10. SOCIAL IMPACT ASSESSMENT

10.1 Project social area of influence

In line with PS1, the assessment of social impacts is carried out over the PSAoI. This PSAoI is defined to include certain areas and communities, where both positive and negative direct social impacts are going to be perceptible in the various phases of the Project. Based on the Project description, and particularly the location and delineation of facilities, and on potential impacts of the various components, the PSAoI includes the following areas and communities:

- Within the territory of Svobodnensky District, the territory of the following three adjacent Village Councils ('*selsovet*'):
    - Dmitrievka, within which the settlements of Dmitrievka, Ust-Pera , Yukhta and Yukhta 3 are part of the PSAoI;
    - Zheltoyarovo, within which the settlement of Chernigovka is part of the PSAoI;
    - Nizhny Buzuli, which includes land that is affected by the Project but no close-by settlement.
- The town of Svobodny.

10.2 Overview of impacts

Based on the preliminary assessment of potential social impacts conducted at scoping stage and on the outcome of further baseline studies, the identification and assessment of social impacts is presented in the following table. Associated impact management measures are presented in further detail in sections 10.5 (in overview) and 10.6 (in further detail).

10.3 Assessment of positive social impacts

Positive impacts (see impacts A1 to A5 in Table below) are related to the economic benefits that the Project will bring to the communities of the PSAOI, which are currently economically depressed and in need of economic development, as shown by the baseline studies. By providing employment to young and other locals, attracting new workforce, generating work for local enterprises through Project procurement, and providing Corporate Social Responsibility benefits, the Project is expected to provide significant and sustainable benefits to local communities. However, to be effective, these benefits need to be enhanced and strengthened by specific impact enhancement measures, which are detailed in Section 10.6, particularly a local recruitment policy and a local procurement policy.

Table 10.1: Overview of potential project social impacts

#	Theme / Issue	Potential Social Impact	Project Phase	Impact Receptors	Assessment of Impact Severity
POSITIVE IMPACTS					
A1	Labour	The provision of employment to local workforce will improve the purchasing power and standard of living of the local population	Construction Operations	People of working age within the general population of the Project AoI and beyond	High (Positive)
A2	Economic benefits	Local procurement can be beneficial to local enterprises and generate indirect employment	Construction Operations	General population of the Project AoI	High (Positive)
A3	Economic benefits	Taxes paid by Company will be beneficial to local governance and can contribute to enhance local infrastructure	Construction Operations	General population of the Project AoI	Moderate (Positive)
A4	Economic benefits	The provision of employment can contribute to reducing out-migration of youth, which baseline demographic studies indicate is an issue in the Project area	Construction Operations	General population of the Project AoI	Moderate (Positive)
A5	Corporate Social Responsibility	Provision of social benefits to surrounding communities within the overall Corporate social responsibility of the Company	Construction Operations	General population of the Project AoI	High (Positive)
ADVERSE IMPACTS AND SOCIAL RISKS					
B1	Labour	Potential violations of RF labour regulations by contractors or sub-contractors	Construction	Contractor and sub-contractor workers	Low
B2	Occupational health and safety of workers	Occupational risks to health and safety of workers	Construction Operations	Company workers Contractor and sub-contractor workers	High

#	Theme / Issue	Potential Social Impact	Project Phase	Impact Receptors	Assessment of Impact Severity
B3	Community safety / traffic on public roads	Risks to community safety linked with Project-related traffic of heavy machinery and light vehicles on local public roads	Construction	General population of the Project AoI	Moderate
B4	Severance to local traffic	Local traffic may be hindered or restricted by construction works on local public roads	Construction	General population of the Project AoI	Low
B5	Land use	Impacts to land use and related impacts to landowners' and land users' livelihoods	Construction Operations	Landowners and land users, particularly those engage in agricultural activities whose land is affected by the Project	Moderate
B6	Land use	Impacts to hunting and fishing caused by land take and in-migration of workers	Construction Operations	Hunters and their associations	Moderate
B7	In-migration / Strain on existing social infrastructure	Potential for strain on existing infrastructure related to in-migration of workers and job-seekers, exacerbated by the fact that some of this infrastructure is already overloaded	Construction Operations	General population of the Project AoI	High
B8	In-migration / Inflation	Potential for local inflation detrimental to locals related to in-migration of workers and job-seekers	Construction Operations	General population of the Project AoI	High
B9	In-migration / Social conflict	Potential for cultural or social conflicts with local community related to in-migration of workers and job-seekers	Construction Operations	General population of the Project AoI	High
B10	Cultural heritage	Potential for loss of tangible cultural heritage (archaeology and other tangible features)	Construction	General population of the Project AoI, scientific community	Moderate

10.4 Assessment of potential adverse social impacts

10.4.1 Labour and health and safety risks

See impacts B1 and B2 in the table below. Experience of similar projects in the Russian Federation and elsewhere indicates that there is a risk to the Company and to the workers themselves if labour and health and safety issues are not addressed in compliance with RF legislation and in the spirit of the IFC PS 2. Impacts and risks may include the following:

- Injuries on the work place due to poor implementation or observance of occupational safety rules, particularly in relation to, but not limited to work at height, loading/unloading of heavy items, work in confined spaces, and hazardous operations such as welding;
- Occupational diseases, including respiratory diseases related to personnel health exposure to chemicals;
- Traffic hazards, at the work site itself and on commuting routes to the work site from worker accommodation or off-site facilities such as the port or the railway station.

Experience also suggests that, while the Project sponsor and main Contractor employees are usually covered by stringent rules and receive consistent training related to occupational health and safety, main risks are typically associated to the chain of sub-contracting, particularly during the construction phase with smaller sub-contractors who may have less awareness of legal requirements and good practice associated to occupational health and safety. Section describes mitigations that GPPB will implement to manage these risks.

In the operations phase, handling of gaseous substances will pose specific hazards, which are usually well addressed in similar facilities by organisations with (both GPPB and its main operations contractors) and qualified professional workers.

10.4.2 Community safety risks and severance

See impacts B3 and B4 in the table above. Works are confined to the Project site and there is going to be only limited work outside of the Project site (road refurbishment and port). The Project site and other construction sites outside of the main Project site are fenced and gated, with 24/7 security, hence the risk of third party intrusion is very low.

However, there will be significant Project traffic on public roads during construction as most loading and unloading operations will be conducted outside of, and at a certain distance from the Project site (either at the Chernigovka port or at the railway station on the Transsib line), thereby necessitating transport to/from these outside facilities to the Project site. In addition, some workers may need to be bussed on local public roads from accommodation located outside of the Project site.

In the operations phase, Project traffic will be mostly limited to workers bussing operations from the worker accommodation microdistrict to be built by GPPB in the town of Svobodny.

Public roads in the Project AoI are generally in good condition and provide adequate traffic safety provisions. Importantly, the Town of Svobodny has a road by-pass, which will allow all Project related traffic from Blagoveshchensk to by-pass the busiest streets of the town. Similarly, traffic from the port and the railway station can reach the Project site without intersecting any settlements.

Temporary severance and disturbance to road users may occur if roads have to be closed for refurbishment works during construction, thereby affecting local traffic and local communities. Related mitigations are described in section 10.6.5.

Transportation activities in the construction phase (and to a lesser extent in the operations phase) have potential to become a significant impact if unmitigated by proper traffic management and measures, which are described in section 10.6.5.

10.4.3 Land use and natural resources

10.4.3.1 Land and agriculture

See impacts B5 and B6 in the table above. Impacts to land use are moderate as land in the Project direct footprint is not permanently inhabited. Therefore, the Project entails no 'physical displacement' (loss of housing as defined by IFC's PS5). However, land was used for agriculture and grazing and the Project causes 'economic displacement' (loss of economic activities and livelihoods as defined by PS5).

50 private land plots (total surface area: 528 hectares) have been purchased from as many landowners (with co-owners in a few cases). Landowners are usually local farmers that were using this land for agriculture (with some plots unused), crops being mostly soya, wheat, and barley. Most plots have been acquired in 'willing buyer – willing seller' amicable transactions with compensation based on regional values. Compulsory acquisition procedures, based on the federal interest declared for the Project, have been used in a small number of cases where landowners were unwilling to reach an amicable transaction. The compensation process is currently complete (September 2016). Some land plots did have private land users, usually under a formalised rental agreement with the landowner.

In addition, 113 plots were also acquired from State and municipal property for a total surface area of 1,088 hectares. No private land users have been identified on these plots.

10.4.3.2 Hunting and fishing

The Ramboll-Environ team met with the chairman of the Association of Hunters and Fishermen, which is the Amur Region branch of the Russian Association of Community Societies of Hunters and Fishermen, an officially recognised NGO in the RF. The representative of Hunters and Fishermen indicated that their organisation monitors fauna on an annual basis along defined transects and share the results with regional level enforcement organs.

The representative of hunters and fishermen also shared specific concerns in regards of the Project and other energy projects in the area:

- The deforestation of the Project area itself will be detrimental to local fauna, both from a habitat and from a migration perspective.
- Noise and light from the construction site may also be disruptive to local fauna.
- Lastly, a specific concern was raised in respect of influx of construction and operations workforce to the Project area and to the Svobodny area: it is feared that this will increase the pressure on natural resources in general, but also more specifically that this workforce, which will mostly be male, will include a number of hunters and fishermen, which may significantly increase the pressure on terrestrial and aquatic fauna.

10.4.4 In-migration

See impacts B9, B10, and B11 in the table above. If workers are predominantly sourced from outside by contractors or the Company, in-migration will occur and this could be detrimental to the economic and social conditions in the Svobodnensky district and in the town of Svobodny, for the following reasons:

- Existing social infrastructure, such as schools, clinics, administrative services, etc. may become undersized to accommodate the population increase, particularly if workers bring in their families;
- Inflation triggered by the higher purchasing power of workers may affect vital commodities, such as housing, food, transport services, etc.;
- The crime situation, which is already not good in Svobodny, might deteriorate in relation to:
    - The perceived 'wealth' of outsiders, who could become targets of violent theft assaults;
    - Alcoholism and substance abuse fuelled by higher purchasing power of workers, particularly when they are off-shift;

- The deterioration (or lack of improvement) of economic conditions for the local population may lead to conflict with outsiders, with potential for outbursts of violence targeting people from other ethnic groups and for associated retaliation, thereby resulting in a deterioration of the security situation.

It is noted that the administrations of both Svobodny and Svobodnensky district have mentioned during consultation held with the Ramboll Environ team that the workers sourced from outside of the area for the construction of the spaceport in Tsiolkovsky (new name of the town of Uglegorsk) were causing some disruption when transiting in Svobodny at the end of their shifts on their way to their respective hometowns. The administrations are eager to avoid similar issues with the construction of the AGPP.

However, in-migration and its potential impacts are already recognised and pro-actively managed by the Project, particularly through the formulation and implementation of a local hire policy (see section 10.6.1) and a worker accommodation policy (see section 10.6.6), thereby mitigating this potential impact to an acceptable level.

10.4.5 Cultural heritage

See impacts B10 in the table above. Detailed archaeological investigations mandated by Russian Federation regulations have been undertaken and these baseline studies have demonstrated that a number of objects of cultural significance were identified within the boundaries of the Project footprint and nearby.

The presence of these sites indicates the potential for similar sites to be found within the boundaries of the Project footprint when excavations and construction continue. A chance finds procedure will therefore need to be put in place for any works involving earthmoving, such that in the event that a similar archaeological site would be uncovered, provisions are made to investigate and protect it, and further allow for its conversation if warranted by its cultural or historical value. This is detailed in section 10.6.7.

10.5 Overview of impact management measures

The following table shows impact management measures, including both positive impact enhancement and adverse impact mitigation. Further details on some of the impact management measures are provided in section 10.6.

