

APPENDIX 4: RIGHT OF WAY REPORT

List of Right of Way (RoW) Locations Visited		
KP	River / Location	Date Visited
<i>RoW from Chaivo Landfall to OPF</i>		
32.5	East of Val River, near NOB-4	7 October 15
35 – 37	West of Val River, near NOB-6	7 October 15
48	Evai River and RoW	7 October 15
63	Dagi River	7 October 15
63 – 66	RoW South of Dagi River	7 October 15
79	RoW Road Crossing	7 October 15
87 – 88	RoW	7 October 15
95	Djimdan River Crossing and RoW	8 October 15
96	RoW Road Crossing south of Djimdan Wetlands	8 October 15
109 – 110	RoW near NOB-19	8 October 15
149 – 155	RoW from NOB-24 to OPF	9 October 15
<i>RoW from LUN-A Landfall to OPF</i>		
14 – 21	RoW	9 October 15
<i>RoW from OPF to LNG/OET</i>		
0	Tie-In with Sakhalin 3	9 October 15
24.5	RoW Road Crossing on OPF Access Road	8 October 15
40	RoW	9 October 15
40.5	Nabil River	9 October 15
45	RoW Road Crossing	9 October 15
47	RoW Road Crossing	9 October 15
54	RoW	9 October 15
502	Kirpichnaya River Crossing and RoW	11 October 15
510.5	RoW Sovietskoy Ridge	11 October 15
511.5	Ai River and Slope	11 October 15
514	RoW and landslide	11 October 15
515	Fault Crossing	11 October 15

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ROW FROM CHAIVO LANDFALL TO OPF

KP 32.5 – East of Val River

The RoW to the south of NOB-4 has good vegetation cover (Photo 1). The RoW ends at the HDD site with robust riverbank vegetation. The RoW is cleared of saplings.

The RoW in the immediate vicinity of the access road to NOB-4 is poorly vegetated (Photo 1). The ground cover in the background of Photo 1 shows a slight improvement over the surface cover in October 2014 as indicated (for comparison) in Photo 2. The site has erosion and sediment control in place and reportedly the site is scheduled for additional seeding.



Photo 1. View to the west showing poorly vegetated area in the foreground and good vegetation cover further west towards the riverbank.

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Photo 2. View to the west during the 2014 site visit – note only slight improvement of the vegetation cover in the foreground.

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KP 35 to 37 – RoW

The RoW between KP 35 and KP 37 is mostly vegetated with grass. Bare spots show growth of fine ground vegetation that provides a measure of sediment and erosion control.

This RoW segment has a slight slope to the west across the RoW. The Company has installed a riprap-protected cut-off drainage ditch that directs the discharge into shallow riprap-protected cross drainage channels, which discharge into flume pipes that cross the access road (Photos 1 and 2). This arrangement appears to be effective since no erosion was visible along the sandy RoW.



Photo 1. Showing rip rap lined cut off channel with a junction of a cross channel

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Photo 2. Showing cross channel leading to culvert under the access road

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KP 48 – Evai River and RoW

The Evai River was flooding the low lands and reportedly may be developing a new channel. The RoW leading to the river from the south is sandy and with little ground cover. An erosional channel is developing on the slope to the river (Photo 2). Saplings have been cut and the Company has reported that the site is scheduled for reseeded. It is recommended that interim sediment and erosion control measures are considered on the slope.

There are many vehicle tracks visible on the RoW between NOB-9 and the river (Photos 1 to 3).

All efforts should be made to minimise access to vehicles.



Photo 1. Showing sandy slope leading to river with minimal vegetation cover.

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Photo 2. Showing erosion channel.



Photo 3. Many vehicle tracks are visible on the RoW.

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KP 62.5 – Dagi River Wetland

The Dagi River valley is showing continuous improvement – see for comparison Photos 1 and 2 taken a year apart in Oct 2014 and Oct 2015.

Tree removal was conducted in the previous year (see piles of cuttings in Photo 2) and the saplings that are re-emerging are still very small (Photo 1)



Photo 1. Oct 2015 – View to the north at the Dagi River wetland showing minor improvement over the previous year (October 2014).

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Photo 2. Oct 2014 View to the north at the Dagi River wetland.

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KP 63 to 66 – RoW

The RoW between KP 63 and 66 (ending at NOB-12) is well vegetated and with good sediment and erosion control. Previously, tree removal was undertaken by mechanised means which removed the grass cover as well. During this year’s monitoring visit it appears that the grass on the RoW has recovered and forming good ground cover (Photos 1 and 2).

