AGP City Gas Pvt. Ltd.

Environmental and Social Management Planning Framework: India City Gas Distribution (CGD) Financing AG&P

Final

9 December 2020

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Environmental and Social Management Planning Framework: India City Gas Distribution (CGD) Financing AG&P

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Name: Ajay Pillai
Job title: Partner

ERM India Private Limited

Building 10A
4th Floor, DLF Cyber City
Gurgaon, NCR – 122002

Tel: 91 124 417 0300
Fax: 91 124 417 0301

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Acronyms

AIIB	Asian Infrastructure Investment Bank
AKT	Allapuzha Kollam and Thiruvananthapuram
BMTPC	Building Material and Technology Promotion Council of India
CA	Charge areas
CAP	Corrective Action Plan
CGD	City Gas Distribution
CGRM	Community Grievance Redressal Mechanism
CGRS	City Gas Receiving Station
CGWA	Central Groundwater Authority
CGWB	Central Groundwater Board
CNG	Compressed Natural Gas
DBS	Daughter Booster Stations
DRS	District Regulating Stations
EHS	Environment, Health and Safety
EMP	Environment Management Plan
EMS	Environmental Management System
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESF	Environmental and Social Framework
ESIA	Environment and Social Impact Assessment
ESMMP	Environment and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
ESMPF	Environmental and Social Management Planning Framework
ESP	Environmental and Social Policy
ESS	Environmental and Social Standards
GA	Geographical Areas
GIIP	Good International Industry Practice
GRM	Grievance Redress Mechanism
HSE	Health, Safety and Environment
IBA	Important Bird Area

IFC	International Finance Corporation
KBA	Key Biodiversity Area
L&FS	Life and Fire Safety
LCNG	Liquid to Compressed Natural Gas
LCV	Light Commercial Vehicles
LEP	Livelihood Enhancement Plan
LGC	Labor Grievance Cell
LIE	Lenders Independent Engineer
LNG	Liquefied Natural Gas
LRP	Livelihood Restoration Plan
MDPE	Medium Density Polyethylene
MMC	Mysore Mandya Chamarajanagar
MoEFCC	Ministry of Environment, Forests and Climate Change
MS	Mild Steel
MSA	Master Service Agreements
OHS	Occupational Health and Safety
OMC	Oil Marketing Companies
PAF	Project Affected Families
PAP	Project Affected People
PIC	Prior Informed Consent
PNGRB	Petroleum & Natural Gas Regulatory Board
QRA	Quantitative Risk Assessment
RP	Resettlement Plan
RFI	Request For Information
ROW	Right of Way
RPF	Resettlement Planning Framework
SEP	Stakeholder Engagement Plan
STPL	Sub-transmission pipeline
ToR	Terms of Reference
TPI	Third Party Inspection
WLS	Wildlife Sanctuary

EXECUTIVE SUMMARY

Project Background

AG&P City Gas Private Limited (AGPCGPL) is a special purpose vehicle promoted by AG&P LNG Marketing Pte. Ltd., Singapore and Atlantic Gulf & Pacific Company of Manila (AG&P Manila) for the development of City Gas Distribution (CGD) networks in India. AG&P has authorisations from the Petroleum & Natural Gas Regulatory Board (PNGRB) to exclusively supply piped natural gas (PNG) and compressed natural gas (CNG) in 12 geographical areas (GA) in 28 districts in Andhra Pradesh, Tamil Nadu, Kerala, Karnataka and Rajasthan.

Out of the 12 GAs, AG&P consortium was granted authorisations from the PNGRB for 9 GAs during the Tenth Round of bidding (hereinafter referred to as "Project"). These 9 GAs are situated across the states of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. The Project proposes to connect 10 million households, install 1,351 CNG stations, and lay 16,186 inch-km of pipelines for the city gas distribution across the 9 GAs over an 8-year period. The Project will be owned and developed by AGPCGPL. The Project is proposed to be financed by the Asian Infrastructure Investment Bank (AIIB) and OeEB, the Development Bank of Austria.

The sites for the sub-projects under each geographical area and details of Project-supported activities at each geographical area are not yet known, therefore an Environmental and Social Management Planning Framework (ESMPF) has been prepared for the Project that is consistent with the more stringent standards amongst AIIB ESP and IFC PS/ EHS Guidelines. The purpose of the ESMPF is to ensure that the activities will be assessed and implemented in conformity with the various international standards, particularly the more stringent requirements will apply.

As on date of submission of this ESMPF, the Project has the following status (*Source: AGPCGPL Progress Report*). Currently, activities have been initiated for the MMC GA and AKT GA.

- Financial closure confirmation has been received from PNGRB for all the GAs
- Gas sales have been commenced to Kerala Minerals and Mining Limited and Sudha Somany Ceramics Private Limited
- LNG sourcing in place for industrial & commercial customers through Petronet LNG on back-to-back basis
- Seven (07) parcels of land has been procured in Round 10th GAs; identification of other land locations is in process
- MSA with IOCL, HPCL & BPCL for all the GAs have been signed and 300+ locations have been identified for roll out of Daugher booster Stations (DBS)
- Layout of 315 DBS have been completed and have applied for PESO approval of 77 DBS; ut of which approvals have been received for 68 DBS.
- Layout of eight (08) LCNG/CNG Stations have been completed and initial PESO approval of 5 LCNG/ CNG have been received
- For laying of steel pipeline, RoW Permission applied for more than 6500 inch-km and demand note for 1954 inch-km has already been received
- Government of Tamil Nadu has issued a Government Order on 27th May 2020, directing all the concerned departments to provide approvals to CGD companies within a period of 10 days.

Project Categorisation

The Project is proposed to be financed by the Asian Infrastructure Investment Bank (AIIB) and has been assigned to "Category B" under the Bank's Environmental and Social Policy (ESP). The Project will also be co-financed by OeEB which is a member of the European Development Finance

Institutions (EDFIs) and adheres to the EDFI Principles for Responsible Financing of Sustainable Development, including IFC Performance Standards (PS). OeEB uses a categorization system with the categories A, B+, B, C for direct investments in projects. As per OeEB project categorisaiton, the Project has been assigned to “Category B+”.

Neither AIIB not OeEB will finance sub-projects that are assigned a Category A in accordance with AIIB ESP and IFC PS. The provisions of the Environmental and Social Exclusion List of AIIB as well as Harmonized EDFI Exclusion List also apply to the Project.

Environment and Social Assessment – Approach and Methodology

The generic methodology for ESMPF comprises of inception and project kick-off meeting, information review, desk analysis, management meetings and consultations, screening for issues and impacts, mapping, site assessment and development of ESMPF.

Prior to document request for information collection, an inception and kick-off meeting was conducted with AGPCGPL to understand company operations and existing EHS&S management systems. Thereafter, a detailed study and review of review existing documents, activities and procedures in place, was done which later facilitated selecting two sample geographical areas, i.e. Mysore GA and Allapuzha GA, to understand site specific the baseline conditions and assessing potential E&S impacts during project construction, operation and decommissioning stages.

Afterward, the desk based analysis of existing Acts, Regulations, Policy and Programs was carried out highlighting specific gaps influencing the environmental and social aspects of the CGD sector in the country and in the state of Kerala and Karnataka. Also, management meetings and detailed consultations with representatives from key departments at AGPCGPL were made to seek clarification and validate the understanding of the project.

Next, a high level screening of potential E&S impacts inclusive of AGPCGPL’s overall site screening, selection and monitoring procedures for city gas distribution projects already in place, was undertaken to accommodate all possible risks/impacts.

An ESMPF was thereafter developed that provides detailed procedures, guidance and management framework during the project implementation for sub-project implementation for sub-projects triggering environmental and social issues. Further, a site assessment was undertaken in from 8th – 10th October 2020 to understand the typical risks associated with the project and to consult on-site project team, contractors and local community in order to understand the direct and indirect impacts at the environment, community and economy.