Table 10.2: Management of Project Social Impacts

#	Theme / Issue	Potential Social Impact	Impact Assessment	Enhancement / Mitigation Measure	Residual Impact Assessment
ENHANCEMENT OF POSITIVE IMPACTS					
A1	Labour	The provision of employment to local workforce will improve the purchasing power and standard of living of the local population	High (Positive)	• Company to formulate and implement from Project inception a Local Recruitment Policy prioritizing locals for all jobs, with quantitative objectives set for unskilled, semi-skilled, and skilled jobs, subject to available capabilities and operational requirements. • Recruitment policy to apply to Project as a whole including Company itself, and all contractors and sub-contractors with more than 50 employees at the Project site. See details in section 10.6.1. • The Company has already embarked into an ambitious training programme targeting students from Amur Region and particularly from the Svobodny area. This programme is implemented jointly with the Blagoveshchensk State University other companies of the Gazprom group that provide practice grounds to students. Other training initiatives aimed at lower qualification workers are also being contemplated.	Not applicable (positive impact)
A2	Economic benefits	Local procurement can be beneficial to local enterprises and generate indirect employment	High (Positive)	• Company to devise from Project inception a Local Procurement Policy prioritizing local companies with adequate capabilities for all contracts under a certain amount threshold and subject to available capabilities and operational requirements. See details in section 10.6.2	Not applicable (positive impact)
A3	Economic benefits	Taxes paid by Company will be beneficial to local governance and can contribute to enhance local infrastructure	Moderate (Positive)	• No specific measure as potential enhancement of governance is fully beyond the Company's control.	Not applicable (positive impact)

#	Theme / Issue	Potential Social Impact	Impact Assessment	Enhancement / Mitigation Measure	Residual Impact Assessment
A4	Economic benefits	The provision of employment will reduce idleness within the local population and can contribute to reducing out-migration of youth, which the baseline demographic studies indicate is a major issue in the Project area	Moderate (Positive)	• Local recruitment policy, see above A1. • Local procurement policy, see above A2.	Not applicable (positive impact)
A5	Corporate Social Responsibility	Provision of social benefits to surrounding communities within the overall Corporate social responsibility of the Company	High (Positive)	• Company to devise annual Corporate Social Responsibility programmes in consultation with Regional and local authorities in Svobodnensky District and the town of Svobodny, and civil society organisations as applicable. Programmes and measures to be discussed with the Community Council (see description in section 5.3 of the SEP)	Not applicable (positive impact)
AVOIDANCE, MINIMISATION AND MITIGATION OF POTENTIAL ADVERSE IMPACTS					
B1	Labour	Potential violations of RF labour regulations by contractors or sub-contractors	Low	• Company to abide by conclusions of any labour inspection and to impose compliance with RF labour regulations to contractors and sub-contractors present at site. • Company to monitor compliance of contractors and sub-contractors present at Project site with the provisions of the Labour Code of the RF. • Company to put in place a grievance mechanism open and accessible to its own employees as well as to contractor and sub-contractors workers and fully accessible to workers, per the requirements of IFC's PS 2. • Company to include compliance with these provisions in contracts passed with contractors, with an obligation upon contractors to pass the same obligations to their sub-contractors.	Low

#	Theme / Issue	Potential Social Impact	Impact Assessment	Enhancement / Mitigation Measure	Residual Impact Assessment
B2	Occupational health and safety of workers	Occupational risks to health and safety of workers	High	• Company to abide by the conclusions and recommendations of any health and safety inspection commissioned by relevant RF authorities. • Company to develop plans for improvement of working conditions for the different phases and components of its work and have them peer-reviewed by independent specialists. • Company to accommodate its workers in compliance with RF regulations and good international practice. • Company to require specific plans for improvement of working conditions from its contractors and to pass to contractors the requirement to have their own sub-contractors develop health and safety plans where applicable. • Company to require its contractors to accommodate their workers in compliance with RF regulations and good international practice. • Company to monitor key Health and Safety indicators on a monthly basis and to report thereupon (internal reporting). When revealing noncompliances, reports will be directed to the financing organisations.	Moderate

#	Theme / Issue	Potential Social Impact	Impact Assessment	Enhancement / Mitigation Measure	Residual Impact Assessment
B3	Community safety / traffic on public roads	Risks to community safety linked with Project-related traffic of heavy machinery and light vehicles on local public roads	Moderate	• Company to properly signpost all works on public roads or causing diversions or other disruptions to public traffic. • Company to publish notices in local mass media wherever disruption or works will exceed one day duration, and to notify relevant local authorities (District road department and selsovet) of the exact location, nature and duration of the works on public local roads. • Company to post flagmen at most hazardous work sites on public roads, with particular attention to the intersection of the Project road with regional road R-468 and to the intersection of the Chernigovka port road with the same regional road, both intersections where a traffic light or roundabout intersection should be considered. • Company to monitor drivers' driving safety behaviour on a permanent basis and to provide incentives to the safest drivers in the form of a 'Driver of the Month' programme or similar (during construction and operation phases). • Company to monitor compliance with speed limits on public roads and on Project site for light vehicles, busses, and Project machinery. • Company to enforce a zero-tolerance policy on alcohol during working hours, with immediate terminations if needed per the provisions of the RF Labour Code. • Company to ensure that its contractors and sub-contractors doing road works abide by these provisions (include relevant provisions in contracts and supervise work in the field). • Contractors to prepare Traffic Management Plans as warranted, defining designated itineraries for haulage of large pieces of equipment and to comply with relevant traffic safety regulations of the RF for heavy loads.	Low
B4	Severance	Local traffic may be hindered or restricted by construction works on local public roads	Low	• Company to seek avoidance of such impacts by avoiding such restrictions or hindrance wherever practical. • Where unavoidable, see mitigation measures in B3 above.	Low

#	Theme / Issue	Potential Social Impact	Impact Assessment	Enhancement / Mitigation Measure	Residual Impact Assessment
B5	Land use	Impacts to land and related impacts to landowners' and land users' livelihoods	Moderate	• Company to finalise compensation to interested landowners and land users per regulations of the RF. • Company to engage with affected farmers to check whether their livelihoods could be affected and to discuss land replacement with these stakeholders and local authorities, as applicable.	Low
B6	Land use	Impacts to hunting and fishing caused by land take and in-migration of workers	Moderate	• Prohibit hunting and fishing by workers and enforce the prohibition with periodic checks of vehicles leaving the Project site. • Create awareness amongst workers about the prohibition and include a topic on hunting and fishing in the mandatory induction of all workers. • It is recommended to negotiate an agreement with the Hunters and Fishermen Association to support their monitoring of local flora and fauna along transects across the Project site and AoI.	Low
B7	In-migration / Strain on existing social infrastructure	Potential for strain on existing infrastructure related to in-migration of workers and job-seekers, exacerbated by the fact that some of this infrastructure is already overloaded	High	• In the Construction phase, Company to accommodate construction workers in self-contained accommodation at Project site, thereby avoiding pressure on local infrastructure and utilities, avoiding and minimising contact and potential conflicts with local communities, and avoiding pressure on food and minimising inflation. • In the Operations phase, Company to build a self-contained accommodation area for Operations workers in the Town of Svobodny. The plan includes all amenities and has been discussed with urban planning departments in the Municipality of the Town of Svobodny to avoid any additional pressure on existing infrastructure. • In the Operations phase, Company to consider providing its operations workers with a company shop to minimise pressure on local shops and inflation. • Both the local recruitment policy and the local procurement policy are meant, amongst others, to reduce in-migration and will contribute to mitigating this potential impact. • Local recruitment policy, see above A1. • Local procurement policy, see above A2.	Low

#	Theme / Issue	Potential Social Impact	Impact Assessment	Enhancement / Mitigation Measure	Residual Impact Assessment
B8	In-migration / Inflation	Potential for local inflation detrimental to locals related to in-migration of workers and job-seekers	High	• See above B7, reduction of in-migration. • Local recruitment policy, see above A1. • Local procurement policy, see above A2. • Inflation monitoring: Company to devise a monitoring procedure (quarterly verification of prices of key items, including housing and food staples)	Low
B9	In-migration / Social conflict	Potential for cultural or social conflicts with local community related to in-migration of workers and job-seekers	High	• See above B7, reduction of in-migration. • Local recruitment policy, see above A1. • Local procurement policy, see above A2. • In addition, the Company will train its own security personnel to avoid conflict with local community members.	Low
B10	Cultural heritage	Potential for loss of tangible cultural heritage (archaeology and other tangible features)	Moderate	• Company to develop a chance finds procedure applicable to all works involving earth moving and to discuss it with Chief Archaeologist of Amur Region. • Company to include the chance-finds procedure in all contracts for works involving earth moving, with an obligation to contractors to pass this requirement on to their sub-contractors.	Low

10.6 Details on some of the social impact management measures

10.6.1 Local recruitment policy

The Company is recommended to prepare a detailed recruitment policy applicable to the Company itself as well as to its contractors and sub-contractors with more than a certain number of staff at site (for example more than 50 staff at site). This policy will define the exact meaning of "local" (for example person should be registered in Svobodny or in Svobodnensky district) and establish thresholds of local vs. non-local employees for each category of workers, for example the following:

- Unskilled[1] labour: 100% locals
- Semi-skilled labour: 50% locals
- Skilled labour: 10% locals.

In accordance with current good practice in the Oil & Gas industry worldwide, the policy could also refine the concept of "local" by defining "local-local" as residents of the communities in the Project AoI (Svobodny and settlements of Dmitrievka, Ust-Pera, Yukhta, Yukhta 3, and Chernigovka) and define specific thresholds for "local-local" workers as well, for example as follows:

- Unskilled labour: 80% "local locals"
- Semi-skilled labour: 30% "local locals"
- Skilled labour: 5% "local locals".

It is suggested that the policy will also identify selection and recruitment procedures. Good practice is to establish beforehand a database of local (and "local-local" if applicable) workers based on information available at employment offices, and to impose recruiters (whether Company or contractors/sub-contractors) to select workers from this database for the relevant categories as defined above.

The Policy will stipulate that local job-seekers shall be only preferred if their professional qualities meet the vacancy requirements. It is suggested that during development and implementation of the Policy the Company will take into account its experience in attracting local candidates from the town of Svobodny and Svobodnensky district, which will help define more precisely the thresholds of local vs. non-local employees described above.

10.6.2 Local procurement policy

The recommended mechanism of the local procurement policy is similar to that described above for the local recruitment policy:

- for any contracts under a certain threshold (for example USD 200,000), the Company and its contractors/sub-contractors are recommended to procure the contracted services from a company registered locally (i.e. in Svobodnensky District or in the town of Svobodny);
- for contracts under another, higher threshold (for example USD 500,000), the Company and its contractors/sub-contractors are recommended to procure the contracted services from a company registered in the Amur Region.

It is suggested that while developing the Policy based on its experience of attracting local contractors, the Company will define the contractual threshold(s) under which local procurement is preferable and (if warranted) define exemptions from the policy for certain categories of services. Once prepared, this policy will be rolled over to contractors and sub-contractors working at the Project site.

The Policy will stipulate that local organizations and companies shall be only preferred if they meet the requirements of GPPB.

[1] *These categories should also be defined precisely in the policy in reference to categories recognised by the RF Labour Code or in the Oil & Gas industry of the RF.*

10.6.3 Labour

GPPB will impose compliance with RF labour regulations to contractors and sub-contractors present at site through inclusion of relevant contractual provisions in contracts. GPPB will monitor compliance of contractors and sub-contractors present at Project site with the provisions of the Labour Code of the RF by introducing a grievance mechanism (see below) and conducting regular health and safety monitoring. In addition, GPPB will timely react to conclusions and recommendations (if such occur) of any labour inspection organised by the relevant authorities (e.g. by the Federal Labour Inspectorate).