The wetland north of the Tomi River is continuing to recover. An access road bridge on a tributary of the Tomi River has sediment control installed.



Photo 1. View of RoW north of NOB-11

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Photo 2. View of RoW south of NOB-11



Photo 3. View to the north of a RoW on wetland and a bridge on a tributary of the Tomi River

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Photo 4. View of the wet land north of the Tomi River

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KP 79 – RoW Road Crossing, Sandy Slope

The RoW at the road crossings at KP 79 has poor vegetation cover on a sandy slope on the north side of the road (Photo 1) and partial cover on the south side of the road (Photo 2).

Slope breakers are in place for the upper elevations of the slopes on both sides of the road.

It is recommended that the site be placed on the reseeding schedule.



Photo 1.

View the south showing slope protection and partially vegetated slope

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Photo 2. View to the north showing poorly vegetated sandy slope with slope breakers at the upper portion.

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KP 87 to 88 – RoW

The RoW between KP 87 and 88 has steep slopes and side slopes. The RoW has good vegetation coverage and good erosion control (Photos 1 and 2).

The section at approximately KP 87.5 required repair along the side slope. The section currently appears stable (Photo 3) and is monitored.



Photo 1. View of RoW showing good vegetation cover on the slopes

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Photo 2. View of RoW showing slope protection and good vegetation



Photo 3. View to the side of the RoW showing gabion wall to stabilise slope.

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KP 95 – RoW by NOB-16 North of Djimdan River

During last year’s monitoring visit the RoW south of NOB-16 Block Valve Station and north of the Djimdan River crossing on the slope leading to the river was covered by dense growth of Alder trees that reached two or more meters in height. Since then, the trees on the RoW between NOB-16 and the river have been removed – See comparison in Photos 2 and 3.

The riverbanks are well vegetated and with Reno matting on both banks. On the northern bank there are signs of reno mat deterioration that will require monitoring.



Photo 1. View across the river to the south showing riverbanks with reno mats.

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Photo 2. Oct 2015 – Same view as photo 3 (below) one year on, showing results of tree removal.



Photo 3. Oct 2014 - View south from the Block Valve Station showing dense growth of Alder on the RoW.

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Photo 4. View to the upstream showing riverbanks with reno mats.



Photo 5. Close up view on the north bank of the river showing deterioration of Reno matting.

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KP 96 – RoW and Wetlands South of the Djimdan River

The wetland south of the Djimdan river is well vegetated as viewed from a vantage point south of the river. The slope from the south has slope breakers in place and good vegetation cover. Tree saplings have been effectively cleared while leaving the grass intact.



Photo 1. View across the Djimdan valley from the south showing vegetated wetland leading to the river. Trees and saplings on the slope in the foreground have been removed – see also photo 3.

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Photo 2. View to the south showing vegetated slope with slope breakers and removed tree saplings.



Photo 3. Close-up view of effective tree sapling removal with grass left intact.

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KP 109 to 110 – RoW and NOB-19

The RoW from KP 109 to 110 has good vegetation cover and with tree saplings effectively cut while maintaining grass cover in place. The cuttings are shredded and used as mulch on the RoW.

The slope towards the south of the section is protected with slope breakers and good vegetation cover.

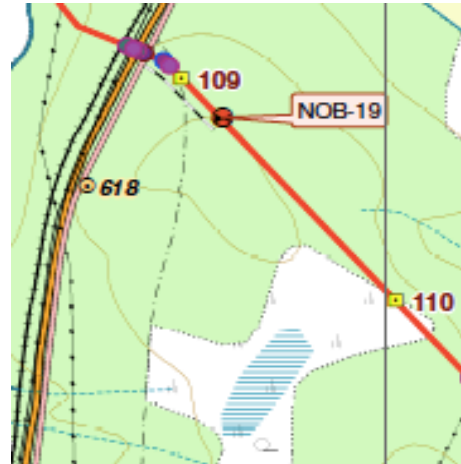


Photo 1. View to the south showing vegetated RoW and cut tree saplings.

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Photo 2. Close-up of effective tree sapling removal with grass left intact. Note the piles of cuttings awaiting mulching.

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KP 149 to 155 – RoW and Wetlands



The RoW section between the OPF and NOB 24 has very good ground cover. The section includes an access road that terminates at the block valve. The road and bridges are well maintained. Several streams and minor drainages are crossing the RoW and are well protected with riprap and show no erosion to the banks. Some portions of the section include dense growth of trees.