Policy and Regulatory Framework

The applicable reference framework for ESMPF comprises of (i) Applicable National Environmental permitting, Technical standards, Community and Occupational Health & Safety, Land procurement and acquisition, Labour and social regulation that are relevant to the project activities and operations; (ii) Environmental and Social Safeguards of AIIB (Amended 2019); (iii) IFC Performance Standards (2012); (iv) IFC General EHS Guidelines and the associated EHS guidelines notably: EHS Guidelines for Gas Distribution Systems (2007); and (v) International Treaties and conventions.

A gap analysis of Indian Regulations and International E&S Safeguards is carried out to understand any gaps between regulatory and international requirements. It is noticed that projects which are exempted from the EC process are not mandatorily required to undertake impact assessment studies and develop management plans, but there could be an inclusion of E&S assessment and management plants as part of the feasibility study or DPRs prepared for such projects. Also, there are regulations around pollution prevention related to air emission, wastewater, hazardous waste, however the stipulated guidelines are not adequately enforced and implemented at project level. Similarly, in guidelines and regulations for protection of biodiversity, some of the requirements like critical habitat assessment, are not in line with international standards requirements.

It is observed that within the current regulatory framework, assessment of project-induced specific community H&S risks are not a mandatory requirement for projects and there is no legal requirement for ongoing disclosure of information to the community about the progress of the project and related health and safety issues.

It is interesting to note that although the E&S regulations, policies and guidelines are in place; however, as per the experience and review of available information, enforcement and proper implementation of these measures still needs to be strengthened at grass root level. For projects granted SIA exemption from the state government, there is no mandatory requirement to assess the impact of land acquisition/ procurement on the livelihood of affected families due to the project activities. Furthermore, there is no legislation to establish a Project-specific Stakeholder Engagement Plan, if private procurement of land is involved.

All these above mentioned identified gaps are addressed by bringing out suitable modifications in the existing practices at AG&P. Besides these, various environment, safety and social policies adopted by AG&P, are also studied and reviewed to understand their applicability to AGPCGPL as well.

Baseline of the Sample Projects

Two geographical areas namely - Mysore Mandya Chamarajanagar (MMC) GA and Allapuzha Kollam and Thiruvananthapuram (AKT) GA, are considered on sample basis for understanding the baseline conditions with respect to environmental and socio economic settings of the project sites and surrounding areas and potential E&S impacts on environmental and social parameters during project construction, operation and decommissioning stages. Data on the two sample sites has been collected through secondary sources on environment, social and ecological settings and supplemented through primary information gathered during site assessment.

The MMC GA is located in the State of Karnataka and is spread over three districts - district Mysore, district Mandya and district Chamarajanagar. The AKT GA is located in the State of Kerala and is spread over three districts - district Allapuza, district Kollam and district Thiruvananthapuram. For all above mentioned districts, the secondary baseline data is thus collected on environmental, ecological and social aspects.

It is observed that in MMC GA, most prominent land use in Mysore and Madhya district is agricultural area (49% and 46%, respectively), whereas in Chamarajnagar, it is forest area (48.4%). The Cauvery river system is the major river perennial system in the state draining all districts. It is assisted by other perennial and non-perennial rivers in Mysuru and Manddya districts. The review of groundwater status informs that there is high contamination of nitrate in all districts in the state. Although the groundwater status in Madhya and Chamarajanagar is in safe category, the status in Mysuru is in over-exploited category. The assessment of natural hazard information revealed that the state lies in Seismic Zone II, which is low risk zone and is not prone to cyclone and floods. There are total 11 protected areas in the state, comprising of 8 Wildlife Sanctuaries and 2 National Parks and 1 conservation area. The baseline information on social aspects revealed that Mysuru is the most populous district and has the largest concentration of urban population, whereas the Mandya district has the hinghes number of females per 1000 males in the population. Although, the Chamarajanagar district has the highest population of Scheduled Caste (25.4 percent), amongst the three districts, there are no schedule V areas declared in these districts. in terms of literacy rate, Mysuru has a greater literacy rate at 78.5 percent. Agriculture is the main source of income for majority of population and the important crops grown in the state and the districts are cotton, grams, groundnut, jowar, maize, ragi, paddy, sugarcane, sunflower and tur.

In AKT GA, the most prominent land use in Alapuzzha, Kollam and Thiruvanathapuram is agricultural land (86.04%, 56% and 61%, respectively). A number of rivers drains the three districts, for e.g. Rivers Achenkovil, Kallada and Ithikara drains Alapuzhza district, Rivers Neyyar, Karamana, Vamanapuram, Mamom and Ayirur drains Kollam and Thiruvanathapuram district. For groundwater, as per Central Groundwater Authority (CGWA), all three district are affected by water contamination through high chloride concentration and alkalinity and while Alapuzzha falls in safe groundwater

category, Kollam and Thiruvanathapuram falls in over-exploited category. The assessment of natural hazard information revealed that the state lies in Seismic Zone III, which is a moderate risk zone and is prone to cyclone and flood events. The ecological baseline revealed that there total 4 eco-sensitive areas in the three districts, namely Vembanad lake in Alapuzzha; Shendurney Wildlife Sanctuary in Kollam and Neyyar and Peppara Wildlife Sanctuary in Thiruvanathapuram. The baseline information on social aspects revealed that Thiruvananthapuram is the most populous district and Kollam has the largest concentration of urban population. There are no schedule V areas declared in any of the districts. In terms of literacy, Alappuzzha has the highest literacy rate of 95.72 percent but there is no significant difference between the literacy rate of the three district and state. Agriculture is the predominant economic activity but tourism also contributes the economy and livelihood due to districts varied and diverse geographical features. Paddy is the most important crop, whereas Coconut, Rubber, Banana and vegetables are other main crops grown in the area. The long coastline also support the fisheries sector.

Significant Potential E&S Impacts

It is envisaged that the proposed Project and sub-project activities may lead to certain impacts on the environmental and socio-economic conditions in the respective project areas, however such impacts can be mitigated and managed through implmenetaiton of appropriate measures.

On floral biodiversity, the CGD system will have minor impacts on the floral biodiversity of the area, hwoever these will be localised and footprint will be limited to the immediate sub-project area. The construction phase activities like site clearance, excavation, trenching and backfilling for installation of underground gas pipelines, establishment of infrastructures such gas receiving and regulating stations can lead to localised habitat alteration. The disturbance to the soils and vegetation within the right of use due to movement of workers and vehicles along the RoW and access roads can further impact the local habitat to some extent, although it is understood that the impacted areas will be largely urbanised. Although, the operation and maintenance activities will not impact vegetation significantly, but there will be standard clearance of vegetation growth around installations and lines. To mitigate this, it is advised that for any gas pipelines passing through forest areas (NP, WLS, PF, RF, etc.) clearance under the Forest Conservation Act 1980 should be obtained and construction should only be after necessary clearance is obtained. Also, minimum vegetation clearance and tree feeling should be allowed and after completion of installation works, natural regeneration of trees or other plantation should be allowed.

Impact on Wildlife - It is understood that the project will only involve laying of pipelines in urban areas, and disturbance to wildlife is not envisaged. However, there is risk to other wildlife (involving smaller animals/ mammals) primarily due to falling of the animal into the excavation carried out for underground pipeline work in close proximity to forest areas. Also, in case of some of the sub-projects, the clearance of riparian vegetation for installation of pipelines in close proximity to river banks may disrupt aquatic habitats. Therefore, it is advised that efforts should be made to prevent intrusion of gas pipelines into wildlife habitats through route optimization and alternative route analysis should be undertaken. Also, the rights-of-way should be sited to avoid critical aquatic and terrestrial habitat and mesh guards should be put around excavated area to prevent falling of animals.

Impact on soil – The site clearance activities will result in removal of stabilized top soil that may increase localised soil erosion. The excavation for underground pipelines, movement of vehicles and corrosion and degradation of gas pipeline will further impact the structure and fertility of soil. However the magnitude of such impacts will not be significant as large portion of the networks will be within already modified urbanised areas. To mitigate this, it is suggested that stripping of top soil should not be conducted earlier than required, the excavations should be filled before rainy season and unnecessary movement of vehicles should be avoided.