GPPB shall put in place a grievance mechanism open and accessible to its own employees as well as to contractor and sub-contractors workers and fully accessible to workers, per the requirements of IFC's PS 2. Specifically, the grievance mechanism will allow for anonymous grievances to be lodged. A specific operational procedure will be prepared by GPPB to describe the grievance mechanism. This grievance mechanism will be kept separate from the grievance system intended for communities and other external stakeholders, which is described in the Stakeholder Engagement Plan.

GPPB will roll over above labour-related provisions to all contractors through appropriate contractual provisions in all construction and procurement contracts, with also an obligation upon contractors to pass the same obligations to their sub-contractors. GPPB shall monitor compliance with these provisions throughout construction and operations.

10.6.4 Occupational health and safety

The Company will seek to minimise occupational risks and hazards to workers employed at Project sites. Specifically, the following measures will be implemented:

- GPPB will cause its contractors to develop plans for improvement of working conditions for the different phases and components of its work.
- For designated tasks recognised as entailing specific hazards (examples: erection of specific structures involving work at height, work in confined spaces such as tanks, etc…), specific Job Hazard Analysis (JRA) will be generated by the relevant contractor for approval by GPPB.
- GPPB shall abide by the conclusions and recommendations of any health and safety inspection commissioned by relevant RF authorities.
- GPPB shall accommodate its workers in compliance with RF sanitary regulations and good international practice (particularly the IFC/EBRD guidance on worker accommodation and associated sanitary standards). Similarly, GPPB will require its contractors and their sub-contractors to accommodate any workers in compliance with these standards.
- Given the specific tuberculosis (TB) situation in the Project AoI, GPPB will cause the general contractor to control its workers and contractors for TB once upon work commencement and further once a year at least.
- GPPB shall monitor key Health and Safety indicators on a monthly basis in line with applicable standards in the Russian Oil and Gas industry, and shall report thereupon on a quarterly basis as part of the general environmental and social reporting.

10.6.5 Traffic management and traffic safety

The Company will seek to minimise disruption and risks caused by its activities to users of local roads. Specifically, the following measures will be implemented:

- All works on public roads or causing diversions or other disruptions to public traffic will be properly signposted, with traffic lights and/or flagmen to regulate traffic if necessary;
- Wherever disruption to local traffic or works will exceed one day duration, GPPB or the relevant contractor will notify relevant local authorities (District road department and selsovet) of the exact location, nature and duration of the works on public local roads and will publish notices in local mass media (see SEP for identification of relevant mass media).

- GPPB or the relevant contractor may have to post flagmen at most hazardous work sites on public roads: specifically, the intersection of the Project site road with regional road R-468 and the intersection of the Chernigovka port road with the same regional road will be paid specific attention from a driving safety perspective, with appropriate signposting, and flagmen and/or a traffic light to be considered for the most intensive work phases.
- GPPB and contractors will implement a driving awareness course on defensive driving, with periodic refreshment courses provided. GPPB and contractors will also monitor drivers' driving safety behaviour on a permanent basis and should consider providing incentives to the safest drivers in the form of a 'Driver of the Month' programme or similar.
- GPPB and contractors to monitor compliance with speed limits on public roads and on Project site for light vehicles, busses, and Project machinery. Subject to this conforming to the RF traffic regulations, GPPB should consider checking speed limits observance with portable "radar-guns".
- GPPB and contractors shall enforce a zero-tolerance policy on alcohol (and other substances) during working hours, with immediate terminations if needed subject to the relevant provisions of the RF Labour Code.
- GPPB shall ensure that its contractors and sub-contractors doing road works abide by these provisions (with relevant provisions clearly spelled out in construction and transportation contracts) and shall supervise compliance in the field.
- For haulage of heavy pieces of equipment, Contractors shall prepare Traffic Management Plans as warranted, defining designated itineraries and time schedules, and addressing compliance with relevant traffic safety regulations of the RF for heavy loads.

10.6.6 Workers accommodation

10.6.6.1 Construction stage

The Company's workers accommodation plan for the Construction phase is to accommodate all construction workers at a camp on the Project site, which is currently being constructed. Pioneer camps have already been established by various contractors at the Project site. Workers are not expected to leave these camps, and they sleep and eat there, with recreation facilities available. Workers' interaction with local community members is therefore minimal, and with these mitigation measures in place, it is not expected that the potential impacts of in-migration as described in Table 1-1 will materialise to any significant level.

10.6.6.2 Operation stage

The workers' accommodation strategy for the Operations phase is to build a dedicated microdistrict (urban quarters) in the northern part of the town of Svobodny. The design is complete and has been approved by relevant authorities, and construction is expected to start shortly. As a result:

- There will be no strain on the local housing stock;
- There will be no impact to existing water supply and sanitation facilities as existing facilities will be upgraded as part of the microdistrict project to accommodate the population increase;
- Dedicated educational and health facilities may be built when the load warrants such construction.

10.6.7 Chance finds procedure

The Chance Finds Procedure will be prepared by the Company with support from the Archaeological and Cultural Heritage Department of the Amur Region to address uncovering of cultural or archaeological heritage upon carrying out earthmoving works. It will be rolled over to all contractors and sub-contractors involved in earthmoving (inclusion in contractual provisions), will be prepared by an experienced local archaeologist, and will address the following:

- Definition of what constitutes cultural and archaeological heritage based on likely examples taken in the Amur Region (with photographs);
- Procedure applicable upon discovery, including:

- Signposting and protection of the site;
- Work stoppage;
- Notification (internal within Company, and external to relevant authorities);
- Verification by experts (to be sourced from the Archaeological and Cultural Heritage Department of the Amur Region in Blagoveshchensk);
- Red light process (work to stop until find is excavated) / green light process (work can resume after investigations).

The procedure will identify clearly the relevant telephone numbers and individuals to whom the notification of the find must be made.

11. DECOMMISSIONING AND CLOSURE

According to the Amur GPP Project Statute (approved on 14.03.2016 by Mr. S.F. Prozorov, Member of the Board, Head of the PJSC Gazprom Department, Chairman of the Board of Directors of "Gazprom pererabotka Blagoveshchensk" LLC, after the gradual commissioning of the Amur GPP planned for the period from 2020 to 2025, the Amur GPP will be operated during the design period of 30 years. The water abstraction facilities and the SDIW landfill have each been designed for 25 year design period. Other facilities can be operated for a longer period with adequate maintenance and repairs or modernization, if required (e.g. new access roads and railways). The design lifecycle of the facilities shall be determined by a set of external and internal factors, such as industrial and associated development of the district hosting the GPP, the economic status, socioeconomic and environmental conditions, etc. At present, it does not appear to be possible to accurately predict a detailed timeframe for the decommissioning of the GPP facilities.

The Russian legislation does not require the preparation of a design for conservation or for the dismantling of capital facilities at the time of the project design development or at the primary construction phase of a project. A separate design should be developed at an undefined point in the future and include appropriate preliminary engineering environmental surveys. The closure design is subject to governmental expert review. One of the information sources for the engineering environmental survey for this phase of the Project will be the results of the operational environmental monitoring conducted throughout the entire operations phase of the Project. In conformity with the requirements of the applicable construction rules (par 6.7 of SP 11-102-97 and par. 8.5.4 of SP 47.13330.2012), the environmental survey program for the Project closure phase should include, amongst other requirements, an assessment of changes in the natural and technogenic environment during the operations phase of the Project (including changes caused by the Project impact), an assessment of the consequences of environmental impacts and their effect on the public health, an assessment of the contamination indicators of used or removed soils, recommendations relating to the dismantling (demolition) methods to be used in the process of the closure procedure, as well as proposals for rehabilitation of the natural environment.

In connection with the gradual commissioning of the Amur GPP facilities and due to differences in the lifecycle of various project facilities, their decommissioning and closure will also require a phased approach over a period of time: from a few years to few decades. The requirements to the design development for the Amur GPP decommissioning cannot be fully defined currently for the following reasons:

- Changes in the existing relevant regulatory and legal framework by the time of the decommissioning and closure of the Project facilities;
- Changes in the Project during its planned lifecycle and its condition at the time of the closure; and
- Development of new technologies and methods for conservation and closure of facilities, which would be available at the time of the closure, including also the experience gained at similar facilities elsewhere.

The actual conservation and closure procedures for the Amur GPP facilities can be determined and implemented in the form of an overall plan developed with due consideration of the applicable requirements of the federal legislation of the RF and the legislation of the member territory, as well as the most efficient and safe international industrial practices. The latter is represented currently by the IFC's Performance Standards. According to their basic principles, the decommissioning and closure process will comprise the following stages:

- Safe shutdown of the production / technologic processes on a step-by-step basis;
- Removal of liquid and solid products/wastes for their treatment and disposal; in case of pipelines, reservoirs and process vessels, they should be washed and cleaned to remove residual petroleum products and other industrial liquids and wastes;
- Assessment of potential use of the empty and cleaned vessels, structures and equipment to take the best possible decisions optimal from the environmental, social and economic viewpoints in conformity with the appropriate international industrial practices;
- Dismantling and removal of decommissioned aboveground and underground vessels and process pipework;
- Conservation and abandonment of boreholes using the best available international practices; and

- Additional research is to be conducted to assess the degree of the environment pollution caused by the Project operations and development of a plan for reinstatement of the original conditions in conformity with the appropriate international industrial practices.

According to current Russian legislation, the main part of the work associated with demolition (dismantling) of buildings and facilities with subsequent technical reclamation of the affected area is classified as construction activities and in this context it is not different from any other construction operation with regard to the environmental protection measures to be taken. The general regulatory requirements to the design development for demolition (dismantling) of capital facilities, except for the linear facilities, are presented in par.24 of the Regulation on the structure of the project design documentation and requirements to its content (approved by RF Government's Decree No.87 of 16.02.2008). In particular, the textual part of Section 7 "Design for organization of work for demolition or dismantling of capital facilities" should contain the following information:

a) Substantiation of the need for development of a design for organization of work for demolition or dismantling of capital buildings, structures an facilities;
b) List of capital buildings, structures and facilities subject to demolition (dismantling);
c) List of measures aimed at decommissioning of capital buildings, structures and facilities;
d) List of measures preventing entrance of people and animals to the capital buildings, structures and facilities subject to demolition (dismantling) and protecting the existing vegetation;
e) Description and justification of the adopted demolition (dismantling) methods;
f) Calculation and justification of the dimensions of the zone affected by demolition and hazardous zones depending on the adopted demolition (dismantling) method;
g) Assessment of the probability of damage inflicted to engineering infrastructure facilities, including operating underground engineering networks, in the process of demolition (dismantling);
h) Description and justification of measures and devices to be used for protection of engineering networks agreed upon with the network owners;
i) Description and justification of solutions proposed for safe execution of demolition (dismantling) operations;
j) List of measures aimed at ensuring the safety of the local communities, including their warning and evacuation (if required);
k) Description of solutions relating to waste removal and disposal;
l) List of measures aimed at land reclamation and site improvement (if required);
m) Information relating to networks, structures and facilities remaining after demolition (dismantling) underground and in water bodies; information relating to existing permits issued by the relevant supervisory agencies for preservation of such networks, structures and facilities installed underground and in water bodies, if such permits are required by the RF legislation;
n) Information relating to approvals issued by the relevant supervisory agencies for the technical solutions adopted for demolition (dismantling) of a facility by blasting, burning or any other potentially hazardous method, as well as a list of additional safety measures when using potentially hazardous demolition methods.
   In addition, the graphical part of the project design documentation for demolition (dismantling) of capital facilities should be prepared including the following components:
o) Schematic layout of the site and adjacent areas with indication of the facility to be demolished, associated engineering network, hazardous zones in the process of demolition, areas to be used for short-term storage of dismantled materials, structures, parts and equipment;
p) Drawings of protective devices of the engineering infrastructure facilities and underground networks; and
q) Process flow diagrams indicating the sequence of operations for demolition (dismantling) of civil engineering structures and equipment.

