Chapter 11 Protected Areas

11.1 INTRODUCTION

During the review of environmental documentation for the Sakhalin II development, the stakeholders to the project outlined a number of issues requiring clarification as a result of reviewing the international-style Environmental Impact Assessment (EIA) report (SEIC 2003). In brief, the focus of the questions raised by interested parties included the following matters:

- Supplementary information and description on the historical background, purpose and function of the Makarovsky and Izubrovy Reserves;
- Summary description of pre-construction survey Scopes of Work and results;
- Statement on commitment to implementation of mitigation measures relating to pre-construction surveys;
- Length of pipeline through protected areas.

11.2 BACKGROUND AND POTENTIAL IMPACTS

The onshore pipeline transportation system proposed as part of the Sakhalin II Phase 2 project is required to transport oil and gas from the production fields on the north-east of the island to facilities at Aniva Bay in the south of the island. The length of the proposed pipeline is approximately 800km. The pipeline will be laid within a Right of Way (ROW) that varies in its width. For about 7km from the Lunskoye shore crossing to the Onshore Processing Facility (OPF) the ROW is 66m wide. On the rest of the ROW the widest point is 55m, mainly on pipeline Spread 4 but also along some sections of Spreads 2 and 3. Generally, however, the ROW is 43m wide south of the OPF. Specific construction areas along the ROW; for example steep slopes where benching is required or Horizontal Directional Drilling (HDD) sites will necessitate additional ROW width.

The pipeline route passes through parts of two protected areas of regional significance:

- Makarovsky Reserve;
- Izubrovy Reserve.

The location of the two reserves in southern Sakhalin is illustrated in Figure 11.1.