The wetland section between KP 149 at NOB-24 and KP 151 is continuing to recover.

Few of the existing bridges along the access road were repaired/improved including the silt fences along the bridge and riprap covering the banks by the bridge footings (Photos 3 and 4).



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Photo 2. View south across the RoW in along the wetland showing recovered area in comparison to unaffected area.



Photo 3. View of bridge and silt fence. Note the sapling rich area behind the bridge.

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Photo 4. View of protected drainage with riprap and good vegetation cover.



Photo 5. View of RoW with good vegetation cover.

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ROW FROM LUN-A LANDFALL TO OPF

KP 14 to 21 – LUN-A Landfall to OPF



The LUN-A Landfall is the start of a seven km RoW terminating at the OPF. The RoW has mostly good vegetation cover. The slopes have slope breakers for sediment and erosion control.

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Photo 1. View west along the RoW showing good vegetation cover.



Photo 2. View west along the RoW showing vegetation and slope breakers.

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ROW FROM OPF TO LNG/OET

KP 0 – Tie-in with Sakhalin-3

The tie-in of Sakhalin-3 at KP 0 near the OPF was observed as part of the visit. The installation of the tie-in was finished two years ago. The disturbed area south of the tie-in is starting to recover (Photos 1 and 2).



Photo 1.

View to the south from the tie-in location showing recovery of vegetation on disturbed area.

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Photo 2. View to the south from the tie-in location showing recovery of vegetation on disturbed area.

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KP 24.5 – Road Crossing

During the visit, a Gazprom field crew of was present and trimming the vegetation on the RoW along the road crossing, reportedly a standard Gazprom procedure at such locations (Photo 1).

The RoW at this crossing has gently sloping topography and was showing good vegetation cover (Photo 1 and 2).

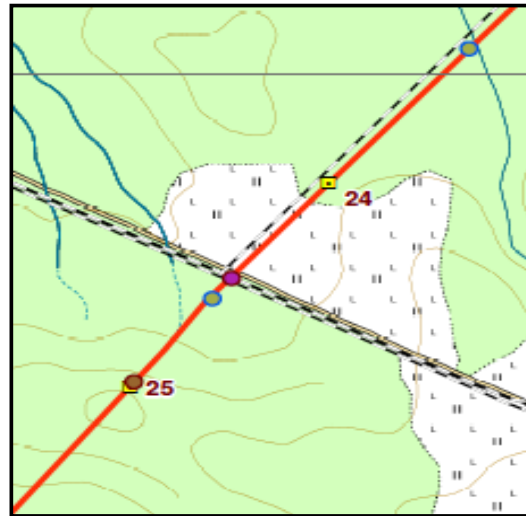


Photo 1. View to the south showing the vegetation trimming process.

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Photo 2. View to the south showing the RoW with a gentle slope and good grass cover.

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KP 30 – RoW Road Crossing

The RoW at this crossing has gently sloping topography. The RoW has good vegetation cover which consists mostly of grasses (Photo1).



Photo 1. View to the south showing the RoW with a gentle slope and good grass cover.

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KP 40.5 – Nabil River

The Nabil River crossing has very steep slopes. The northern slope was blasted into solid rock and forms an indent in the topography of the hillside.

The slope appears stable and with some grass that was naturally established. The southern slope has a soil cover and good vegetation and slope protection.



Photo 1. View to the south showing a steep slope of the RoW with good vegetation cover and slope protection.

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Photo 2. View to north showing the rocky slope of the RoW with some vegetation.

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KP 45 – Road Crossing

The RoW at this crossing has undulating topography. The RoW has good vegetation cover which consists mostly of grasses. (Photos1 and 2).



Photo 1. View to the south showing the RoW with a gentle slope and good grass cover.

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Photo 2. View to the north showing the RoW with a gentle slope and good grass cover.

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KP 47 – Road Crossing

The RoW in this area is in undulating terrain with some steep slopes. The slopes are protected with slope breakers and with good vegetation cover.



Photo 1. View north along the RoW showing good vegetation cover and slope protection.

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KP 54 to 55 – RoW and Slopes

During the current monitoring visit, only a portion of the area was observed due to access and weather conditions. The area observed was at the intersection of the RoW with an access road.

Previously, this area (which was likely used as a staging area during construction) was bare of any vegetation. The area was reseeded earlier in 2015 and the results are shown in photos 1 and 2.

The site should be monitored to see if the new grass growth will regenerate following the winter.