Currently, the highest level of uncertainty in connection with the future closure of the Amur GPP Project is associated with the technical solutions to be used for waste management: the landfill to be constructed for domestic and industrial solid waste disposal has a lifecycle duration of 25 years, which is shorter than the design life of the gas processing plant. This means that the significant volumes of wastes generated in the process of the demolition (dismantling) of the GPP buildings and facilities may have to be transported to

other waste disposal facilities located at a distance from the construction zone. An alternative could be construction of a new landfill in the direct vicinity of the GPP site.

Taking into account the abovementioned uncertainties, it is not possible at this stage of the Project implementation to determine potential environmental and social impacts associated with the decommissioning and closure of the Project facilities with any certainty. Nevertheless, the application of the best available international practices should ensure minimization and reduction of such impacts to acceptable levels.

12. TRANSBOUNDARY IMPACTS

The Project AoI is not expected to extend beyond international boundaries on the basis of:

- The scope of the Project as defined in Section 9 of Chapter 4 is located entirely within the RF (for example, the LPG/helium transport in existing shipping lanes is excluded from the scope of the ESIA because it is not considered within the Project AoI).
- The extremely low levels of sulphur in the feed gas mean that regional acidification effects of SO_2 generated by the operation of the Amur GPP and associated power generation plants will not be significant and hence will not result in significant transboundary impacts.
- The effects of nitrogen deposition from the Project's combustion of natural gas are assessed in Chapter 9 (Section 2), but given the location of the Project, significant impacts are not anticipated to extend beyond national boundaries.

Significant transboundary impacts are therefore not anticipated. The one exception to this relates to emission of greenhouse gases (GHG) through the lifecycle of the Project and these impacts are addressed in Section 2 of Chapter 9.

Project waste will generally be managed locally at the onsite waste facility (see Chapters 4 and 9 for further details). Select wastes will also be sent to third party licensed facilities for recycling, including scrap metal, spent catalysts, etc. (see Chapter 9). These will generally be facilities in the RF (only facilities with all relevant licenses will be used).

13. CUMULATIVE IMPACTS

13.1 Introduction

This Chapter presents a cumulative impact assessment (CIA) on the natural and social environment associated with the existing or planned activities for the Amur GPP Project, taking into account also other types of commercial activities carried out within the subject area and in adjacent territories. This Chapter comprises the following sub-sections.

- Definition of the cumulative impacts on the basis of the currently applicable guidelines;
- Significance of an assessment of cumulative impacts for this Project;
- Approach adopted for this ESIA; and
- Assessment of cumulative impacts.

The types and levels of impacts imposed by individual Project facilities on the natural and social receptors have been reviewed in Chapters 9 and 10, respectively.

13.2 Definition and Applicable Guidelines

CIA is one of the requirements set for a comprehensive ESIA. The relevant IFC Performance Standards are used as the main guideline for this purpose, including the following definition:

Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

13.2.1 IFC Guidance Notes: Performance Standards on Environmental and Social Sustainability, 2012

Recommendations relating to interpretation of CIA are provided in Guidance Note 1 to the IFC Performance Standards. Relevant text from this guidance has been summarized below again with emphasis added using bold text.

GN37. ….. Multiple environmental and social impacts from existing projects, combined with the potential incremental impacts resulting from proposed and/or anticipated future projects may result in significant cumulative impacts that would not be expected in the case of a stand-alone project or business activity.

GN38. … In those situations, where cumulative impacts are likely to occur from activities by third parties in the region and the impacts from the client's own operations are expected to be a relatively small amount of the cumulative total, a regional or sectoral assessment may be more appropriate than a CIA. [It should be noted that normally this is carried out by regional authorities as a strategic regional assessment].

GN40. At a practical level, the critical element of such an assessment is to determine how large an area around the project should be assessed, what an appropriate period of time is, and how to practically assess the complex interactions among different projects occurring at different times. Because a CIA transcends a single project development, the resulting potential management or mitigation measures typically require participation from a larger and more diverse number of stakeholders in order to be coordinated and implemented. Furthermore, the active participation of government authorities is typically required to assess the incremental contribution of each project to the cumulative impacts, monitor and enforce the implementation of the mitigation measures corresponding to each project, identify the additional mitigation measures required, and coordinate, ensure and document their implementation.

GN41. Paragraph 8 of Performance Standard 1 requires that…..the risks and impacts identification process ….. identifies and assesses cumulative impacts from further planned development of the project and other project-related developments, any existing project or condition whose impacts may be exacerbated by the project, and other developments of the same type that are realistically defined at the time of the risks and impacts identification process. Impacts from unplanned but predictable developments caused by the project that may occur later or at a different location should also be identified and assessed.

The assessment should be commensurate with the incremental contribution, source, extent, and severity of the cumulative impacts anticipated, and be limited to only those impacts generally recognized as important

on the basis of scientific concerns and/or concerns from Affected Communities. Potential impacts that would occur without the project or independently of the project should not be considered.

… the client should ensure that its assessment determines the degree to which the project under review is contributing to the cumulative effects.

GN42. … In terms of anticipated future projects, priority should be given to assessing cumulative impacts stemming from the project being considered for financing, such as further planned developments associated with the project and other future developments of the same type in the project's AoI that are realistically defined at the time of the assessment (this may include any combination of developments which are either proposed, licensed or for which permits exist).

GN43. Where appropriate, the client should use commercially reasonable efforts to engage relevant government authorities, other developers, Affected Communities, and, where appropriate, other relevant stakeholders, in the assessment, design, and implementation of coordinated mitigation measure to manage the potential cumulative impacts resulting from multiple projects in the same project's AoI.

13.2.2 *Good Practice Handbook on Cumulative Impact Assessment and Management Guidance for the Private Sector in Emerging Markets (August 2013)*

IFC published in August 2013 the Good Practice Handbook (GPH) on Cumulative Impact Assessment and Management. This document is a supplement to the IFC Performance Standards and Guidance Notes and provides recommendations relating to practical assessment of cumulative impacts recognizing some of the uncertainties and constraints faced by private sector proponents. It also introduces the concept of valued environmental and social components (VEC) in the assessment of cumulative impacts.

The approach outlined in the Handbook comprises six steps consistent with IFC PS 1 and associated guidance note and is broadly applied in the methodology and approach presented in Section 13.4.

13.2.3 Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, EU (1999)

Recommendations related to CIA are also provided in the EU commissioned document entitled 'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions' (1999) applied extensively by European companies in the EIA process as a primary source of practical guidance.

Although a relatively old document, it advocates an approach that is consistent with more recent IFC guidance described above, including the following:

- Gathering of project information,
- A scoping phase (temporal and spatial scope),
- Scoping, to identify important issues for further assessment,
- Collection of baseline data, potentially over a wider geographic area than for the Project alone,
- Assessment of cumulative impacts (outlining a range of assessment tools and techniques) with consideration given to the carrying capacity of the receiving environment.

Recognizing that temporal boundaries need to be determined on a project-by-project basis, and that this is dependent upon the availability and quality of information, the Guidance states that *'In setting the future time boundary it is suggested that in general, beyond 5 years there is too much uncertainty associated with most development proposals. It is therefore recommended that in the majority of cases the limit does not exceed 5 years into the future.'*

13.3 Approach to CIA

The approach towards the assessment of cumulative impacts has evolved over recent decades as new guidance has been made available. The approach is therefore based primarily on the 2012 IFC Performance Standards and supplemented by the recommendations provided in the IFC GPH described in Section 13.2.2.

The GPH recognizes that where impacts are likely to arise from multiple projects at a regional level, or where there is uncertainty over potential impacts due to the longer-term timeframes involved, it would be

more appropriate for a CIA to be undertaken by the relevant authorities. In recognition of the constraints often faced by private sector organizations when assessing cumulative impacts, the GPH introduces the concept of a simpler Rapid Cumulative Impacts Assessment (RCIA) based on a desktop review of readily available information.

For the purpose of this ESIA, the CIA will draw from the following information:

- Detailed primary baseline data gathered in the process of environmental engineering surveys and enabling a rather detailed characterization of the Project Area of Influence,
- Data and information received during the site visit in August 2016,
- Archives and literature data and information from other publicly available sources and used for characterization of a more extensive range of the territory, i.e. at a regional level, outside the Project Area of influence.

Further detail regarding the manner in which the two tiers of information will be applied is discussed below in the section dealing with the CIA methodology.

13.4 CIA methodology

The CIA methodology is based on the guidances described previously (section 13.2) and in particular follows the six step approach outlined in the draft GPH and includes the following six steps.

Step 1. Scoping Phase I – VECs, Spatial and Temporal Boundaries

The first stage of the CIA is aimed at identifying potential VECs and defining the spatial and temporal boundaries.

VECs

VECs are those receptors that are considered to be important when assessing the risks posed from cumulative impacts. VECs have been identified throughout the ESIA process, including through consultations undertaken with stakeholders (e.g. see Chapter 5 and the Stakeholder Engagement Plan) and reviews and assessments undertaken as part of the ESIA (see Chapters 7, 8, 9 and 10).

Consistent with the above-mentioned guidance, the assessment is limited to impacts generally recognized as important on the basis of scientific concerns and concerns from Affected Communities and excludes any potential impacts that would occur without the Project or independently of the Project. In addition, only those environmental and social receptors on which the Project itself is assessed to have potentially significant effects (see Chapters 9 and 10) are included in the CIA. In practical terms, this means that:

- If the impact of the Project on a receptor has been assessed Negligible then it is not considered as a VEC in the CIA (i.e. scoped out in all cases);
- Receptors on which the assessed Project impact is Low are considered on a case-by-case basis for inclusion as a VEC in the CIA.

Spatial Boundaries

The Project AoI defined in Chapter 4 in accordance with the IFC Performance Standards' guidance and with due consideration of potential cumulative impacts[2] . The pre-defined AoI includes:

- Project Area (areas directly affected by the Project include those affected by direct physical impacts from GPP or associated auxiliary facilities located within the Project boundaries),
- Areas adjacent to the Project Area where the Project facilities will have indirect impacts.

The CIA also considers a larger spatial area outside of the Project AoI. The precise spatial boundaries are defined on the basis of the geographic range of specific VECs as well as the spatial distribution of other third-party activities or influences that might impact the VECs.

Temporal Boundaries

Consistent with established EU guidance[3], consideration is normally given to existing projects or those expected to be initiated within a period of 5 years from the data of the CIA completion, with an exception of development projects that may be initiated after 5 years, but for which reliable information and certainty is available. The temporal boundary is therefore defined based on the availability and quality of information about existing and reasonably foreseeable projects or projects with a conceptual plan.

The overall Phase I scoping is undertaken through consideration of the VECs, spatial and temporal boundaries and also the Phase II scoping, in a systematic manner, taking the assessed Project impacts to each social and environmental receptor identified in Chapters 9 and 10, and taking into account the following aspects:

1. All the different types of Project impacts on those receptors and the assessed significance of the residual Project impact;
2. Spatial extent of a receptor in this particular region;
3. Consideration of how the spatial extent of the receptor may overlap with the influence of other industrial activities identified through the Phase II Scoping process;
4. Consideration of the relative temporal boundaries of the different stressors (e.g. whether or not such stressors are concurrent, consecutive etc.) and the duration of such impacts;
5. Other non-industrial influences that may affect a receptor (within the determined spatial and temporal boundaries).