Impact on water resources – Though the construction activities will require water, the duration will be limited. Dependency on groundwater resource can impact the resource and withdrawals in over-

exploited areas. Therefore, it is advised to avoid use of groundwater in dry areas to the extent possible and to promote rainwater harvesting at the gas receiving stations.

Impact due to emissions and discharges – Wastewater discharges from labour camps, fugitive and exhaust air emissions from vehicles and machinery, operation of machinery during construction phase may impact surrounding water, air and noise environment for a short term and will have a limited footprint. The magnitude of impacts will not be significant. Therefore, it is required that each sub-project develops an ESMP (prepared as a part of ESIA for each sub-project) and implement the measured proposed therein for pollution prevention. Also, gas leaks during operation phase can impact the environment which needs to be looked after and ensured that structural integrity and operation performance of pipelines should meet international standards.

Occupational H&S impacts – The construction activities such as site clearance, excavation and repairing and maintenance during operation phase possess a risk to H&S of personnel involved, which can be mitigated by use of proper PPEs, necessary training providing required training to workmen and development of emergency preparedness and response and disaster management plans. To protect community from exposures to H&S risks, it is essential to inform them of the activities of the projects and the potential hazards presented by gas infrastructure and involved them in emergency preparedness and response planning.

Impact due to loss of land and livelihood – For installation of network components, it is understood that private lands might be procured on willing buyer willing seller basis and impacts due to loss of livelihood are not envisaged. Also, there is possibility of damage to crops in case of pipeline installed near agricultural areas. Therefore, it is advised to use non-forest government land to the extent possible and to adequately compensate owners if land taken otherwise.

Impact on cultural heritage is envisaged, if the construction activates conducted near culturally sensitive locations like temples, mosques and other religious structures, near monuments of cultural or archaeological significance, etc., mostly during excavation work for underground pipelines where possibility of finding archaeological artefacts is high. Therefore, it is advised that care should be taken to avoid disrupting community access or disturb the cultural settings of the project area. Also, in case of any chance finds during construction, the procedure as laid down in the Section 4 of Indian Treasure Trove Act, 1878 as amended in 1949 should be followed.

Impact on traffic – The construction and operation may cause increase incidence of road accidents due to disruptions caused in existing traffic movements which can be mitigated by implementing traffic diversion and management plans.

Impact on labours – The labour involved can be impacted by contraction conditions, low wages, exploitation, harassment and discrimination which can be avoided by having standard labour contract agreement, audit of sub-contractor compliance, maintenance of wage registers, adoption of various labour polices and establishment of a grievance redress mechanism for contract workers

The project will also bring positive impact on local community by creating economic opportunities.

Environmental and Social Management Planning Framework

The ESMPF is prepared to provide a broad outline of the range of impacts that can occur while implementing the sub-projects. The Framework approach encompasses all possibilities identified during the assessment and a generic mitigation plan to address such risks and impacts. It prescribes (a) Site selection and RoW screening criteria; (b) ESIA process to be conducted for each sub-project (i.e. geographical areas); (c) Development of specific ESMP (with the generic ESMP as a guidance) for each sub-project and preparation of RP; (d) Auditing and Monitoring Protocols and (e) Measures for establishment of Grievance Redress Mechanism (GRM).

The site selection and RoW screening criteria is prepared to flag sensitive receptors with significant environment and social risks and impacts and exclude them from the process. A checklist on screening criteria, involving all possible impacts, is suggested for implementation. Since, CGD projects do not fall under the purview of EIA Notification, 2006 (as amended), they do not require EC

or impact assessment studies. However, they require other clearances like consents from SPCB, hazardous waste permission, tree felling permission, forest clearance, as applicable. The ESMPF also focuses on the guidelines and requirements of ESDD and ESIA to be conducted for each sub-project, detailing upon the scope of assessment activities, establishment of baseline conditions, analysis of alternatives, impact assessment, risk assessment, stakeholder consultation and disclosure, management plans and institutional framework.

For monitoring and evaluation, the ESMPF provides management on four major aspects viz; (i) Legal register and compliance monitoring; (ii) Environment and social monitoring; (iii) Environment and social supervision; and, (iv) External audits.

For Legal register and compliance monitoring, each GA team, specifically the HSE In-charge, should (a) ensure that permits and authorizations under all applicable laws are in place, current and valid, (b) regularly review the regulatory environmental and social licenses applicable and (c) prepare a legal register. It also requires submission of monthly report to corporate HSE team on status on compliances. For Environment and social monitoring, it is imperative to ensure compliance to environmental and social regulations applicable to the project and with the Environmental and Social Management Plans (inclusive of all environmental and social parameters) for construction and operation phase.

For supervision, the HSE team will be responsible to monitor ESMPF implementation at the corporate level and sub-project level. The corporate HSE Head will also submit annual progress reports to AIIB on E&S safeguards implementation which will summarizes the reports received from all sub-projects and information from E&S audits. For external audits, it is recommended that a competent third party consultant should be engaged to undertake audits during construction (on half-yearly basis) and operational activities (on annual basis, for first two years of operations) to review statutory compliance and implementation of ESMPF and ESMP, based on which a Corrective Action Plan should be prepare to address the gaps found.

As per the requirements of AIIB & IFC PS, for reporting, each GA team will be required to report on E&S performance of respective sub-projects to the corporate team on periodic basis through customized reports, to enable the corporate HSE Head to understand the effectiveness of the ESMPF and management plans/ procedures, status of compliances with legal and/or contractual obligations and regulatory requirements by the GA. For performance assessment, quarterly reports will be submitted during operation phase while monthly report will be submitted during construction phase. In addition to this, an internal will also be adopted by the GA to ensure that E&S management procedures are effectively implemented at the asset level in day to day operations. Such reporting will be done in form of / incident records register, grievance records, water consumption records, employee / staff and worker details, trainings records etc. and will be submitted to HSE Head along with quarterly/ monthly E&S Performance report.

Resettlement Planning Framework

The sub-projects of AGPCGPL shall comprise of city gas distribution network, which are understood to have limited land acquisition and related impacts, as pipelines will be set up within the available utility Right of Way (RoW) or corridors within urban areas. In case, the Project anticipates any physical or economic resettlement, there is flexibility of rerouting pipeline and other components and avoiding such issues. Wherever the Project requires private land, it is purchased on willing buyer willing seller agreement, and there is no requirement of government led land acquisition for the Project. Therefore, there is no scope of large-scale resettlement and displacement and negligible possibility of physical and economic resettlement related issues. The total land required for the Project for all the GAs, is estimated to be not more than 123.5 acres (or 50 hectares).

This RPF thus provides detailed guidelines to address impacts due the land procurement and establishes the compensation principles for land sellers, and any non-titlemholers with informal rights on the land (as per requirement of AIIB ESP/ IFC PS).

Stakeholder Engagement, Disclosure and Grievance Mechanism

Stakeholder engagement is fundamental to building trust with the communities. For this purpose, stakeholder groups within the project's area of influence (AoI) for consultation and engagement should be identified and mapped. Thereafter, in view of Disclosure requirements, relevant information about environmental and social risks and impacts of the Project should be made available in the Project area in a timely and accessible manner and in a form and language understandable to the Project-affected people, other stakeholders and the public. Next, consultations will be conducted with Project Affected Persons including vulnerable social groups (such as women, poor household, caste, persons with disabilities, among others) towards relocation of the PAPs, relocation of cultural properties, and towards addressing the impacts on common property resources (CPRs) such as places of religious importance, community buildings, trees, etc.

The Grievance Redressal Mechanism applied to the entire project lifecycle, will be a guide to grievance redress process across various stages of the Project, while meeting the requirements of the applicable reference framework. The internal GRM for internal stakeholders (employees, workers/labours and contractors engaged for the project) will provide formal, systematic and confidential platform for registration, handling and addressal of grievances in a time bound manner. To provide transparency, fairness, and accountability to the stakeholders, the GRM will be regularly evaluated and regulated by monitoring, reporting and recording of complaints and information. The head of Human Resource will be the Chief Grievance Officer at the corporate level whereas at the GA level and site level, the grievance head would be assigned by AGPCGPL as per availability of requisite individuals. Training will also be provided for Labor grievance mechanisms, relevant to their exposure and responsibilities for managers, all other project liaising employees, contractors and visitors, as per company's policy and practices.