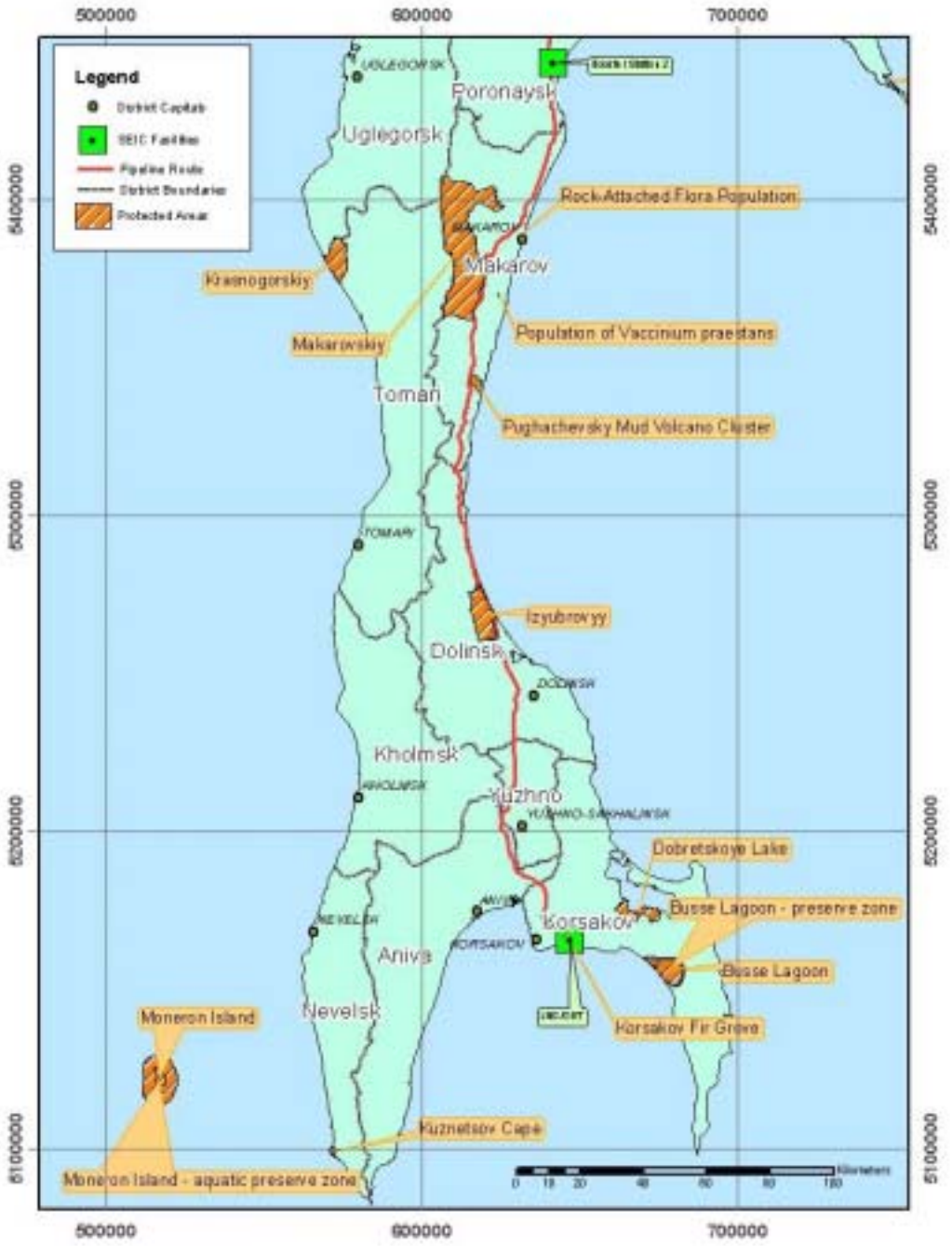

Figure 11.1 Locations of Protected and Heritage areas in Southern Sakhalin

The principal impacts associated with the pipeline will occur largely during the construction phase and it is not considered that operational activities will have an adverse impact on nature conservation interests in the reserves. This section therefore addresses construction issues only.

The potential impacts associated with laying the pipeline ROW within, and adjacent to, the two reserves will be broadly the same as for the rest of the pipeline route through Sakhalin. A full assessment of the impacts associated

with the pipeline is contained in *SEIC Phase 2 Development EIA Volume 4, Chapter 3*. In summary, the principle potential impacts include:

- Soil erosion and compaction;
- Physical disturbance to surface watercourses;
- Contamination of groundwater, due to release of STP effluent and hydrotest waters;
- Landscape and visual amenity impacts;
- Habitat loss and fragmentation;
- Direct impacts to protected or rare species of fauna and flora.

In general, reserves are normally designated to provide protection to rare, protected and sensitive habitats and environments. However, it should be noted that nature reserves or protected areas on the island of Sakhalin have often historically been created for the purpose of hunting and forestry rather than purely for nature conservation interests.

The characteristics of the two reserves, and the potential impacts of laying the pipeline route through each are discussed in more detail below.

11.2.1 Makarovsky Reserve

The Makarovsky reserve is situated to the east of Kamyshovy Mountain Range (west of the town of Makarov, see Figure 11.1) and includes the upper parts of Makarova, Lesnaya and Lazovaya river basins. The rivers Madera, Lesnaya and Lazovaya form the majority of the eastern boundary while the riverbed of the Makarova River and the Zvanka river basin delineate its northern boundary.

The Makarovsky reserve was established in 1992 by the Decision of the Regional Council of People Deputies (“Regulation of the State Complex Forest and Hunting Reserve of regional level Makarovsky” dated 03.12.92, Nº 316) and has a surface area of 45,732ha. The reserve is situated on land assigned to the Federal Forest Reserve. The reserve was originally designated as a hunting and forestry area, specifically to protect and facilitate the restoration of some game species populations. Hunting within the reserve area was prohibited; but fishing as well as the culling of certain animal species and recreational activity (when approved by reserve management) were permitted.

In 2000, the classification status of the Reserve was changed and the area was designated as a ‘Biological Reserve‘ (in accordance with the Sakhalin Oblast Governor’s Resolution ”On the Validation of the Regulation of the State Biological Reserve of regional level Makarovsky” dated 27.07.2000, No. 308). A full citation for the reserve was published in 2003 following the Sakhalin Oblast Administration Resolution “On the Validation of new edition of the Regulation of the State Biological Reserve of regional level Makarovsky” dated 09.01.2003, No. 3-па).