The above aspects are determined, and the potentially affected receptors identified in the CIA process are taken into consideration for the above factors, which are then considered as VECs.

The results of the Phase I Scoping are presented in Section 13.5.

Step 2. Scoping Phase II – Other Activities and Environmental Drivers

This part of the scoping exercise identifies historical, existing and planned activities and the presence of natural influences and stressors that have the potential to affect the VECs identified in Step 1 that will require further assessment within the CIA.

Natural influences and stressors that are unrelated to the Project activities are also considered, for example, the potential impact of climate change in terms of the climatic extremes and impacts on permafrost, migratory and predatory animals. Given the inherent uncertainty and variability associated with climate change projections, these factors are only considered in terms of a high-level and qualitative assessment.

The results of the Phase II Scoping are presented in Section 13.6.

Step 3. Baseline Conditions

Available baseline data are gathered for the identified VECs. Baseline data for the Project AoI is based on detailed studies and survey works undertaken by the Project and as described in Chapters 7 and 8. These Project-specific studies are supplemented by readily available information at the regional scale beyond the Project AoI (see also Chapters 7 and 8).

Step 4. Assessment of Cumulative Impacts

The Project CIA has adopted a VEC centric approach, i.e. VECs and their resilience have been identified / determined then the impacts from various activities on these VECs were assessed.

The assessment presented in this Chapter considers only the residual impacts associated with the Project, i.e. the impacts that will persist after implementation of the planned mitigation measures. The VECs,

[3] In the "'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions" (1999), it is indicated that normally most of project proposals are associated with too many uncertainties outside of a period of 5 years. *It is recommended, therefore, to assume a time limit of maximum 5 years.*

potentially affected according to the assessment to an insignificant degree, should not necessarily be included in the cumulative impact assessment (Table 13.1).

Table 13.1: Criteria for including valued environmental and social components

Residual impact			
Insignificant	Low	Moderate	High
Not included in CIA	Considered for assessing the potential cumulative impact	Included in CIA	Included in CIA

Predicted future conditions for VECs are analyzed taking into consideration all impact factors, including the contribution of this Project to the overall cumulative impacts.

Due to the inherent uncertainties in the nature of cumulative impacts, the CIA has by necessity been performed in a qualitative manner, but nevertheless provides useful context for determining the significance of the Project's contribution to the overall impacts.

The assessment of cumulative impacts is provided in Section 13.7.

Step 5. Significance of Cumulative impacts

The assessment methodology in Chapter 3 describes the assessment of significance as a function of impact 'severity' and 'likelihood'. The methodology was developed primarily for assessing Project-specific impacts, although can be broadly applied to cumulative impacts. However, given the inherent uncertainties associated with the prediction of impacts from future projects where definitive information is expected to be limited, less reliance can be placed on the 'likelihood' component of impact significance (see below).

The cumulative impact assessment draws on the methodology described in Chapter 3 to express the severity of potential cumulative impacts. The detailed criterion of 'probability' mentioned in Table 3.2 in Chapter 3 has not been used.

Step 6. Management of Cumulative Impacts

Many of the mitigation measures defined during the assessment of Project impacts will also be applicable to the mitigation of cumulative impacts. However, it is also recognized that the cumulative impact assessment may generate additional mitigation measures and strategic or long-term actions, for example, the need to share findings of assessments and cooperate with third parties such as future developers and Amur region authorities or local government bodies.

Consistent with the approach taken elsewhere in the ESIA and described in Chapter 3, the mitigation hierarchy, which broadly requires that consideration be given to avoidance, minimization, mitigation and offsetting in that order of preference, has been applied.

The findings of the CIA, including the significance of impacts and necessary mitigation measures / further actions are described in Sections 13.7 and 13.8.

13.5 Scoping Phase I –VECs, Spatial and Temporal Boundaries

The output of the Phase I and Phase II scoping is summarized in Appendix 7 and is the result of the scoping process described in Section 13.4. Based on the results of the scoping process the following VECs have been identified for further consideration within the CIA:

- Atmospheric air,
- Geological environment,
- Underground waters,
- Surface waters,
- Aquatic biological resources
- Terrestrial fauna (natural habitats),
- Landscapes,

- Health and safety of local communities,
- Local infrastructure,
- Employment opportunities and economy.

13.6 Scoping Phase II Results– Other Activities and Environmental Drivers

This section defines the past, current and planned and reasonably defined developments in the vicinity of the Project. If the Project is able to interact with such developments (temporally and / or spatially), the Project may be able to exert a potential cumulative impact.

13.6.1 Historical and current activities

Based on available data, the Project area constitutes territories developed in the past and covered with ruderal grass and shrub vegetation.

The sites allocated for the planned facilities includes arable farm land. There are fields used for soybean cultivation (arable land is located in the eastern part of the Amur GPP site and projecting toward the site middle for a distance of 560 m).

The following industrial and municipal companies of the town of Svobodny are located in the immediate vicinity of the Amur GPP Project area (i.e. within a range of 10 km to 15 km):

- Svobodny railway carriage repair factory, subsidiary of "TransVagonMash" LLC, performing major repairs of freight cars and upgrades of gondola cars. Its proportion in the total shipped manufactured goods in the manufacturing sector amounted to 55% in 2012;
- The following other enterprises are incorporated in the structure of the Far Eastern railway division, subsidiary of OJSC "RZhD" Company: Chesnokovskaya railway station, railway terminal of the Svobodny railway station, NGCh-7 division for general maintenance works, communication centre, transport vehicle fleet of the Trans-Baikal Railway Department, Svobodny engineering department of the "Zabaikal Zheldor Proyekt" design development institute, cargo loading and unloading section, precast concrete manufacturing yard of the RZhD-Stroy Company;
- Amur Division of the Power Supply Network of the Federal Power Supply Networks of Russia providing utility services in Amur Region and in the southern part of the Republic of Sakha (Yakutia) operating the power supply trunk lines (including also international lines) and substations;
- Construction of an enterprise for quarrying of sandy silts and manufacture of ceramic building bricks. It is designed to exploit the Svobodny sandy silt deposit and produce up to 30 million ceramic bricks per year. It is planned also to construct a railroad track line to transport the products to Blagoveshchensk. Currently, these operations are performed on a seasonal basis, but it is planned to produce bricks and other construction materials round the year. The products will be sold in the town of Svobodny and in other districts of Amur Region; the products will be also used for construction of facilities at the Vostochny Spaceport.
- "StroyDetali" LLC manufacturing reinforced concrete parts, concrete, joinery products and steel structures;
- Enterprises of the food industry. More than 80% of enterprises producing food products belong to the small private business sector;
- "Teploset" LLC providing centralized heating services in urban areas. There are 47 heating sources, including 2 district boiler stations and 17 block boiler stations. The total installed capacity of all boiler stations is 240 Gcal/hour and the connected load is 150 Gcal/hour. The length of the heating networks in terms of double pipelines is 83.3 km, including 34.0 km requiring replacement.
- "Khoz-Alliance" LLC and "Aqua" LLC: 3 water abstraction facilities (Persky, Razdolnensky and Central) and 47 water wells. The installed capacity of the water pipelines is 16,900 m^3. There are six sewage treatment facilities. The length of the single-line water pipelines in the water supply networks is 91.2 km, of which 59.0 km need replacement. The length of the single-line sewage pipeline network is 119.2 km, of which 75.8 km need replacement.

13.6.2 Planned future activities

Since the Project is implemented in an area with a rather limited level of industrial development, the CIA is based on the review of the following policy documents related to development of the studied area:

- Concept of long-term social and economic development of the Russian Federation during the period until 2020 (RF Government's Decree No.1662-r of 17.11.2008);
- Strategy of socioeconomic development of Far East and the Baikal region during the period until 2025 (RF Government's Decree No.2094-r of 28.12.2009);
- Concept of development of border areas of the RF entities, included in the Far East federal district (RF Order No. 2193-r of 28.10.2015);
- Territorial planning scheme of Amur Region (Amur Region Government's Decree No.985 of 30.12.2011);
- Social and Economic Development Strategy of Amur Region for the period up to 2025 (Amur Region Government's Decree No.380 of 13.07.2012);
- Amur Region Government Program for Development of the Transport System in Amur Region in 2013-2020;
- Investment Strategy of Amur Region for the period up to 2018 (Amur Region Government's Decree No.679 of 1411.2014);
- Social and Economic Development Program of Amur Region in 2013-2017 (Amur Region Law No.277-OZ of 13.11.2013);
- Amur Region Government Program "Environment Protection in Amur Region in 2014-2020" (Amur Region Government's Decree No.453 of 25.09.2013);
- Program "Economic development of municipalities in Svobodnensky district in 2015-2020 (Amur Region Government's Decree No.552 of 05.11.2014);
- Municipal Program "Development of the Public Motor Road Network in Svobodnensky district in 2015-2020 (Amur Region Government's Decree No.564 of 05.11.2014);
- Municipal Program "Modernization of Communal Infrastructure Facilities in Svobodnensky district in 2015-2020" (Amur Region Government's Decree No.562 of 05.11.2014);
- Integrated Investment Plan for modernization of the mono-profile municipality of the town of Svobodny, Amur Region, during the period of 2013-2018;
- Social and Economic Development Strategy of the town of Svobodny until 2025 (Amur Region Government's Decree No.2371 of 26.12.2014).

According to the strategic planning documents covering the Far East and Baikal regions, three main zones for territorial development have been formed in Amur Region: natural resources zone along the Baikal-Amur railway line; industrial and logistics zone along the Amur river; and Svobodny zone associated with the spaceport; as well as two advanced development zones (ADZ): Belogorsk ADZ (agro-industrial complex) and Svobodny ADZ (gas-processing chemical industry sector).

The Svobodny advanced development zone is located within an area of an administrative unit of Uglegorsk and adjacent areas within the boundaries of Svobodnensky district. It is planned to develop the construction sector, high-tech instrument-engineering and machine-buildings sectors to provide services for construction and operation of the Vostochny spaceport.

In connection with the development of the gas processing complex in Svobodnensky district, a RF Government's Decree was issued in 2015 aimed at establishing the Svobodny ADZ to support the construction and operation of major gas processing enterprises.

A list of main projects to be implemented during the period until 2025 is presented in Table 13-2 (in compliance with the Territorial Development Scheme for Svobodny urban zone and with the Integrated

Investment Plan for modernization of the multi-profile municipality of the town of Svobodny, Amur Region, for the period of 2013-2018).

Development of the Spaceport Cluster

The national Far Eastern spaceport of Vostochny is based on the use of state-of-the-art technologies and the integration of the space development activities within the general industrial development and the activities of research and educational institutions. It is supposed to be the basis for the space development cluster and give a stimulus for development and strengthening of the socioeconomic situation not only in Amur Region, but also the entire Far Eastern region of Russia. The creation of the spaceport cluster is scheduled to be completed in 2018-2020. The total investments for the spaceport construction will amount to 300 billion Rubles.

The capacities of the construction sector will be increased to a significant degree for the purpose of the spaceport construction; new capacities will be built in the sector of construction industry and for manufacture of advanced construction materials.

The construction and operation of the Vostochny spaceport will facilitate an increase in the capacity of the Trans-Siberian railway line, modernization of the railway track network, intensification of the traffic through the federal "Amur" highway up to its design capacity and its integration with the overall motor road network of the region (express road Blagoveshchensk-Svobodny bypassing the town of Svobodny, the federal Amur-Uglegorsk highway), creation of modern road infrastructure facilities (radio communication system, medical services and other road service facilities). Along with the development of the multi-functional transport and logistics complex, new opportunities will be provided for development of the transport network in Amur Region as a whole and for the use of the regional transit potential.