An external GRM will also be provided for community grievances on land related issues, impact on environment, risk to health and safety of community, etc. To ensure this, AGPCGPL will ensure suitable public disclosure of its grievance handling and redressal process to its community stakeholders, by establishment of Community Grievance Redressal Mechanism (CGRM) cell at its respective project sites.

Institutional Arrangements and Capacity Building

The AGPCGPL will be responsible for planning, designing and installation of the network components, and ensuring that E&S safeguards are implemented at all the sub-projects on consistent basis. It will also regulate and contractually bound the contractors to ensure implementation of E&S safeguards and ESMP requirements at the project level. AIIB and other investors will regulate AGPCGPL operation and activities by ensuring compliance to E&S safeguards compliance and will conduct performance assessment at regular basis. Equally, the Regulatory bodies like PNGRB, SPCB will regulate licensing authority and will provide technical standards for project designing, planning and implementation. Also, the public/general community, will be part of the project planning and their suggestions and feedback will help developing a robust E&S management system at the sub-project level.

The AGPCGPL will design the capacity building and training programs, based on the technical safety standard requirements of PNGRB and other national safety regulations and develop an annual training calendar primarily covering all occupational health and safety trainings such as road safety, electrical safety, emergency handling, excavation safety, lifting, rigging etc. Also, it will commit adequate funds and resources to train the HSE team members through external experts/ third party consultants on at least annual basis. Such trainings will be focussed on enhancing the competency of the E&S staff at corporate and GA level to implement the ESMPF by acquiring new skill sets. Furthermore, it will be ensured that job specific E(HS) & S training needs are identified for GA level

personnel (including the contractors and sub-contractors) based on specific requirements of the ESMPF and training requirements shall be evaluated for staff at GA level.

Budget Estimate

For the implementation of this ESMPF throughout the Project lifecycle, an indicative budget of INR 23,67,00,000 (USD 3,198,650) is proposed.

1. INTRODUCTION

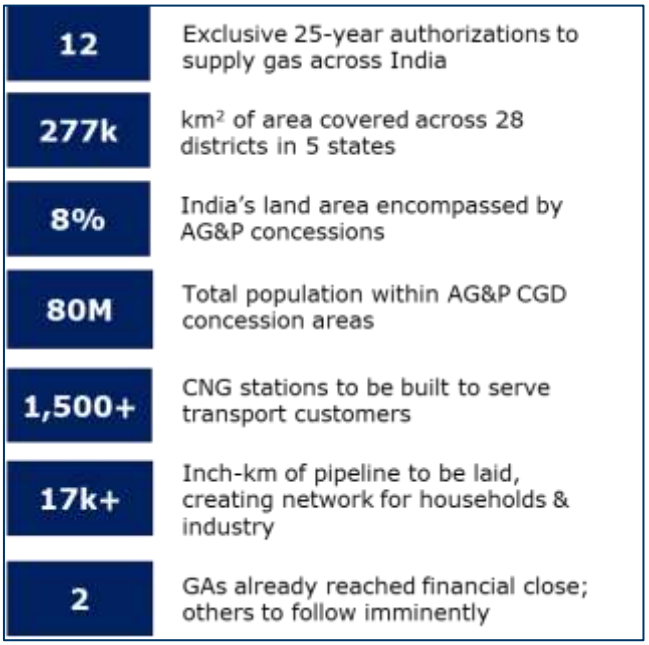
1.1 Project Background

AG&P City Gas Private Limited (hereinafter referred to as 'AGPCGPL') is a special purpose vehicle promoted by AG&P LNG Marketing Pte. Ltd., Singapore ("ALMPL") and Atlantic Gulf & Pacific Company of Manila ("AGPM") for the development of City Gas Distribution (CGD) networks in India.

AG&P Global is a Singapore based company with business services that include development, engineering, procurement and construction for onshore and offshore gas infrastructure, LNG logistics, LNG marketing and delivery of natural gas straight to industrial, commercial, vehicular and domestic customers. The city gas distribution business of AG&P is across India and Indonesia.

In India, AG&P is one of the largest private players with CGD authorisations from the Petroleum & Natural Gas Regulatory Board (PNGRB) to exclusively supply piped natural gas (PNG) and compressed natural gas (CNG) 12 geographical areas (GA) in 28 districts in Andhra Pradesh, Tamil Nadu, Kerala, Karnataka and Rajasthan. The India headquarters is in Delhi and CGD operational headquarters is in Chennai with multiple satellite offices across the concession areas.

Figure 1.1 AG&P India CGD: Facts & Figures



Out of the 12 GAs, AG&P envisages development of CGD network for 9 geographical areas (GA) across the states of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh (hereinafter referred to as "Project") through AGPCGPL. The Project proposes to connect 10 million households, install 1,351 CNG stations, and lay 16,186 inch-km of pipelines for the city gas distribution across the 9 GAs over an 8 year period. These geographical areas are referred to as "sub-projects" in this document.

AG&P was granted authorisations from the PNGRB during the Tenth Round of bidding for the 9 GAs, as listed below:

Table 1.1 List of the Nine Geographical Areas

S. N.	Name of Geographical Area	State	Districts covered	Charge Areas[1]	Household Connections	CNG stations	Inch-Km	Geographical Area (sq.kms)
1.	Anantapur and YSR (Kadapa)	Andhra Pradesh	2	18	18,51,111	291	1,851	6,087
2.	Sri Potti Sriramulu Nellore	Andhra Pradesh	1	114	10,01,101	134	3,289	34,489
3.	Chittoor, Kolar and Vellore	Andhra Pradesh, Karnataka and Tamil Nadu	3	15	5,86,121	114	1,979	20,564
4.	Bagalkot, Koppal and Raichur	Karnataka	3	18	9,28,651	121	1,187	18,149
5.	Chikkamagaluru, Hassan and Kodagu	Karnataka	3	82	22,95,933	251	1,731	25,206
6.	Kalaburagi and Vijayapura	Karnataka	2	12	5,26,551	62	1,395	21,452
7.	Mysuru, Mandya and Chamarajanagar	Karnataka	3	18	13,54,714	171	1,293	16,917
8.	Uttara Kannada, Haveri and Shivamogga	Karnataka	3	46	8,52,111	81	1,468	13,076
9.	Alapuzzha, Kollam and Thiruvananthapuram	Kerala	3	25	8,99,311	126	1,993	23,578

Source: AGPCGPL

AG&P had previously, during the Ninth Round of bidding by PNGRB, secured three (3) GA licences for Kanchipuram and Ramanathapuram districts in Tamil Nadu, and Barmer, Jaisalmer & Jodhpur districts in Rajasthan which are currently in advanced stages of planning.

For the purpose of the Environmental and Social Management Planning Framework (ESMPF), two of the sample geographical areas, i.e. **Mysuru GA and Allapuzha GA**, have been selected for understanding the baseline conditions and assessing potential E&S impacts during sub-project construction, operation and decommissioning stages.

1.2 Environment and Social Policy of AIIB and EDFI Members

The Project is proposed to be financed by the Asian Infrastructure Investment Bank (AIIB) and has been assigned to “Category B” under the Bank’s Environmental and Social Policy (ESP). The Project

[1] Charge areas are smaller areas or wards within the authorized geographical area which are to be supplied through pipelines to meet the demand of the consumers in such areas.

will also be co-financed by OeEB which is a member of the European Development Finance Institutions (EDFIs) and adheres to the EDFI Principles for Responsible Financing of Sustainable Development, including IFC Performance Standards (PS). OeEB uses a categorization system with the categories A, B+, B, C for direct investments in projects. As per OeEB project categorisaiton, the Project has been assigned to “Category B+”.