The Makarovsky reserve now acts as an area for the conservation of rare and endangered species of plants and animals, including economically valuable animal species, thereby safeguarding the mountain forest biotopes of the southern part of Sakhalin Island. The reserve is managed by the Makarovsky

Department for Protection, Control and Regulation of Use of Sakhalin Oblast Game Animals Committee and the Makarovsky Forestry Committee of Sakhalin Oblast Natural Resources and Environmental Protection Department.

In order to protect the characteristics of the reserve, the following activities are prohibited:

- Logging operations:
  - on slopes steeper than 20°;
  - between 1 May to 31 October;
  - in habitats of protected plant and animal species;
  - in highly sensitive parts of the reserve;
- Sports and amateur hunting;
- Oleoresin (balsam or turpentine) collection;
- Usage of fertilisers, growth stimulators, pesticides and other chemical substances for plant protection;
- Public visits, picnics, tourism and other recreational activity that is non-approved by reserve management;
- Ploughing, domestic animal grazing, mowing (except individual service areas);
- Amelioration and drainage operations;
- Prospecting operations, development and extraction of mineral resources;
- Explosions and drilling operations;
- Allocation of land for housing, except hunter cordons;
- Off-road vehicle travel (except for management service vehicles).

However, there is some allowance for limited development and other activities within the reserve. In accordance with the Sakhalin Oblast Administration Resolution “On the Validation of new edition of the Regulation of the State Biological Reserve of regional level Makarovsky” dated 09.01.2003, No. 3-па), the following activities are allowed within the reserve, under controlled conditions:

- Culling of certain animal species;
- Sports and amateur fishing;
- Collection of biological and mineral samples (with relevant permits);
- Limited tree cutting to support the management of the reserve;
- Construction of logging roads;
- Laying of pipelines and other utilities in agreement with the relevant statutory authorities (such activities are only permitted from March to September).

The predominant habitat within the Makarovsky reserve is spruce-fir forest. This forest habitat is common throughout the Makarovsky district, in the basin of the Lesnaya River and upper reaches of the Lazovaya River. The citation for the Reserve lists the following fauna: Sakhalin musk deer (*Moschus moschiferus* spp*. Sachalinensis*), white-tailed sea eagle (*Haliaetus albicilla*), Steller's sea eagle (*Haliaetus pelagicus*), osprey (*Pandion haliaetus*) Blakiston's fish-owl (*Ketupa blakistoni*), reindeer (*Rangifer tarandus*), brown bear (*Ursus arctos*), otter (*Lutra lutra*) and hazel hen (*Bonasia bonasia*). However, although these species are listed in the citation, it is unlikely that some of them actually occur in the reserve. In particular, given the distance from the coast, it is likely that the reference to Steller's sea eagle refers to individuals on transit during migration rather than breeding birds. There has also been no sighting of Blakiston's fish owl within the reserve, or for the whole of Sakhalin Island, during the last 60 years (Nechaev, 1991). A feather of this species was, however, found during a specific Blakiston's owl expedition in 1997 in the nearby valley of the Araks River.

The listing of reindeer on the citation probably reflects the occasional presence of this species in the reserve; the mountain ecotopes prevalent within the Reserve are not typical habitats for this species, which largely inhabits lower-lying areas to the north of Terpeniya Bay.

The citation also lists a number of rare and protected plant species including: Chinese peony (*Paeonia obovata*), cordate spikenard (*Aralia cordata*), large-flowered lady's slipper orchid (*Cypripedium macranthon*) and spotted lady's slipper orchid (*C. guttatum*), Kurile cherry tree (*Cerasus kurilensis*), Hokkaido spurge-laurel (*Daphne jezoensis*), Sugawara's gentian (*Gentianella sugawarae*), Gray's bifoliolate (*Diphylleia grayi*), forked guelder rose (*Viburnum furcatum*), weak lily (*Lilium debile*), Sargent's juniper (*Juniperus sargentii*), screwed juniper (*J. conferta*), prostrate holly (*Ilex rugosa*), roseroot stonecrop (*Rhodiola rosea*), Japanese yew (*Taxus cuspidata*) and Ssior's black cherry tree (*Padus ssiori*).