Within the framework of the project new industrial capacities will be built to provide support services for the spaceport, including an oxygen and nitrogen plant, facilities for manufacture of spare parts, construction industry, a specialized medical complex, research laboratories and centers, and a modern housing complex for up to 30,000 residents.

Creation of a gas chemical cluster

Construction of the Amur GPP is directly related to the implementation of the Power of Siberia gas pipeline project. The pipeline will cross the region from north to south and will be connected to the Amur GPP site. The compression station KS-7a "Zeiskaya" of the "Power of Siberia" pipeline is located in 1.5 km to the north of the Amur GPP site. It is planned to complete construction of the "Power of Siberia" pipeline until 2018 and its construction schedule is coordinated with the GPP construction.

"Power of Siberia" TPP with a capacity of 440 MW and the associated transmission lines and substations are planned to be built for steam and power supply of the Amur GPP. It will be located in a close vicinity of the Project area (around 1 km south from the Amur GPP site). It is planned to be commissioned in IV quarter of 2020.

The Sibur Holding Company considers construction of a (Sibur plant) in the direct vicinity of the Project area (1.5-2 km south-east of the Amur GPP site) to be connected to the "Power of Siberia" gas pipeline and the Amur GPP as the main supplier of the raw-material gas for the Sibur plant. Ethane to be produced by the Amur GPP at a rate of 3.4 million t/year will be used for polyethylene manufacture at the Sibur plant. Currently, the Sibur Holding Company selects a co-investor to share financial risks and support the project to ensure product sales in Asian markets. According to the RF Ministry for Far East Development, the potential investments for construction of a gas chemical plant can be as high as 11.5 billion US Dollars, but no decision has been taken so far with regard to implementation of this project, its timeframe and investments.

In order to facilitate these investment projects, an ADZ of Svobodny will be established in Amur Region during 2016-2017. The status of such a zone provides the following advantages: the plant as an ADZ resident will be exempted of property and land tax and the charges to be paid to the extra-budgetary funds will be reduced down to 7.6%.

In addition to the major projects in the energy and space development sectors, it is planned to implement in the town of Svobodny and in Svobodnensky district a number of investment projects in various sectors of

economy, including industry, agro-industrial sector, communal services, transport and communication infrastructure, recreational and tourism sector, as well as social infrastructure. Main investment projects planned in Svobodnensky district are described below:

Development of the Svobodny sandy silt deposit for construction mix manufacture

It is planned to construction in 2014-2016 a plant for loose construction mix manufacture (SK "Gorodok") on the basis of the Svobodny sandy silt deposit, the development of which was started to provide raw materials for the brick-manufacturing plant built in 2015 by the Construction Ceramics Company. The investments for the plant construction amounted to 200 million Rubles.

Modernization of production facilities of OOO "Amur-Agro-Invest"

Modernization of the Company's plant for production of extruded low-fat soybean flour is carried out at the existing facilities with their subsequent expansion (installation of a second production line, construction of vertical storage facilities, automation of loading facilities for railway transport). The final product will be sold in Chelyabinsk and Sverdlovsk Regions and in the Republic of Bashkortostan. The total investments will amount to 15 million Rubles; the projects will provide 6 permanent jobs.

Construction of a dairy and meat complex

The project for construction of a new livestock farm for 300 head of cattle using a close-circuit system will provide comprehensive technologic support throughout the entire period of the project design development, construction, equipment installation and commissioning phases. A livestock farm building having an area of 572 m^2 will comprise a cattle farm and a meat processing plant. It is planned to use a farmland area of 50 ha for growing fodder crops. The farm will produce during a period of 5 year 380,000 l of milk and 10 tonnes of meat. To implement this project, it is planned to construct also a required infrastructure: a cable line 1000m to 1200m long and an access road to the farm 400m long. The project should be implemented during 2014-2016. The total investments will amount to 30 million Rubles. Ten permanent jobs will be created.

Construction of a maize processing complex

The objective of this project is to ensure high degree of maize processing and manufacture of maize starch and associated by-products (maize flour, cereals, popcorn, etc.). The complex will comprise three independent production facilities combined in a single line and ensuring a waste-less maize processing process. To implement this project, it is also planned to construct the required infrastructure facilities: an access road and a boiler house, as well as connections to water and heat supply systems. From the environmental viewpoint, this complex will have an insignificant impact on the surrounding environment; it has been mentioned in the feasibility study documentation that the air emission sources will be equipped with exhaust air treatment devices. The total investments will amount to 30 million Rubles. Ten permanent jobs will be created.

There is also some information about the following agro-industrial projects planned in Svobodnensky district during the period until 2025:

- Construction of the cattle farm building for 300 head in Svobodnensky district, village of Klimoutsy;
- Horse meat farm for 50 head in Svobodnensky district, village of Klimoutsy;
- Construction of a pig farm complex for 15,000 head in Svobodnensky district, village of Zagornensky;
- Extension of the livestock farm for meat production for 300 head of cattle and 100 pigs in Svobodnensky district.

Development of the transport infrastructure

It is planned to implement the following projects aimed at development of the transport and communications infrastructure during the period until 2025 in order to ensure comprehensive balanced development of the region as a whole and Svobodnensky district in particular:

- Construction of express road Blagoveshchensk-Svobodny;

- Modernization of the infrastructure and the building of the river port of Svobodny;
- Modernization of the airport building and the runway in the town of Svobodny (2014-2020), installation of up-to-date equipment;
- Modernization of the highway Blagoveshchensk-Svobodny;
- Construction of bypass roads to bypass the cities of Svobodny and Uglegorsk;
- Construction of a bridge across the Serebryanka river at the 32km point of the Svobodny-Busse motor road;
- Construction of a regional motor road Sergeyevka – Guran (10km long) to backup the Blagoveshchensk-Svobodny highway (until 2025);
- Modernization of the Svobodny – Talali motor road (until 2025);
- Construction of a fiber-optic communication line Shimanovsk-Svobodny-Belogorsk-Bureya.

Construction of a transport and logistics complex in Svobodny

It is planned to establish within the urban district of Svobodny an advance development zone: Svobodny transport and logistics complex (STLC). The complex project design has been developed for a built-up area of 145 ha with a potential expansion of up to 290 ha within the boundaries of the town of Svobodny in the vicinity of the "Ust-Pera" railway station with an access to the Svobodny – Shimanovsk motor road. The following facilities will be constructed within the allocated land area:

- storage facilities for temporary storage, an open-air store for bulky cargoes and a transport and shipping enterprise;
- authorized service station for repair and maintenance of heavy-duty trucks and trailers;
- parking lot for transport vehicles;
- a plant for manufacture of tires for heavy-duty trucks.

Development of recreational facilities and tourism

It is planned to establish three recreational and touristic zones, for which purpose a land area of 3,000 ha has been allocated:

- a recreational area at the Bardagon lake for construction of recreational facilities, children's recreation camps and boarding houses (400 ha);
- a recreational area of "Moskvitinskaya" for seasonal recreational facilities (593 ha);
- a recreational area "Natalyino - Istochny" for recreational facilities and children's recreation camps (1873 ha).

Modernization and creation of communal infrastructure facilities and wastewater treatment plants

It is planned to construct in the town of Svobodny a number of municipal sewage treatment facilities and incinerators foe medical waste incineration at the municipal landfill for solid waste disposal.

It is planned to construct a local landfill for biological waste disposal (cattle burial ground) at a distance of approximately 6 km from the village of Chernigovka, Svobodnensky district. No data is available with regard to the exact location of this facility. It might potentially be located within the Project AoI.

Table 13.2: List of main facilities foreseen in the development plan of Svobodnensky district and Town of Svobodny, Amur Region

Ser. Nos.	Planned projects	Area of implementation	Implementation timeframe		
			Top priority	Estimated timeframe until 2025	Degree of priority
I	Spaceport complex				
	Implementation of the project aimed at construction of a spaceport cluster, including:	Closed administrative territorial unit "Uglegorsk"		2013-2020	
1	Construction of Vostochny spaceport	Closed administrative territorial unit "Uglegorsk"		2017-2020	6
2	Construction of associated infrastructure facilities for the Vostochny spaceport (housing complex, industrial, construction and maintenance base: oxygen and nitrogen plant, spare parts manufacturing plant, construction organizations, research center, specialized medical center, construction of motor roads and engineering networks, etc.)	Closed administrative territorial unit "Uglegorsk"	2013-2017		1,6
II	Fuel and energy sector				
	Construction of a gas chemical cluster, including:				
1	Construction of the "Power of Siberia" gas pipeline within the Svobodnensky district (pipelines, KS-7a "Zeiskaya")	Chayanda gas field - Blagoveshchensk (across Svobodnensky district)	2014	2018	4
2	Construction of Amur GPP	15 km to the north of the town of Svobodny	2015	2021	1,4
3	Construction of "Power of Siberia" TPP and associated transmission lines/substations	15 km to the north of the town of Svobodny		2020	2,4
4	Construction of Sibur's deep hydrocarbon conversion plant	10-15 km to the north of the town of Svobodny	2017	2024	1,4
III	Construction complex				
1	Construction of a plant for manufacture of ceramic bricks (Construction Ceramics Company) for development of the Svobodny sandy silt deposit	Town of Svobodny	2012	2015	4
2	Construction of a plant for manufacture of construction mix (SK "Gorodok") using the Svobodny sandy silt deposit	Town of Svobodny	2014	2016	4
IV	Agro-industrial complex				

Ser. Nos.	Planned projects	Area of implementation	Implementation timeframe		
			Top priority	Estimated timeframe until 2025	Degree of priority
1	Modernization of soya bean flour production facilities of "Amur-Agro-Invest" LLC	Town of Svobodny	2014		8
2	Construction of livestock farm complex for dairy and meat products production	Town of Svobodny	2014	2016	8
3	Construction of a maize processing facility	Town of Svobodny		2015	8
4	Construction of cattle farm buildings	Village of Klimoutsy, Svobodnensky district		2025	8
5	Development of horse meat production complex	Village of Klimoutsy, Svobodnensky district		2025	8
6	Construction of pit farm buildings	Zagornensky Village Council, Svobodnensky district		2025	8
7	Expansion of the facilities for meat production (cattle and pigs)	Svobodnensky district		2025	8
V	Development of transport and motor road infrastructure				
1	Construction of an express road Blagoveshchensk-Svobodny	Cities of Blagoveshchensk and Svobodny	2013	2017	2,4
2	Modernization of the river port infrastructure and building	Town of Svobodny	2014	2020	2
3	Modernization of the airport and runway	Town of Svobodny	2014	2020	2
4	Creation of a transport and logistics complex of Svobodny	Town of Svobodny	2016-2017	2020	2,4
5	Modernization of the existing highway Blagoveshchensk-Svobodny	Cities of Blagoveshchensk and Svobodny 46-47 km, 46-83, 90, 92-142 km	2015	2025	2
6	Construction of bypass roads to bypass the cities of Svobodny and Uglegorsk	Town of Svobodny, Closed administrative territorial unit "Uglegorsk"	2015		2,7
7	Construction of a bridge across Serebryanka river	32km point of motor road Svobodny -Busse		2025	2
8	Construction of a regional motor road Sergeyevka - Guran to back up the existing highway Blagoveshchensk-Svobodny	Settlement of Sergeyevka - Settlement of Guran (10 km long)		2025	2

Ser. Nos.	Planned projects	Area of implementation	Implementation timeframe		
			Top priority	Estimated timeframe until 2025	Degree of priority
9	Modernization of motor road connecting the town of Svobodny and settlement of Talali	Svobodny – Talali		2025	2
VI	Development of communal engineering infrastructure and waste disposal facilities				
1	Construction of sewage treatment facilities	Town of Svobodny	2015		1,5,7
2	Installation of an incinerator for medical waste incineration at the municipal landfill	Town of Svobodny		2025	1,5,7
3	Construction of a cattle burial ground	Village of Chernigovka Svobodnensky district	2015	2025	7,8
VII	Recreation and tourism				
1	Construction of infrastructure in recreational zones: recreation facilities, children's recreation camps, boarding houses, seasonal recreational facilities	Bardagon Lake, settlement of Moskvitino, settlement of Natalyino	2010	2020	1,4

13.6.3 Other environmental pressures

Other environmental pressures in the area include habitat degradation due to different agricultural activities (croplands, cattle and sheep farming) and forest fires; and illegal fishing and hunting.