Neither AIIB not OeEB will finance sub-projects that are assigned a Category A in accordance with AIIB ESP and IFC PS. The Project will require application of the following AIIB Environmental and Social Standards (ESS), in addition to IFC PS 1-8:

- ESS 1 – Environmental and Social Assessment and Management
- ESS 2 – Involuntary Resettlement (which includes land acquisition), and
- ESS 3 – Indigenous Peoples

The ESS 1 will be applicable to the entire Project. The applicability of the provisions of ESS 2 would be determined in the context of each of the sub-projects, and will be made as part of this ESMPF. The ESS 3 is not applicable to the sub-projects as they do not fall in areas with presence of Indigenous peoples and are located in urban areas. The provisions of the Environmental and Social Exclusion List of AIIB as well as Harmonized EDFI Exclusion List also apply to the Project (**Appendix A**).

1.3 Need for ESMPF

The sites for the sub-projects and details of Project-supported activities at each Geographical Area are not yet known, therefore an Environmental and Social Management Planning Framework (ESMPF) is required to be prepared that is consistent with the more stringent standards amongst AIIB ESP and IFC PS/ EHS Guidelines. The exact size and nature of impacts associated with the sub-projects could only be assessed after finalization of locations for the network components. The purpose of the ESMPF is to ensure that the activities will be assessed and implemented in conformity with the ESP and ESSs. The ESMPF sets out the policies and procedures to assess and address:

- Environmental and social risks and impacts of the activities
- Involuntary Resettlement and land acquisition, that are unlikely to arise from the activities, however there may be instances when encroached land may be required to be cleared for the purpose of project implementation; and
- Impacts on Indigenous Peoples that may potentially arise from the activities.

The overall objective of this ESMPF will be to serve as the guidance document for screening, identification and mitigation of potential E&S risks associated with the asset development and as a platform for consultations with stakeholders and potential project beneficiaries. The ESMPF will provide principles and guidance for AGPCGPL’s activities to ensure that the potential negative environmental and social impacts, if any, during construction and operation are minimized, while striving to maximize benefits for local communities and the environment.

Screening of E&S risks at an early stage is a very important step as the possibility of CAT A being triggered for any of the sub-projects needs to be ruled out. A site selection and screening criteria has been provided in the ESMPF for this purpose.

1.4 Scope of Work

The ESMPF will be applicable to AGPCGPL and its contractors engaged for project implementation. The scope of work for the ESMPF includes the following:

- Desk based review of information and existing corporate E&S policies, procedures and practices adopted by AG&P and understanding the company’s current and future operations related to city gas distribution business;

- Discussion and interviews with relevant teams of AG&P to understand the existing management systems and processes related to project development and E&S;
- Development of ESMPF that includes:
  - Policies and procedures for assessment, management and monitoring of environment social risks & impacts during project planning, construction, operation and decommissioning activities;
  - E&S risk assessment and screening procedure/checklist for assessing risks and impacts associated with sub-projects;
  - Detailed guidelines / procedures for purchase of land;
  - Contractor management programs to supervise their compliance with legal requirements, executed contract conditions and applicable standards, and subsequent performance evaluation;
  - Framework / guidelines on environment, health and safety management measures to cover potential risks and impacts for issues such as pollution prevention and management; biodiversity; occupational and community health & safety; land requirements, and clearing of right of way; special concerns of Indigenous peoples/ Scheduled Tribes; and employment and working conditions commensurate to the nature and scale of activities being considered;
  - Guidance / terms of reference on preparation of specific environmental and social documentation such as ESIA, ESMP and RP;
  - Development of information disclosure plan, stakeholder engagement procedures and Grievance Redress Mechanism (GRM); and
  - Documents pertaining to building capacity in senior management for implementation of ESMPF.

The ESMPF is intended to be a comprehensive framework on how to address potential adverse social and environmental impacts for interventions under the Project and will comprise targeted mitigation and compensation measures as appropriate and in accordance with applicable Standards.

1.4.1 Scope Limitations

As on date of issue of this ESMF, there has been a national health emergency situation due to the COVID-19 pandemic across the globe. This has led to issuance of national advisory on social distancing, avoiding non-essential domestic and international travel, public places and crowded areas, and a nation-wide lockdown till at least 31st May, 2020 in order to prevent community transmission. In line with the advisory, ERM's Global H&S Policy and in consultation with AGPCGPL / AIIB, ERM has postponed the site assessments as planned. The dates of site visits will be subject to normalization of the present situation and discussion with AGPCGPL/ AIIB.

In view of the above limitation, following activities have not been conducted.

- Visit to the selected geographical areas (maximum two locations) to identify E&S risks that require management systems; and
- Onsite meetings and consultations with other local agencies, project-affected people and other stakeholders as relevant to the proposed Project activities.

1.4.2 Applicable E&S Standards

The reference framework and standards for development of this ESMPF is as follows:

- Applicable Indian regulatory framework (national, state and local) on E&S aspects;

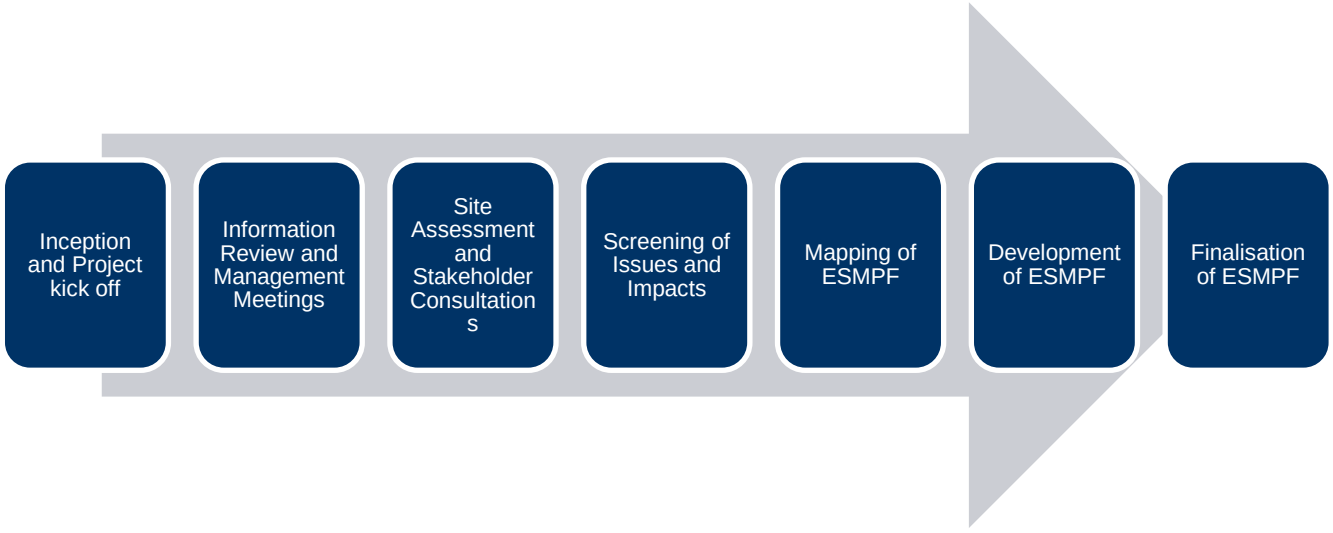
- Pollution emission standards as stipulated by the Central Pollution Control Boards (CPCB) / State Pollution Control Boards (SPCB) or IFC, whichever is more stringent;
- Environmental and Social Policy of AIIB;
- Environmental and Social Framework of the AIIB (Amended 2019);
- International Finance Corporation (IFC) Performance Standards (2012);
- Environment, Health and Safety (EHS) Guidelines of the World Bank Group:
  - General EHS Guidelines (2007), and
  - EHS Guidelines for Gas Distribution Systems (2007)
- International Frameworks and Conventions
- AG&P's existing EHS and Social Policies and Procedures

The applicable E&S Standards defined above are the minimum, mandatory standards for compliance. Where there is a discrepancy between applicable Indian E&S regulations and international standards, the more stringent regulation will apply. Further details of the above standards are provided in Section 2 of the ESMPF.