A list of protected plant species were included within the Sakhalin Region Red Data Book (RDB, 2003) and approved by the Sakhalin Oblast Administration Resolution "On the Validation of plant objects included in Sakhalin oblast RDB and preparation of the edition Sakhalin Oblast Red Data Book" ("Plant" volume, dated 18.02.2003, No. 39-па). It should be noted that some species listed in the RDB of the Russian Federation are relatively common on Sakhalin Island (e.g. cordate spikenard and Chinese peony).

Pipeline Route

The proposed pipeline route runs along the easternmost boundary of the Reserve, crossing (into) it at three sections:

i. Along the left bank of Lesnaya River – between kms 368 and 376 of the ROW (the length of the section within the Reserve is 7.1km);

ii. Along the right bank of the headwater of the Lazovaya River – between kms 378 and 380 of the ROW (1.1 km section within the Reserve);

iii. Adjacent to the Lazovaya River between kms 387 and 390 of the ROW (2.0 km section within the Reserve).

In addition, for a distance of 1.6 km, the ROW coincides with the eastern boundary of the Reserve – between kms 376 and 378km. Altogether the length of ROW within the Reserve or along its boundary is 11.8km, as shown in Figure 11.2.

In general, the eastern area of the Reserve, through which the pipeline will pass, has been exposed to extensive forestry and hunting activities in the past. Forestry activities (selective felling) are still taking place along the eastern boundary of the site. Due to the occurrence of these activities, the areas through which the ROW will pass is not considered as sensitive to disturbance as other parts of the Reserve. This is reflected by the last edition of the Sakhalin Oblast Administration Resolution "On the Validation of new edition of the Regulation of the State Biological Reserve of regional level Makarovsky", dated 09.01.2003, No. 3-па), which enlarged the number of activities allowed within the Reserve, especially along its eastern boundary. The pipeline route therefore passes through the most altered areas of the Reserve (i.e. within areas of secondary forest vegetation), which have developed following primary timber felling, and parallel to the road and power transmission line adjacent to the eastern boundary of the Reserve.

Pre-Construction Surveys

As part of the TEOC requirements, SEIC commissioned detailed pre-construction pipeline monitoring surveys. The purpose of these was to identify and record the locations of any rare and protected flora and fauna at defined sections along the pipeline route outlined by TEOC. Within the Reserve a total of 23km of route was surveyed in detail (2km x 200m sections surveyed per day).

The botanical survey revealed the presence of three Sakhalin RDB species along the ROW sections surveyed in the Reserve:

- Chinese peony (78 occurrences);
- Hokkaido spurge-laurel (4 occurrences);
- Cordate spikenard (2 occurrences).

Both Chinese Peony and the cordate spikenard are also listed in the Russian RDB. The comparatively rare, but not protected, wild weak lily was also recorded in the ROW within the Reserve (114 occurrences).

Besides the species mentioned above, a number of others listed on the Reserve citation were also recorded, including: large-flowered lady's slipper orchid, Gray's bifoliolate, Sargent's juniper, convolute juniper, prostrate holly, roseroot stonecrop, Japanese yew and Ssior's black cherry. Four other protected species (not listed on the Reserve citation) were also found in the Reserve or along its boundary: common lady's slipper orchid (*Cypripedium calceolus*), harsh bluegrass (*Poa radula*), Kamchatka fringed orchid (*Platanthera camtschatica*) and *Ophrys*-like fringed orchid (*P. ophrydioides*).

