-	2	
10	4	98	-	-	192	279	-	16	7	1	1	1	1	16	4	
10	4	98	-	-	192	434	-	16	9	1	8	1	1	16	6	

of PLA and Project design. However, figures provide a good understanding of the ratio of the affected types of land and use.

lass of pipeline sectors. The width of the sanitary protection zones will be finalised at the work design stage. Estimates for permanent facilities are presented with regards to the data from

Chapter 7 Project Land Needs

TABLE 7-21: PROJECT LAND NEEDS- CONSTRUCTION CAMPS

District	Community	Description	Permanent Facility	Construction Camp	Laydown Yard	Rail Siding Improvement	IUP Supervision Camp	Temporary Access Roads	Permanent Access Roads/Bridges	Direct Impact Area (ha)	Sanitary and Safety Zones**
Construction (Camps/Laydown Yards, Support Bases, Sidings) - short term lease, restoration, return to previous owners											
<i>Nogliki</i>	Val	Camp/Laydown Yard		Y	Y					28	25
	Nogliki	Camp		Y						20	15
	Nogliki	Laydown Yard			Y					11	
	Nysh	Camp/Laydown Yard		Y	Y					54	50
<i>Tymovsk</i>	Yasnoye	Camp		Y			Y			44	17
	Yasnoye	Laydown Yard			Y					30	
<i>Smirnykh</i>	Onor	Camp/Laydown Yard		Y	Y					54	51
<i>Poronaisk</i>	Leonidovo	Camp		Y						17	12
	Leonidovo	Laydown Yard			Y					54	
	Poronaisk	IUP Camp					Y			0.5	
<i>Makarov</i>	Tumanovo	Camp/Laydown Yard		Y	Y					42	42
	Porechje	Support Base								3	
	Zaozernoje	Support Base								3	
	Pugachevo	Camp		Y						16	3
	Pugachevo	Laydown Yard		Y						21	9
<i>Dolinsk</i>	Sovetskoye	Camp		Y			Y			19	15
	Sovetskoye	Laydown Yard			Y					40	
<i>Aniva</i>	Mitsulevka	Camp		Y						32	32
	Mitsulevka	Laydown Yard			Y					31	
Total										519.5	271

TABLE 7-22: PROJECT LAND NEEDS - ACCESS ROADS

District	Temporary (ha)	Permanent (ha)
Okha	8	67
Nogliki	99	274
Tymovsk	85	20
Smirnykh	41	67
Poronaisk	55	63
Makarov	30	179
Dolinsk	36	61
Yuzhno-Sakhalinsk	3	3
Aniva	26	44
Korsakov	40	16
Total	423	794