Climate change also has the potential to lead to region-wide impacts in Amur Region. Potential impacts include changes to range of migratory species and increase of unfavorable conditions such as floods, forest fires and etc. However, the strength and nature of any such induced changes over the lifetime of the Project are highly uncertain. As such, the effects of climate change are discussed only in qualitative high-level terms in this CIA.

13.6.4 Discussion

An analysis has been undertaken of current activities and development proposal features (programme, distance from the Project activities, development footprint characteristics) in order to ascertain the Project's potential to contribute to a cumulative impact. This analysis is presented in Table 13-3 and details which activities/ development proposals have been scoped in and out of the CIA (i.e. developments scoped out of the assessment are considered to not have the ability to generate a significant cumulative impact as associated with the Project) or where development proposals have a high degree of uncertainty or are undefined such that the potential for cumulative impacts cannot be appropriately assessed.

Based on an analysis presented in Table 13.3, the following projects / activities have been included in the Cumulative Impact Assessment:

- Construction of the Vostochny spaceport and its auxiliary facilities within the closed administrative territorial unit "Uglegorsk";
- Construction and operation of the "Power of Siberia" gas pipeline within the boundaries of Svobonensky district (pipelines, KS-7a "Zeiskaya");
- Construction of "Power of Siberia" TPP and associated transmission lines/substations;

- Construction and operation of the Sibur plant;
- Trains and lorries for transportation of liquefied gases.

Other developments have been scoped out of the CIA on the basis that:

- The temporal or spatial interactions with the Project are such that significant adverse cumulative impacts would be avoided;
- The development proposals are only at the conceptual stage; or
- There is lack of information available to undertake a meaningful assessment.

Table 13.3: Analysis of activities / projects capable generate cumulative impacts in combination with AGPP Project

Activity / Potential development	Interrelations with the Project	Included / Nor included in CIA
Enterprises and facilities incorporated in the RZhD Company's structure: Svobodny railway carriage repair plant, railway station Chesnokovskaya, railway terminal Svobodny, NGCh-7 division for general maintenance works, communication centre, transport vehicle fleet of the Trans-Baikal Railway Department, Svobodny engineering department of the "Zabaikal Zheldor Proyekt" design institute, cargo loading and unloading section, precast concrete manufacturing yard of the RZhD-Stroy Company.	The facilities are located outside of the Project AoI. Temporal and spatial interrelation with the Project will not cause any unfavorable cumulative impact.	Not included
An enterprise for manufacturing construction materials: ceramic bricks by the Construction Ceramics Company and construction mix by the "Gorodok" Construction Company using raw materials from the sandy silt deposit at Svobodny.	The facilities are located outside of the Project AoI. Temporal and spatial interrelation with the Project will not cause any unfavorable cumulative impact.	Not included
Construction of the Vostochny spaceport and associated infrastructure (housing complex, creation of an industrial and construction base, i.e. an oxygen and nitrogen plant; a plant for components manufacture, plants for manufacture of construction materials, a research center and laboratories, a specialized medical center, motor roads and engineering networks, etc.).	Development is planned outside of the Project AoI. Cumulative impact is possible in case of impact on the same VECs within the Project AoI.	Included
Construction of the Sibur plant.	It is planned to construct a gas chemical plant within the Project AoI. It can be coordinated in the temporal and spatial respect. Cumulative impact is possible in case of impact on the same VECs within the Project AoI (natural and social aspects).	Included
Construction of “Power of Siberia” TPP and associated transmission lines/substations	Construction is planned within the Project AoI. It can enter into interaction with the Project both in temporal and spatial	Included

Activity / Potential development	Interrelations with the Project	Included / Nor included in CIA
	relation. Cumulative impact is possible in case of impact on the same VECs in the Project AoI.	
Construction of the "Power of Siberia" gas pipeline (within the boundaries of Svobodnensky district)	Construction is planned also within the Project AoI. It can enter into interaction with the Project both in temporal and spatial relation. Cumulative impact is possible in case of impact on the same VECs in the Project AoI.	Included
Modernization of the soya bean flour production facility operated by the Amur-Agro-Invest Company in the town of Svobodny	The facility is located at a significant distance from the Project area. Temporal interrelations with the Project will not cause any adverse cumulative impact.	Not included
Construction of a dairy and meat-processing complex in the town of Svobodny	The facility is located at a significant distance from the Project area. Temporal interrelations with the Project will not cause any adverse cumulative impact.	Not included
Construction of a maize processing plant in the town of Svobodny	The facility is located at a long distance from the Project area. Temporal interrelations with the Project will not cause any adverse cumulative impact.	Not included
Development of a livestock complex in Svobodnensky district (including construction of a cattle farm and development of horse meat production complex in the village of Klimoutsy; construction of a pig farm complex in the village of Zagornensky.	The planned facilities are located at a significant distance from the Project area. Temporal interrelations with the Project will not cause any adverse cumulative impact.	Not included
Construction of an express road Blagoveshchensk-Svobodny	No accurate data is available with regard to the location of the planned express road.	Not included
Modernization of the river port infrastructure and building in Svobodny.	The facility is located at a significant distance from the Project area. Temporal interrelations with the Project will not cause any adverse cumulative impact.	Not included

Activity / Potential development	Interrelations with the Project	Included / Nor included in CIA
Modernization of the airport building and runway in the town of Svobodny	The facility is located at a significant distance from the Project area. Temporal interrelations with the Project will not cause any adverse cumulative impact.	Not included
Establishment of a transport and logistics complex in Svobodny	The facility is located at a significant distance from the Project area. Temporal interrelations with the Project will not cause any adverse cumulative impact.	Not included
Construction and modernization of the motor road network in Svobodnensky district (bypass roads bypassing the cities of Svobodny and Uglegorsk, a bridge across the Serebryanka river, roads of regional significance Sergeyevka-Guran, Svobodny-Talali)	Development is planned within the Project AoI. Temporal interrelations with the Project will not cause any adverse cumulative impacts.	Not included
Operation of the social facilities constructed during Stage 5 of the Project.	The social infrastructure (microdistrict in Svobodny city) is sponsored by the Project and handed over to the Svobodny District administration. Therefore, during the construction phase it is considered as an associated facility of the Project and its impacts are to be assessed within the current ESIA. Operation of the microdistrict will unlikely to result in significant adverse cumulative effects.	Not included
Engineering and communal infrastructure and waste disposal facilities in the town of Svobodny	Facilities or activities on which the Project is not dependent, and which do not result in risks and impacts in the Project AoI.	Not included
Construction of a biological waste disposal facility (cattle burial ground) near the village of Chernigovka, Svobodnensky district	There is no accurate data available with regard to the location and timeframe of the cattle burial ground construction and operation.	Not included
Recreation and tourism in Svobodnensky district	Recreational facilities and areas are located at a significant distance from the Project area and will not have any interrelations with the Project.	Not included

Activity / Potential development	Interrelations with the Project	Included / Nor included in CIA
Trains and lorries for transportation of liquefied gases (helium –by lorries, propane, ethane, butane, pentane/hexane fractions and WLHF – by trains)	It can enter into interaction with the Project both in temporal and spatial relation.	Included

13.7 Assessment, significance and management of cumulative impacts

The sections below consider the potential for VECs to experience potential cumulative impacts. Table 13.4 summarises the results from the analysis and indicates which activities/ developments have been considered by the various VEC-specific cumulative impact assessments.

In the sections below, if a cumulative impact risk is identified, the significance of the potential cumulative impact is qualified.

Table 13.4: Types of activities/projects included in the CIA for each VEC

VEC	Sibur plant	"Power of Siberia" gas pipeline	Vostochny spaceport	"Power of Siberia" TPP	Lorries and trains for transportation of finished products
Atmospheric air	v	v		v	v
Geological environment	v	v		v	v
Underground waters	v	v		v	v
Surface water bodies	v			v	
Aquatic water resources	v				
Terrestrial wildlife	v	v	v	v	v
Landscapes	v	v		v	
Health, safety and security of local communities	v		v	v	v
Local infrastructure	v		v	v	v
Employment opportunities for local residents and local economy	v	v	v	v	v

V indicates activities/ developments scoped in

13.7.1 Atmospheric air

Chapter 9 (Section 9.2 Air Quality) reports that the residual air quality impacts are all predicted to be insignificant during construction and low during operation phase. Major sources of emissions and resulting air pollution during operation will be gas compressor units, direct-fired/ combustion heaters of gas, boiler plants, and gas treatment units (major pollutants will be nitrogen dioxide, nitrogen (II) oxide, sulphur dioxide, carbon monoxide, benzo(a)pyrene, particulate matter, hydrocarbons (by components) and hydrogen sulphide).

The main potential sources of impacts on air quality within the Project AoI are the planned projects located close to the AGPP SPZ boundaries: the Sibur plant, the "Power of Siberia" gas pipeline, the "Power of Siberia" TPP and lorries (for transportation of the finished products – helium). Their simultaneous operations may result in adverse cumulative effects on air quality (especially in regards to nitrogen dioxide and carbon monoxide). Considering the distance from the closest residential areas (garden/vegetable allotments of the

Yukhta settlement in 1.7 km to the west and Yukhta settlement in 2.3 km to the south-west) and predominate west and north-west wind direction, the cumulative impact is likely no more than moderate[4].

13.7.2 Geological environment

It has been shown in Section "Geological Environment" of Chapter 9 that several types of residual impacts on the surface relief and geological environment have been assessed as 'moderate' to 'high' (Summary table of main types of impact is presented in Appendix 7).

Construction of two major industrial facilities (the Sibur plant and the "Power of Siberia" gas pipeline) as well as the "Power of Siberia" TPP is planned in the immediate vicinity of the Project area and approximately within the same timeframe; their impact on the geological environment can be aggravated with a high degree of probability by the Project construction activities. Areal and vertical transformation of the ground stratum as a result of excavations and associated operations, loads imposed on the ground and development of hazardous exogenous geological processes and phenomena caused by vegetation removal, destruction and disturbance of the soil cover, re-distribution of huge amounts of soil and changes in the surface runoff and underground discharge within a very large area can be assessed as **long-term and of moderate intensity**.

13.7.3 Underground waters

The residual impact on the upper aquifers is expected to be from moderate to high, mainly during the construction phase due to high concentration of construction machinery, transport vehicles, mobile buildings and structures, industrial and domestic wastes against the background of considerable volumes of works associated with destruction or disturbance of the soil cover and low degree of underground water protection. Similar impacts are expected also in the process of construction of the Sibur plant, the "Power of Siberia" gas pipeline and the "Power of Siberia" TPP. Taking into consideration the high permeability of the ground (self-purification ability), no significant cumulative impact is expected and the impact on the upper aquifers is assessed as **temporary and low**.

As far as the operational aquifer is concerned, it appears to be probable that it will be depleted due to deterioration of the recharge conditions and changes in the surface runoff and underground discharge from the industrial sites and adjacent areas (recharge zone of the aquifer). The cumulative impact is probable, but it does not appear to be possible to assess the intensity of this impact at the current moment of time due to the lack of monitoring data of this aquifer.