Expert botanical assessment has also determined that four species cited for the Reserve should be excluded from the list, as they do not occur here. These are: Sugawara's gentian (which is restricted, in Sakhalin, to the area around the Pugachevo mud volcano), Kurile cherry tree and forked guelder

rose (both of which only occur in the southernmost part of the island) and spotted lady's slipper orchid which does not occur on Sakhalin.

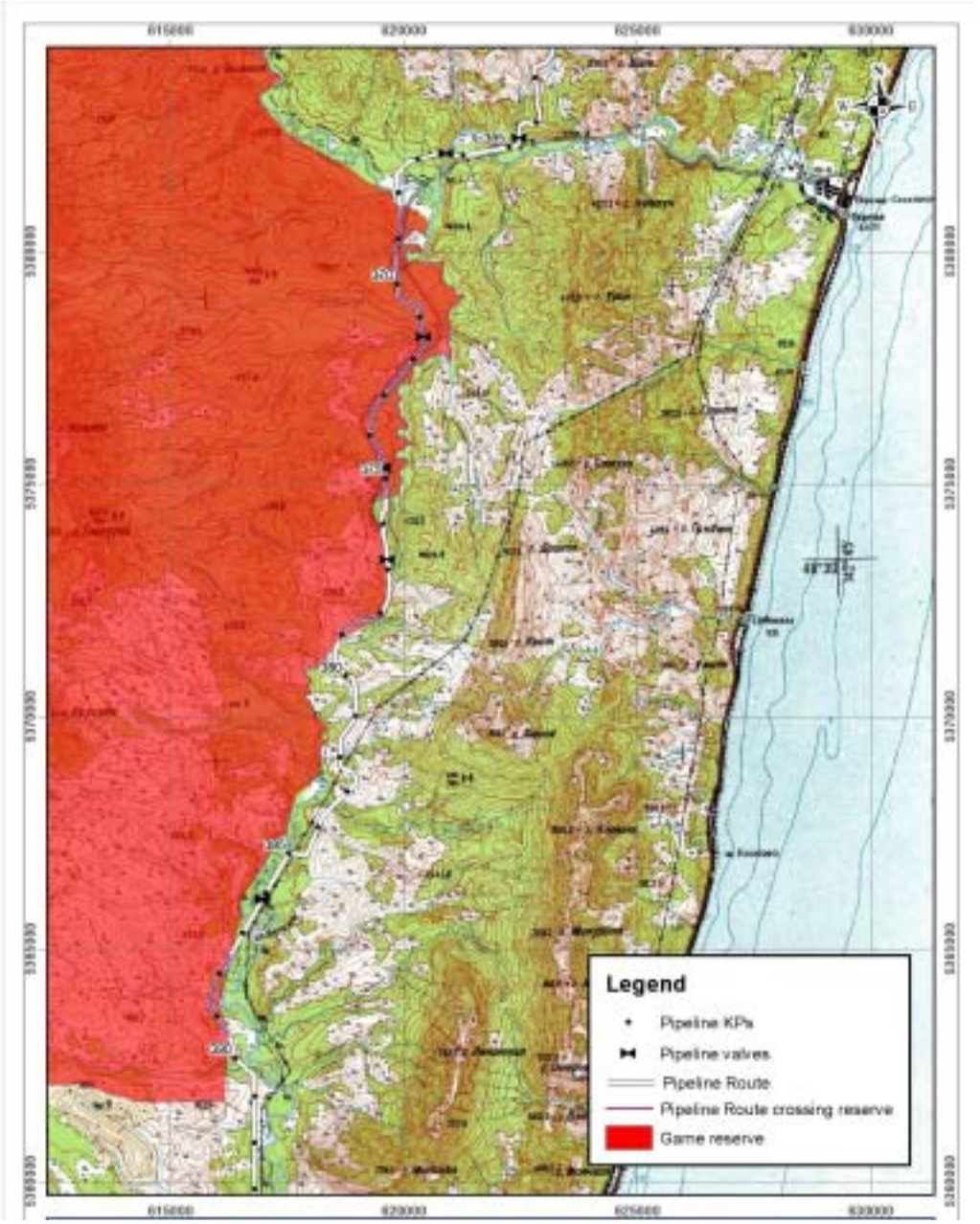

Figure 11.2 Pipeline Route through the Makarovsky Reserve

In addition to the detailed survey findings reported above, a survey carried out for SEIC (*Environmental Survey for Sakhalin II Project Report, Far Eastern State University, 2002*) noted the presence of a further two rare plant species (neither included in the Russian Federation or Sakhalin Region RDBs) along the proposed route through the Makarovsky Reserve: *Veronica schmidtiana* and *Plantago salsa*.

11.2.2 Izubrovy Reserve

The Izubrovy Reserve is situated in the Dolinsk district, between the rivers Ai and Firsovka. The Reserve was originally established in 1988 by decree of the Sakhalin Executive Committee (decree “On establishing state hunting

reserve 'Izubrovy' in Dolinsk district" dated 28 December 1988). It has an area of 40,000ha and was established for the protection of red deer, sable and mink.

As with the Makarovsky Reserve, the Izubrovy Reserve was established originally as a hunting and forestry area and the designation was changed in 2002 to make the area a "Biological Reserve". The Department for Protection, Control and Regulation of Use of Sakhalin Oblast Game Animals Committee now manages the Reserve.

A range of activities are prohibited within the boundary of the Reserve in order to protect its natural characteristics and interests. These are the same as listed for the Makarovsky Reserve (see Section 11.2.1. above).

The nature conservation interests of the Reserve include the following species of animals and birds (as listed on the citation): peregrine (*Falco peregrinus*), gyrfalcon (*Falco rusticolus*), Steller's sea eagle, Bewick's swan (*Cygnus bewickii*), spotbill duck (*Anas poecilorhyncha*), brown bear, otter, sable (*Martes zibellina*) and fox (*Vulpes vulpes*). Steller's sea eagle does not breed in the Reserve but may pass through on transit during migration.

Pipeline Route

As with the situation for the Makarovsky Reserve, road and pipeline construction deemed to be of national importance is permitted as long as the necessary permits and consents are agreed with the Sakhalin Oblast Natural Resources and Environmental Protection Department.

In order to minimise the potential level of disturbance to habitats and nature conservation interests within the Reserve, the proposed pipeline ROW runs alongside the eastern boundary of the Reserve, adjacent, in part, with the existing transport and services corridor, which includes the road, railway and transmission power line. The total length of pipeline ROW in the Reserve is approximately 20km, (see
Figure 11.3*).*