1.5 Approach and Methodology

The approach and methodology adopted by ERM is based on the proposal dated 18 January 2020, and on the basis of subsequent discussions and mutual agreement between AGP and ERM team, during the kick off meeting held on 28 January 2020 at AGP's HQ office in Chennai, Tamil Nadu.

Figure 1.2 Methodology Adopted for ESMPF



1.5.1 Inception and Project Kick-Off Meeting

ERM conducted a kick-off meeting with AGPCGPL at their Chennai CGD headquarters on 28 January 2020. The attendees from AGPCGPL included Managing Director, CGD & Logistics and Heads of various departments such as Supply chain, Marketing, HR and Technical services. Discussions were held to understand the company operations, plan of activities for upcoming 4 - 6 months, and AGP India's HSE & AI Management system which will be implemented for the CGD Projects. ERM team made a presentation to the participants to apprise them on the technical offerings of ERM in the E&S service areas, ERM's wide experience in the CGD and O&G sector, ERM's unique proposition, approach and methodology for completion of tasks, discussion on site visit schedule and data sharing to be initiated by AGPCGPL. The single points of contact were identified from AGPCGPL and ERM. ERM also submitted a request for information (RFI) sheet to the Company.

1.5.2 Information Review

Based on the documentation request by ERM, the following documents shared by AGPCGPL through data room were reviewed:

1. Document on the Quality, HSE and Social Impact of AGPCGPL Operations
2. Commercial Presentation on AGPCGPL Operations.
3. Document of AGP Operations in India
4. Document on Business Model for CGD
5. AGP HSE Manual
6. Consolidated Feasibility Reports for their Gas
7. Document Pertaining to List of Approvals Required

ERM reviewed the above documents on the existing processes and practices in place. It was understood during discussions with AGPCGPL that several of the documents as requested by ERM will be asset specific and will be available at the respective GA office for review by ERM team during site assessments.

Specifically, two of the sample geographical areas, i.e. **Mysore GA and Allapuzha GA**, have been selected for understanding the baseline conditions and assessing potential E&S impacts during project construction, operation and decommissioning stages.

1.5.3 Review of Secondary Literature and Desk Analysis

Desk based analysis of existing Acts, Regulations, Policy and Programs was carried out highlighting specific gaps influencing the environmental and social aspects of the CGD sector in the country and in the state of Kerala and Karnataka. Secondary literature was reviewed to understand the baseline environment and socio-economic conditions of the two sample geographical areas.

1.5.4 Management Meetings

ERM undertook management meetings and detailed consultations with representatives from key departments at AGPCGPL including the CGD Project team, existing EHS and Compliance Team that oversees permits and approvals, in order to triangulate the understanding developed as part of the desk based review and seek clarifications as required.

1.5.5 Assessment of potential E&S impacts

Based on the initial discussions with AGPCGPL on the location of sub-projects, desk-based review of AGPCGPL's existing documents, understanding of type of activities involved in project development and operations, and ERM's prior experience in the sector, ERM has undertaken a high level screening of potential E&S impacts typically associated with the CGD sector. ERM has also taken into consideration AGPCGPL's overall site screening, selection and monitoring procedures for city gas distribution projects already in place.

The assessment environmental and social impacts of sample sub-projects with similar scope and significance of risks and impacts in worst case scenario was conducted to accommodate all possible risks/impacts:

- To identify, evaluate and manage the environmental and social risks and impacts of the project in a manner consistent with the ESSs.
- To identifying positive and negative environmental and social impacts likely to occur for different sub-groups or beneficiaries as a result of project interventions

- Suggesting measures to mitigate negative impacts and derive the maximum from positive impacts using Mitigation Hierarchy.
- To utilize environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate.
- Documenting the practices currently commonly adopted

The baseline assessment and appraisal of sub-project risks and impacts have been presented in ***Section 4 and 5*** of the ESMPF.

1.5.6 Mapping and Development of ESMPF

An ESMPF was thereafter developed that provides detailed procedures, guidance and management framework during the project implementation for sub-project implementation for sub-projects triggering environmental and social issues. The ESMPF provides screening criteria for determining whether safeguard risks/ impacts are triggered and if yes, what mitigation action is required. It provides a generic Environment Social Management Plan for preparing site-specific ESMPs. ESMPF also defines the protocol required to be followed during identification, planning and implementation of sub-projects. The ownership of all environment and social documents that will be prepared as per the requirements of guidelines stipulated in the ESMPF will be with AGPCGPL. The documents will be prepared by consultant on behalf of AGPCGPL.

1.5.7 Site Assessment and Consultations

A two-member team from ERM conducted the site visit of two (2) selected geographical areas- **Mysore Mandya Chamarajanagar (MMC) GA and Allapuzha Kollam and Thiruvananthapuram (AKT) GA**. The site visit was undertaken from 8th – 10th October 2020. The visit to the two GA was conducted with the objective of understanding the typical risks associated with the project operations. The site visit included drive through of the proposed pipelines, identifiend fuel stations. Consultations were conducted with on-site project team and select government departments, in order to understand the direct and indirect impacts of the Project.

Table 1.2 Site Visit Summary

Date	Activities undertaken during site visit
8th October	▪ Kick off meeting between ERM & AGP team before undertaking the site visit; ▪ Visit to the two identified Daugher Booster Station at Indian Oil Petrol Pumps in Thiruvananthapuram. No work has been initiated by AGP yet. ▪ Visit to Under construction Daughter Booster Station at Hindustan Petroleum petrol pump at Alapuzzah ▪ Visit to the Location of the proposed LCNG Station, located on NH 47 ▪ Visit to proposed daughter booster station at Alapuzzah ▪ Tracing the route of the proposed 40 kms steel pipeline route starting from Allepy Taluka to Shertallai Taluka in Alappuzha District ▪ Meeting at Municipal Corporation Office, Alappuzah
9th October	▪ Kick off meeting between ERM & AGP team before undertaking the site visit and understand the overall implenatation of the policies, organisation structure and roles & responisbilities of Project team
10th October	▪ Visit to proposed Daughter Booster Station at Indian Oil petrol pump at Shrirangapattana; ▪ Visit to identified land parcels for the proposed Mother CNG Station & LCNG station at hebbal and Nanjagund industrial area; ▪ Tracing the route of the identified 15 kms (out of the proposed 40 kms) steel pipeline route through Mysuru district

The minutes of meeting of the site visit are presented in **Appendix H**.

1.5.7.1 Audit of OMC Outlets

ERM team also undertook visit to the OMC outlets within the two GAs where CNG dispensing equipment of AGPCGPL will be installed. Following outlets were visited:

- BPCL ST Augustine, Aroor village, Cherthala Taluka, Alappuzha District (AKT GA) -
- IOCL Elengickal Fuel, Peroorkada, vazhayila village, Nedumangad Taluka, Tiruvanthapuram District (AKT GA)
- IOCL Arvind fuels, Enchakkal, Pettha village, Tiruvanthapuram Taluka, Tiruvanthapuram District (AKT GA)
- HPCL Prima fuel, Alleppey village, Ambalappuzha Taluka, Alappuzha District (AKT GA)
- IOCL Sri Chakra Fuel Station. S. R. Patna, Mysore Mandya Chamarajanagar District (MMC GA)
- HPCL Sri Ranga Amaravathi Fuel station, S. R. Patna, Mysore Mandya Chamarajanagar District (MMC GA)
- HPCL ADHOC Sri Maruthi service station , Hebbal, Mysore Mandya Chamarajanagar District (MMC GA)

At the time of ERM site visit, all the above OMC sites were observed to be greenfield sites, except the IOCL facility at Enchakkal, Pettha village, Tiruvanthapuram Taluka, Tiruvanthapuram District (AKT GA) which was under construction at the time of visit. The scope of the visit was to observe the activities currently being undertaken at the facilities, identify any E&S impacts and understand the management aspects.

The observations made from the site assessment of OMC is presented in *Section 3.5.1* and audit checklists are appended in **Appendix J**.