Photo 1. View of reseeded sandy area.

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Photo 2. View of reseeded sandy area.

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KP 502 – Kirpichnaya River Crossing and RoW

The Kirpichnaya River crossing has two locations that require monitoring. The first is the downstream band cuts and erodes into the eastern side of the RoW. The Company has installed a heavy riprap wall to stabilise the bank (Photo 1). The second location is in the upstream of the river crossing on the northern bank – the river current cuts into the northern bank behind a protection layer of riprap (Photo 2).

The RoW on each side of the crossing and the banks of the river at the crossing are well vegetated (Photo 3). A steep slope on the south side of the river valley is well vegetated and protected with slope breakers (Photo 4).

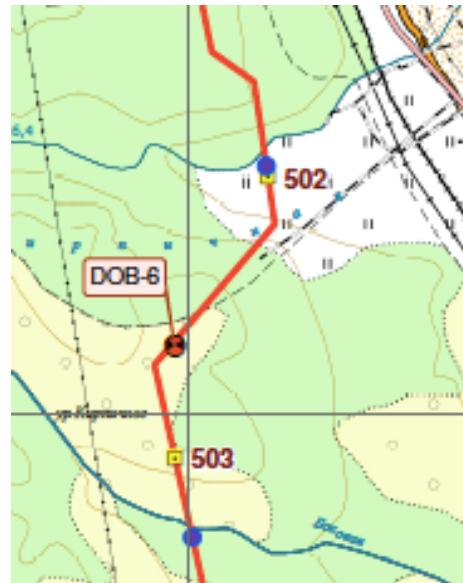


Photo 1. View of the repair of the riverbank at the band.

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Photo 2. View of the north bank where the current is cutting into the bank behind the riprap protection layer.



Photo 3. View of the crossing to the upstream.

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Photo 4. View to the south showing RoW and slope with good vegetation cover and slope protection.

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KP 510.5 – RoW Sovietskoy Ridge

The Sovietkoy Ridge has required subsurface drainage to stabilise it during the construction and reinstatement stages.

Currently, the slope appears to be stable and has very good vegetation cover.



Photo 1. View of the slope to the north showing good vegetation cover. Note the outlet of a subsurface drain at the bottom of the slope.

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KP 511 – Ai River Crossing and RoW

The Ai River is situated in a broad flat valley and bordered by short but steep slopes.

The river crossing appears in good condition and with very well vegetated banks (photos 1 and 2). The slope south of the river appears stable and well vegetated (Photo 3).

The river valley is well vegetated and to the north it ends at the Sovietsky Ridge (see KP 510.5 for Sovietsky Ridge).



Photo 1. View to the upstream of the east bank.

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Photo 2. View to the downstream of the east bank.



Photo 3. View to the south across the river at the west bank and the RoW slope.

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KP 514 – RoW and RoW Repair

The RoW at KP 514 experienced a landslide from the edge of the RoW toward the east. The slide was stabilised and new drainage control and slope protection was constructed (Photo 1).

The RoW to the north and south has sandy, undulating short but steep slopes with partial vegetation cover and slope protection (Photo 2). The side slopes are protected with Geojute but are still poorly vegetated. These slopes should be monitored regularly.

It was observed that tree saplings were cut on a side cut on the east side of the RoW (Photo 3). This practice should be re-evaluated.

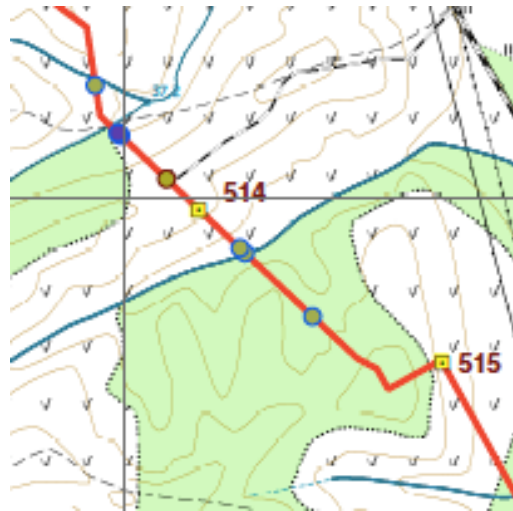


Photo 1. View from the RoW to the east of a repaired landslide area.

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Photo 2. View to the north of the RoW showing undulating steep slopes with partial vegetation cover.



Photo 3. View of a RoW side cut with trees cut on the slope itself, and additionally failing geojute.

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