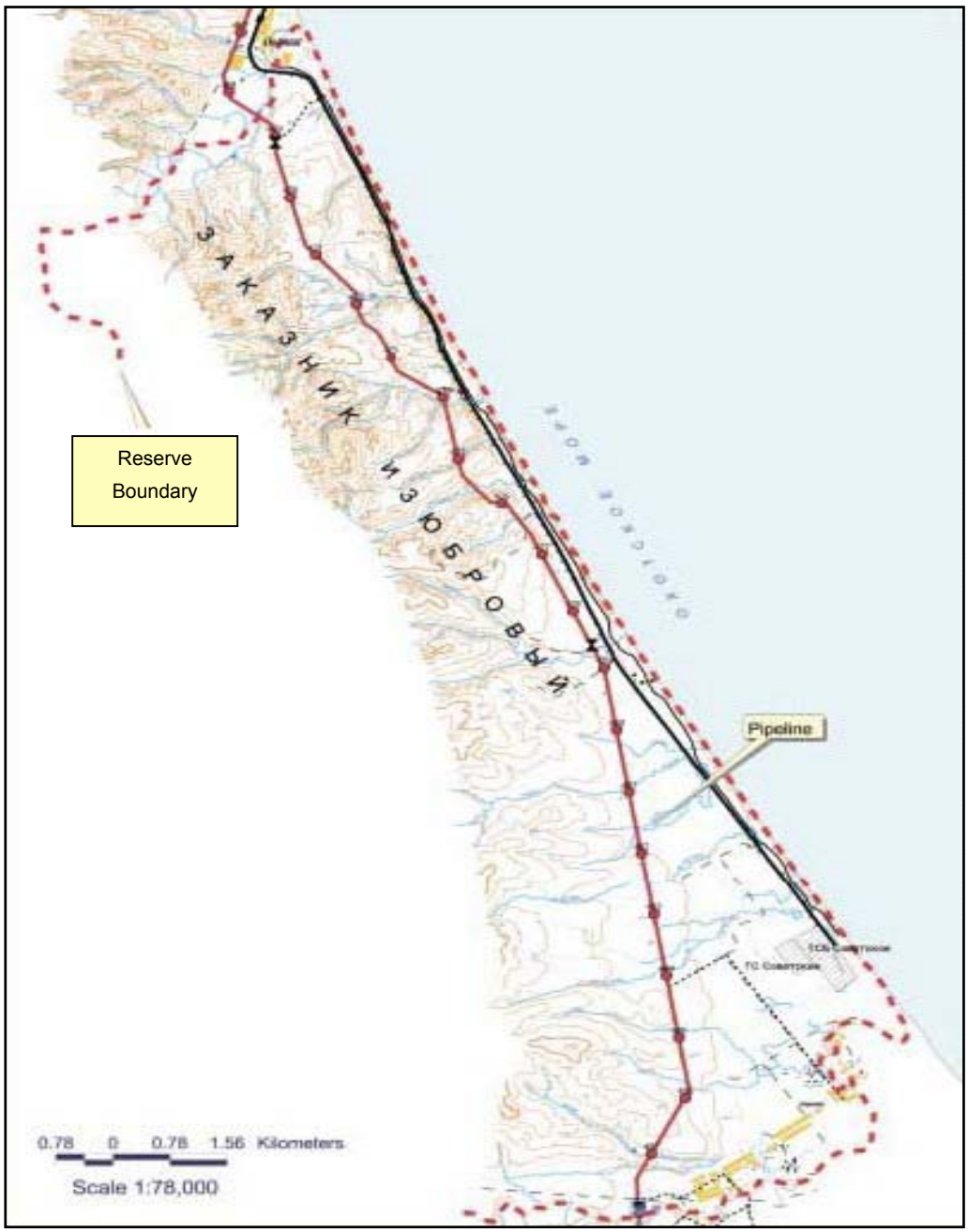

Figure 11.3 Pipeline Route through the Izubrovy Reserve

Pre-Construction Surveys

The predominant habitat within the Izubrovy Reserve is spruce-fir forest.

As part of the TEOC requirements, SEIC commissioned detailed pre-construction pipeline monitoring surveys. The purpose of these was to identify and record the locations of any rare and protected flora and fauna at defined sections along the pipeline route outlined by TEOC. Within the Izubrovy Reserve a total of 17km of route was surveyed in detail.

There are no specific species of plants listed in the Reserve citation. Pre-construction monitoring surveys carried out for SEIC identified that the pipeline route crosses areas with high-density populations of the Russian Federation RDB species, cordate spikenard. For example, 1,138 localities for this plant were recorded in the 200m wide survey corridor along a 2.06km section of the ROW in the northern part of the Reserve. Japanese yew, Chinese peony, Kamchatka fringed orchid and Gray's bifoliolate were also recorded. Wright's guelder-rose (*Viburnum wrightii*) and two species of lady's slipper orchid (*Cypripedium macranthon* and *C. calceolus*) may possibly occur within the Reserve, but were not recorded during the pre-construction survey.

11.3 MITIGATION AND MONITORING

The approach to mitigating the potential impact of the pipeline on protected areas involves a number of actions, foremost of which is the avoidance of routing through designated sites, or in the absence of alternatives, selecting the most acceptable route, with approval from the relevant authorities. The construction of pipelines and roads of national importance is permitted within both Makarovsky and Izubrovy reserves under the 2002/2003 redefinition of their status. Where the pipeline route does encroach on, or pass through protected land, the route has been developed so as to follow, as far as possible, existing transport and service corridors. This measure effectively reduces the potential for disturbance to designated habitat and to protected species.