1.5.7.2 Limitations during the Site visit

The site visit was undertaken under the following limitations:

- Limited consultations were held with the officials from government department due to their availability due to ongoing pandemic COVID-19;
- The final route survey for pipeline network was ongoing at both the GA and the final route has not been finalised. Out of the total proposed steel pipeline at MMC GA, only 15 kms line was covered. Further, pipeline for AKT GA will be laid along the National Highway, however it is not final if the pipeline will be laid on left hand side (LHS) or right hand side (RHS) of the road, Therefore, assessment was based on general observations on environment and social sensitivities on both the sides.

1.6 Current Status of the Project

As on date of submission of this ESMPF, the Project has the following status (*Source: AGPCGPL Progress Report*). Currently, activities have been initiated for the MMC GA and AKT GA.

- Financial closure confirmation has been received from PNGRB for all the GAs
- Gas sales have been commenced to Kerala Minerals and Mining Limited and Sudha Somany Ceramics Private Limited
- LNG sourcing in place for industrial & commercial customers through Petronet LNG on back-to-back basis
- Seven (07) parcels of land has been procured in Round 10th GAs; identification of other land locations is in process

- MSA with IOCL, HPCL & BPCL for all the GAs have been signed and 300+ locations have been identified for roll out of Daugher booster Stations (DBS)
- Layout of 315 DBS have been completed and have applied for PESO approval of 77 DBS; ut of which approvals have been received for 68 DBS.
- Layout of eight (08) LCNG/CNG Stations have been completed and initial PESO approval of 5 LCNG/ CNG have been received
- For laying of steel pipeline, RoW Permission applied for more than 6500 inch-km and demand note for 1954 inch-km has already been received
- Government of Tamil Nadu has issued a Government Order on 27th May 2020, directing all the concerned departments to provide approvals to CGD companies within a period of 10 days.

1.7 Structure of the ESMPF

The ESMPF has been structured in the following manner:

Section 1: Introduction

Section 2: Policy and Regulatory Framework

Section 3: Description of Project

Section 4: Description of Environmental and Social Baseline Conditions

Section 5: Sampling ESIA and Environmental & Social Impacts and Mitigation

Section 6: Environmental and Social Management Planning Framework

Section 7: Resettlement Planning Framework

Section 8: Institutional Arrangement and Capacity Building

Section 9: Consultation and Disclosure of Documentation

Section 10: Grievance Redressal Framework

Section 11: Budget estimate for implementation of ESMPF

Appendices

Following tools and guidance will be appended to the ESMPF:

Appendix A	Exclusion List
Appendix B	Compendium of Applicable E&S Regulations for CGD Sector in India
Appendix C	Gap Analysis
Appendix D1	Format for Site Selection Checklist
Appendix D2	Format for EHS Audit Checklist
Appendix E	Sample Terms of Reference for ESDD/ ESIA and ESMP
Appendix F	Template of E&S Monitoring Report
Appendix G	COVID 19 SOP of AG&P
Appendix H	Minutes of Meeting of the Site Visit
Appendix I	References for Ecologically Protected Areas
Appendix J	EHS Audit Checklist of OMC from MMC and AKT GA

2. POLICY AND REGULATORY FRAMEWORK

This section highlights the environmental and social policies and regulations, and other international E&S standards applicable to the AGPCGPL activities.

2.1 EHS and Social Regulations Applicable to ESMPF

The following table captures the key legislations that are applicable to the Project in general and are deemed to be material regulations from the perspective of the applicable E&S Standards. ***Appendix B*** of the ESMPF provides a compendium of the below listed E&S regulations. The compendium **discusses the applicability of the regulation** to AGPCGPL and key provisions, including permitting requirements, along with the pertinent regulatory authorities responsible for the implementation of the said regulations/legislations.

Table 2.1 Applicable EHS and Social Regulations Typical to CGD Sector

Aspect	Regulation
Environmental Permitting	▪ Environment (Protection) Act and Rules, 1986 ▪ Air (Prevention and Control of Pollution) Act, 1981 including Rules 1982 and 1983 ▪ Water (Prevention and Control of Pollution) Act, 1974 including Rules, 1975 (as amended up to 1988) ▪ Noise Pollution (Regulation and Control) Rules, 2000 and amendment, 2010 ▪ Central Ground Water Authority (CGWA) Notified Guidelines to regulate and control Ground water Extraction in India dated 12 December 2018, with effect from 01 June 2019 ▪ Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; ▪ Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as Amended 2000 (hereinafter referred to as MSIHCR, 1989); ▪ Forest (Conservation) Act, 1980; ▪ Coastal Regulation Zone (CRZ) Notification, 2019; ▪ Wildlife Protection Act, 1972; ▪ Guidelines for declaration of eco-sensitive zones around National parks and Wildlife Sanctuaries, 2011
Technical Standards	▪ Petroleum and Natural Gas Regulatory Board (Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks) Regulations, 2008, amended up till 2016 ▪ Petroleum and Natural Gas Regulatory Board (Authorizing Entities to Lay, Build, Operate or Expand City or Local Natural Gas Distribution Networks) Regulations, 2008, amended up till 2018 ▪ Petroleum and Natural Gas Regulatory Board (Exclusivity for City or Local Natural Gas Distribution Network) Regulations, 2008, amended up till 2015 ▪ Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010, amended up till 2014
Community and Occupational Health and Safety	▪ Gas Cylinder Rules, 2016 ▪ Static and Mobile Pressure Vessels (Unfired) Rules, 2016 ▪ Public Liability Insurance Act, 1991 ▪ Explosives Act, 1884, amended till 1983 and Explosives Rules, 1983 (amended 2002) ▪ Motor Vehicles Act, 1988 ▪ State specific Fire Safety Rules
Labour	▪ Child Labour (Prohibition and Regulation) Amendment Act, 2016 ▪ Equal Remuneration Act, 1976 (Amended 1987) and Equal Remuneration Rules 1976 ▪ Minimum Wages Act, 1948 and Minimum Wages Rules 1950 ▪ Payment of Wages Act, 1936 and the Payment of Wages (Procedure) Rules, 1937 ▪ Payment of Bonus Act, 1965 and the Payment of Bonus Rules, 1975

Aspect	Regulation
	▪ Payment of Gratuity Act, 1972 and Payment of Gratuity (central) Rules 1972 ▪ Employee State Insurance Act 1948, ESI Central Rules, 1950 ▪ Employee Provident Fund and Miscellaneous Provisions Act, 1952 and Rules, 2015 ▪ Maternity Benefit Act, 1961, amended 2008 and Rules, 1961 ▪ Workmen's Compensation Act, 1923 and Rules, 1924 ▪ Employment Exchanges Act, 1959 and Rules 1960 ▪ The Contract Labour (Regulation and Abolition) Act, 1970 and Central Rules 1975 ▪ Building and Other Construction workers(regulation of Employment and Conditions of Service) act 1996 and Rules 2006 ▪ Inter-state Migrant Workers Act, 1979 and Rules 1980 ▪ Bonded Labour (Abolition) Act 1976 and Rules 1976 ▪ Prevention of Sexual Harassment at Workplace Act, 2013 ▪ Factories Act 1948 and state specific Rules ▪ Shops and Establishment (Amendment) Act, 2017 and State specific Rules; ▪ Local authority or Gram Panchayat permission for establishment of batching plant or other components
Land Procurement and Acquisition Regulations	▪ Land Revenue Codes of different State Governments and Union Territories. ▪ Land Acquisition Act, 1894; ▪ Right to Fair Compensation and Transparency in Resettlement and Rehabilitation Act, 2013
Social Safeguards	▪ Panchayats (Extension to Scheduled Areas) Act 1996; ▪ Forest Rights Act, 2006; ▪ Scheduled Castes and Scheduled Tribes (Prevention of Atrocities Act), 1989; ▪ Ancient Monuments and Archaeological Sites and Remains Act, 1958 as amended up to 2010.