13.7.4 Surface water quality

In the Section "Surface Water Quality" of Chapter 9 it has been demonstrated that the residual impact on the surface water quality is predicted to be 'low'.

The Sibur plant and the "Power of Siberia" TPP projects are located within the Project AoI and the impact of these projects appears to be probable during the construction and operations phases on one and the same watershed area (Zeya river with its tributaries: Rakusha and Bolshaya Pera) due to both wastewater discharge and discharge of upper aquifers and stormwater runoff from industrial sites and adjacent areas (predominantly during the construction phase).

Provided that appropriate mitigation measures will be taken at the level of individual projects, the cumulative impact on the Zeya River is assessed as **temporary and of low intensity**.

13.7.5 Aquatic resources

The residual impact of the Project on aquatic resources is assessed from 'low' to 'moderate'. Moderate impact on the water quality and habitats of hydrobionts is expected during the dredging operations in the process of construction of a provisional river jetty on the Zeya River. This negative impact will be limited to the jetty construction period (max. 8 months). It is unlikely that the impact of other projects (first of all, the

[4] A modelling of air pollutant dispersion from all potential sources might be recommended for more precise assessment of the cumulative impact.

Sibur plant) will take place at the same time and cause any significant cumulative impact. Due to this reason, the cumulative impact is assessed as **temporary and of low intensity**.

13.7.6 Terrestrial fauna

As has been discussed in the Section "Terrestrial fauna" in Chapter 9, the residual impact has been assessed from 'low' to 'moderate'. The main impact of the Project implementation on natural habitats will be associated with their long-term physical loss due to land take for construction of the Project facilities and infrastructure, clearing of forests and other vegetation, complete loss and fragmentation of habitats within the boundaries of the Project area, elevated noise level caused by transport vehicles (disturbance factor) and synanthropization of the landscape (construction of motor roads and other linear facilities, etc.). The parameters of the disturbance zone are limited to a range of 2-3 km from the boundary of an impact source.

Construction of associated projects (the "Power of Siberia" gas pipeline, and the Sibur plant and the "Power of Siberia" TPP) can cause similar impacts on the same habitats (in the first line habitats of major mammal species within an area of more than 10 km^2), both due to an increase in the area of disturbed habitats and the influx of construction and operating personnel. All this can be aggravated by illegal hunting, which will result in a negative impact on game animal resources.

The cumulative impact on the wildlife as a result of habitat destruction and deterioration can be assessed as **long-term and of medium intensity**.

13.7.7 Landscapes

The expected changes in the landscape structure of the right banks of the Zeya River in the interfluve area of the Bolshaya Pera and Gashchenka rivers are not limited to the construction of the Amur GPP and its associated facilities: numerous associated facilities will be located along the "Power of Siberia" gas pipeline and around the chemical plant as well as the "Power of Siberia" TPP in the areas adjoining the Project sites. Some of those facilities will be located in the direct visibility range of the following residential areas in Svobodnensky district: Yukhta, Chernigovka, Gashchenka, Ust-Pera and Svobodny (residential area). The overall decrease in the forest area and fragmentation of the preserved slightly and moderately modified natural landscapes with some areas having technogenic physiognomic aspects will result in the loss of the original visual amenity of the local forest and meadow landscape and in processes of gradual transformation under the new sharply changed conditions. The cumulative impact is assessed as **long-term, irreversible and of high intensity**.

13.7.8 Health, safety and security of local communities

As has been discussed in Chapter 9, the Project implementation can have negative impact on the health and safety of the local communities due to the following factors (the residual impact level of the Project is low):

- Risks for safety of the local residents associated with the traffic of heavy machinery and passenger transport on local public roads, an increase in the road traffic intensity that might affect the safety on roads and result in higher risks of traffic accidents;
- Tensions and conflicts associated with a significant influx of workers from other regions.

The impact of other projects (in particular the projects of construction and operation of the Amur chemical plant and the Vostochny spaceport, the timeframe of which coincides with the time of the Project implementation) as well as transportation of finished products by lorries affecting the road traffic safety will increase the probability of cumulative impact on the health and safety of local communities only to a minor degree. Mutual interference of the transport streams associated with the Vostochny spaceport project will be insignificant due to the fact that contrary to the Amur GPP Project, the main part of transportation will be by railway, rather than by motor vehicles. During the construction of the chemical plant, it will be possible that the cumulative impact of the transport traffic (heavy machinery and trucks) on public roads will increase up to the medium level, but it will decrease during the operational phase when the risks will be limited to transportation of the personnel of the AGPP and the Sibur plant.

As to potential tensions and conflicts associated with immigrating workforce are concerned, the cumulative impact will also probable because there is already some information available about growing tensions caused

by the influx of the workforce to the Uglegorsk area. A temporary increase in the tensions will be caused also by additional influx of workforce in connection with the chemical plant construction project, but taking into account the generally favorable attitude of the local communities to implementation of major projects in their region, the cumulative impact relating to this aspect is assessed as moderate.

In general, the cumulative impact on the health and safety of the local communities, considering also other existing and planned major projects in the subject region, can be assessed as **moderate**.

13.7.9 Local infrastructure

The influx of workforce for implementation of various projects to the subject region can potentially increase the pressure on the existing infrastructure facilities and services relating mainly to public healthcare, education and transport services. It has been shown in Chapter 9 that the residual impact of the Amur GPP Project on the local infrastructure has been assessed as 'low'.

Immigration of personnel and applicants for jobs for the chemical plant project will increase the overall impact on the social infrastructure in the town of Svobodny and in case of no mitigation measures it can reach a high level during the initial period of the operational phase. The load on the social infrastructure in Svobodny will be intensified due to the fact that certain elements of the social infrastructure are already overloaded. The input of the Vostochny spaceport to the impact on the social infrastructure will be less noticeable because the project personnel will use the infrastructure located in Uglegorsk. Taking into consideration the fact that the implementation of the above projects will significantly increase the population of the subject region, it will be potentially possible that the overall load on the infrastructure facilities of regional significance will increase to a certain degree (e.g. specialized medical institutions, occupational and higher educational institutions, cultural institutions in the city of Blagoveshchensk).

Construction of the Sibur plant, the "Power of Siberia" gas pipeline and the "Power of Siberia" TPP will increase the traffic intensity of heavy machinery and vehicles on public roads in Svobodnensky district and in the town of Svobodny, potentially resulting in deterioration of the local roads and in the need for better financing of road maintenance and repair at the expense of the local budget. This will also increase the road traffic intensity due to transportation of local residents using both their private cars and public transport. During the operational phase, transportation of the finished products by lorries will take place, but in general, the traffic intensity will decrease due to termination of the traffic of heavy machinery and trucks, but this factor will still exist during a long period of time. Taking into consideration the satisfactory condition and capacity of the motor road network, it is unlikely that the pressure on the transport infrastructure will exceed the medium level.

In case of no adequate mitigation measures at the level of individual projects, the overall level of cumulative impact on the local infrastructure may be assessed from **medium to high**.

13.7.10 Employment opportunities for Local Residents and Local Economy

Implementation of the major industrial and innovative development projects to be implemented in Svobodnensky district will provide benefits to the local and regional economy due to the following factors:

- Direct and indirect employment opportunities for local residents and associated benefits for the economy;
- Increase in tax proceeds to the regional budget;
- Purchase of local goods and services and associated effects relating to motivation and development of businesses.

Creation of new jobs in connection with the Project implementation will provide an additional contribution to the overall **favorable cumulative effect** associated with the development of other projects in the subject region. Potential opportunities for socioeconomic development of the subject region, including employment opportunities for local communities, are discussed in detail in Chapter 10.

Negative cumulative impacts will be associated with potential inflation at the local level caused by the influx of workforce and applicants for jobs and increasing with the beginning of the chemical plant construction.

An increase in the demand for goods and services can cause a local rise of prices and affect the local households. The intensity of the cumulative impact caused by implementation of major projects in Svobodnensky district on the economy and wellbeing of local communities is assessed as **medium**.

13.8 Management of Cumulative Impacts

Management of cumulative impacts requires appropriate mitigation measures at their source at each stage of the Project.

The Company is committed to take a proactive approach for management of such impacts by strict compliance with the respective mitigation measures within the framework of the Project implementation, constant interactions and consultations with the local communities (see Chapter 10 and the Stakeholder Engagement Plan).

The CIA did not reveal probability of any additional significant environmental and social cumulative impacts requiring special mitigation measures or control, except for those already developed for the Project (see Chapter 9). However, a number of recommendations have been prepared in the process of the CIA for coordination of strategies aimed at abating the impacts with the companies that run the projects located within the Project AoI:

- Interrelations with the nearest projects (the "Power of Siberia" gas pipeline and the Sibur plant and the "Power of Siberia" TPP) in order to model, if needed, air pollutant dispersion and in case of significant adverse impact - to develop agreed mitigation measures and coordinated plans for management the machinery and motor vehicle traffic during the construction and operational phases;
- Coordination of the strategies aimed at abating the adverse environmental impacts with the Power of Siberia gas pipeline, the Sibur plant and the "Power of Siberia TPP projects and ensuring compliance with the global best practices for execution of works and compliance with the requirements aimed at improving the biodiversity management system both within and outside of the Project area;
- Interaction with the "Power of Siberia" gas pipeline, the Sibur plant and the "Power of Siberia" TPP projects and the relevant environmental agencies with regard to coordination of environmental monitoring programs and implementation of environment protection measures;
- Interaction with the "Power of Siberia" gas pipeline and Sibur plnt projects with the purpose to develop coordinated plans aimed at social infrastructure development and other measures to reduce the probability of cumulative impacts on the health and safety of local communities associated with the influx of workforce from other regions to be employed at the project facilities.
- Engagement of the local public in the process of consultations and development of any new projects, which might be initiated in the vicinity of the Project area and within the area of its influence.

14. ENVIRONMENTAL AND SOCIAL MANAGEMENT

GPPB will establish management programs that describe mitigation and performance improvement measures and actions that address the potential environmental and social risks and impacts identified through the ESIA process. These programmes will include procedures, practices and plans to ensure that all environmental and social aspects of the Project are managed in a comprehensive and systematic way. The programs will apply across the Project, including both GPPB and the contractors over which it has control.

In particular, GPPB will produce the following document packages:

1. Environmental and Social Management Plan (ESMP)

An ESMP comprising a suite of individual environmental and social management plans (MPs) will be developed that defines the Project's environmental and social requirements and how these requirements are to be managed throughout the Project development. In particular, the MPs will describe:

- The organisational approach to environmental and social management, including definition of roles and responsibilities.
- The environmental and social standards to be applied.
- The specific management, mitigation and monitoring measures to be implemented to control all potentially significant environmental and social impacts under the control of GPPB. These will include the mitigation and monitoring measures identified under each topic area in Environmental and social impact chapters of ESIA and which have been used to determine the residual environmental and social impacts in this ESIA.

Recognizing the dynamic nature of the Project, the MPs will be responsive to changes in circumstances, unforeseen events, and the results of monitoring and review. At this stage, the ESMP and associated Construction Management Plans (CMPs) will be developed that will address the construction phase of the Project. The operations phase ESMP will be developed at a later date prior to commencement of operations.

2. Environmental and Social Action Plan (ESAP)

An ESAP will be prepared at this stage of the ESIA process that describes and prioritises any additional actions needed to enable the development and implementation of further relevant mitigation measures, corrective actions and/or monitoring measures necessary to manage the environmental and social impacts and risks identified in the ESIA. Additional actions captured in the ESAP are typically those that require additional time for their full development after the finalisation of the ESIA.

Both the ESMP and ESAP will sit within the Project's overarching management systems, including GPPB's Health, Safety & Environmental Management System (HSE MS) that is being developed to the international ISO14001 and OHSAS 18001 standards.