Additional mitigation measures specifically required for construction activities within, or close to, protected areas will be developed in accordance with the requirements of specific construction permits for the works. This approval process requires consultation with the relevant authorities that have jurisdiction over the management of these protected areas. These measures include:

- Wherever technically feasible and allowed under Russian Federation regulations, the width of the ROW will be minimised in environmentally sensitive areas such as protected areas and wetlands;
- Where practical, activities associated with pipeline construction will not be undertaken within designated reserve areas and within periods when construction is not allowed. If there any river crossings within the boundaries of the reserve which are required to be undertaken during the winter these will be completed during March-April, or specific deviation sought from the relevant authorities to enable construction during the winter outside this period. There are no planned accommodation camps or pipe yards within the boundaries of the reserves;
- Pipeline construction crews will be briefed on the importance of avoiding disturbance within protected reserves and the necessity to minimise the duration of construction activities taking place in their vicinity;
- SEIC policies to ensure that the pipeline construction workforce does not engage in hunting or fishing within the protected areas will be rigorously enforced throughout the construction period;

- In order to limit the potential for poaching, new temporary access roads constructed by the Contractor or new extensions to pre-existing roads or tracks during the pipeline laying operations shall be removed and access to the ROW blocked when construction activities have been completed, unless the road is designated as a permanent access road;
- Where appropriate, more stringent restoration requirements will be implemented in protected reserves; and
- Ongoing consultation and co-operation with the regulators responsible for managing the protected areas.

During the pre-construction survey work the locations of any rare or protected plant or bird species were recorded. On the basis of this information, the construction permit conditions will identify any site-specific mitigation measures.

All mitigation measures relating to the conservation of fauna and flora within protected areas during and post-construction are included within the Health, Safety, Environmental and Social Action Plan (HSESAP) Part 2, Table 2.3 (Onshore Biodiversity).

The TEOC provides a list of plants and birds for which it was originally suggested that monitoring should be undertaken. Using this as a basis, a programme to monitor the potential effects of the pipeline construction works on plant and bird species along the ROW has been developed.

For birds, a number of plots along the route have been identified that support bird assemblages associated with main vegetation types (e.g. dark coniferous forest). These plots will be monitored before, during and after construction.

Plots for vegetation monitoring along the route have also been identified that are representative of key community types. These plots will also be monitored before, during and after construction as is being done for birds. As part of the overall strategy, a number of RDB and rare plant species within the community types will be included in the monitoring programme.

Qualified and competent ecological surveyors will be contracted to undertake the monitoring programmes described above. The monitoring programmes have been discussed with and submitted for agreement to the Sakhalin branch of the Ministry of Natural Resources.

11.4 RESIDUAL IMPACTS

A number of rare or protected species occur within the Makarovsky and Izubrovy reserves, however, it is not considered that either of the reserves is significant for any particular rare or endangered species or habitat. In general, the spruce-fir forest found in the two reserves is very similar to that found across large parts of Sakhalin.

Where possible, the pipeline route has been confined to areas where human activity has already disturbed the natural habitat (e.g. areas of secondary forest vegetation that have grown after timber felling) and/or the existing transport and services corridors. As such, the impact of the pipeline is

considered to be minor to moderate during and immediately following pipeline construction, reducing to a minor impact during long-term operation.

SEIC will continue consultation with the relevant regulators and undertake further studies, where necessary, into any particular sensitive interests or issues connected with the reserves.

11.5 REFERENCES

Far Eastern State University (2002) *Flora and vegetation survey along pipeline route.*

Nechaev, V.A. (1991) *Ptitsy ostrova Sakhalin [Birds of Sakhalin Island*. Vladivostok, Institute of Biology and Pedology of Far-Eastern Branch of Ac. of Sc. of the USSR. p748.