The applicability of the above regulations are discussed in detail in **Appendix B.** The key permits that are required for the Project based on assessment of applicability of above regulations are presented below:

- Consent to Establish and Operate as per Air(Prevention and Control of Pollution) Act and Rules and Water Consent as per Water (Prevention and Control) Act and Rules
- Hazardous waste Authorization under the Hazardous Wastes (Management and Handling) Rules, 2016.
- Factories License as per Factories Act and State Specific Rules
- PESO (Petroleum and Explosive Safety Organization) License as per Gas Cylinder Rules and SMPV Rules
- Permission for laying and Operating pipelines if those are operating at => 8 bar pressure
- PNGRB authorization for development of CGD network in allotted areas i.e. Geographical Areas.
- Other statutory approvals from local departments for laying of components and utilities.

It is understood that AGPCGPL will not install any of the components in forest areas, wildlife areas or coastal regulatory zones. In case any of the project components are located in such areas, the project trigger Category A. AIIB / OeEB will not support sub-projects trigger highly eco-sensitive impacts, therefore none of the project components will be located in such areas.

2.2 Environmental and Social Framework of AIIB

The Asian Infrastructure Investment Bank's Environmental and Social Framework (ESF) is a system that supports the Bank and its clients in achieving environmentally and socially sustainable development outcomes, by integrating good international practice on environmental and social planning and management of risks and impacts into decision-making on Bank supported Projects.

The following components of AIIB Environmental and Social Framework (Amended 2019) encompass AIIB's approach to environment and social risk management:

Table 2.2 Applicability of AIIB ESS to the Project

Policy	Brief Summary	Applicability to the Project
Environmental and Social Policy	AIIB's Environmental and Social Policy sets forth mandatory environmental and social requirements for each Project. The Policy applies to all Project funded by AIIB, and sets out the general processes and requirements for Project screening and categorization, environmental and social due diligence, environmental and social assessment, environmental and social management plan, environmental and social assessment tools and management plan framework, information disclosure, consultation, monitoring and reporting, as well as grievance redress. It also defines the roles and responsibilities between AIIB and its investment vehicle and the Investee Companies.	This Policy is applied to all AIIB direct or indirect financing.
Environmental and Social Standard 1 (ESS 1) - Environmental and Social Assessment and Management	This standard requires borrowers/investees undertake environmental and social assessment of the Project in accordance with the Environmental and Social Policy, using appropriate studies proportional to the significance of potential risks and impacts. It requires the assessment process is supported by effective information disclosure and consultation with a grievance mechanism in place and the coverage of the assessment should include pollution prevention, biodiversity impact, resource efficiency, climate change, sustainable use of natural resources, vulnerable groups, access to resources, impact of livelihood, resettlement, cultural resources, working conditions and community health and safety etc.	The requirements stipulated in this standard suggest the establishment of guidelines for the preparation of environment and social management planning and subsequent implementation, and is therefore applicable to the project.
Environmental and Social Standard 2 (ESS 2) - Involuntary Resettlement	This standard aims to avoid involuntary resettlement wherever possible; to minimize Involuntary Resettlement by exploring Project alternatives; where avoidance of Involuntary Resettlement is not feasible, to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-Project levels; to improve the overall socioeconomic status of the displaced poor and other vulnerable groups; and to conceive and implement resettlement activities as sustainable development programs, providing sufficient resources to enable the persons displaced by the Project to share in Project benefits.	This Standard would be applicable in case any of the asset development entails involuntary resettlement. If the Project would result in Involuntary Resettlement, it shall be covered in a resettlement plan or resettlement planning framework (RPF) considering the requirements of ESS2.
Environmental and Social Standard 3	This standard aims to design and implement Projects in a way that fosters full respect for Indigenous Peoples' identity, dignity, human	In India, Indigenous People (IPs) are categorized as Scheduled Tribes (ST) or tribal population. For the protection of

Policy	Brief Summary	Applicability to the Project
(ESS 3) – Indigenous Peoples	rights, economies and cultures, as defined by the Indigenous Peoples (IP) themselves, so that they: (a) receive culturally appropriate social and economic benefits; (b) do not suffer adverse impacts as a result of Projects; and (c) can participate actively in Projects that affect them. This Standard would be applicable in case the asset is located in areas where IP (scheduled tribes) might be present.	STs, the Constitution of India, under Schedule V, gave the power to the President to designate an area as a Scheduled V Area. In accordance with the provisions of paragraph 6(2) of the Fifth Schedule of the Constitution of India, the President may increase the area of any Scheduled Area in a State after consultation with the Governor of that State; and make fresh orders redefining the areas, which are to be Scheduled Areas in relation to any State. The same applies in the case of any alteration, increase, decrease, incorporation of new areas, or rescinding any Orders relating to “Scheduled Areas”. The currently designated Fifth Scheduled areas are in the states of Andhra Pradesh, Telangana, Gujarat, Jharkhand, Chhattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Orissa, and Rajasthan. As per the latest government of India notification, none of Project disctricts falls under under Schedule V areas[2]. Also, it is understood that the Project will only involve the laying of pipelines in urban and peri-urban settings; where the presence of the indigenous population is limited. Therefore, it is unlikely that their unique cultural autonomy, practices, and beliefs will be impacted in these areas. In case, the land is acquired from ST landowners and ESS 2 is triggered, the same will be managed and covered under the RP or RAP prepared as part of ESS 2. **According to the above understanding, ESS 3 will not apply to the Project.**

2.3 IFC Performance Standards

The International Finance Corporation (IFC) also applies the Environment and Social Performance Standards (PS) to manage social and environmental risks and impacts and to enhance development

[2] https://tribal.nic.in/declarationof5thSchedule.aspx

opportunities in its member countries eligible for financing. These performance standards and guidelines provide ways and means to identify impacts and affected stakeholders and lay down processes for management and mitigation of adverse impacts. Together, the eight Performance Standards of IFC establish standards that a borrower is required to meet throughout the life of an investment by IFC or other relevant financial institution.

The applicability of the IFC Performance Standards (1-8) have been presented below:

Table 2.3 Applicability of IFC PS to the Project

S. No.	IFC PS	Applicability to Sub-Projects
1.	PS 1: Assessment and Management of Environmental and Social Risks and Impacts	This standard requires the project to establish and maintain a Social and Environmental Management System (ESMS) appropriate to the nature and scale of the project and commensurate with the level of social and environment risks and impacts. The ESMS should include (i) a policy; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review. While the policy should be consistent with the principles of the PS, it may apply local or national law depending if it is deemed more stringent. Besides the area of influence, IFC PS1 also considers Associated Facilities “which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
2.	PS 2: Labour and Working Conditions	This standard requires the project to document and communicate to all employees and directly contracted workers, their working conditions and terms of employment in a standardized manner Additionally, this requires appropriate coverage on human resource policies, decent working conditions for laborers, workers’ organization, non-discrimination and equal opportunity, retrenchment, protecting the workforce, occupational health and safety, wages and overtime work, etc. Indian labour laws cover requirements such as minimum wages, overtime payment, working hours, child labour, etc. however provisions around working conditions (e.g. accommodation), retrenchment and grievance mechanism have certain gaps, which should be covered through PS 2 guidelines.
3.	PS 3: Resource Efficiency and Pollution Prevention	This standard requires the project to implement technically and financially feasible and cost effective measures for improving efficiency in its consumption of energy, water, as well as other resources and material inputs. Waste management of resources that could affect human health is also addressed as part of this standard. During the design, construction, operation and decommissioning of the project (project life cycle), the project is required to consider ambient conditions and apply pollution prevention and control technologies and techniques.
4.	PS 4: Community Health, Safety and Security	This standard requires the project to evaluate risks and impacts to health and safety of the Affected Communities during the project life-cycle and will establish preventive and control measures in a manner that avoids or minimizes risks to the fence line communities due to project construction and operations.
5.	PS 5: Land Acquisition and Involuntary Resettlement	This standard requires the project to consider feasible alternative project design to avoid or at least minimize physical or economic displacement, while balancing environmental, social, and financial costs and benefits. In compliance with the PS-5 the project/ sub-project will offer displaced persons

S. No.	IFC PS	Applicability to Sub-Projects
		and communities, compensation for the loss of assets at full replacement costs and other assistance to help them improve or at least restore their standards of living and sources of livelihoods. Resettlement Action Plan/ Livelihood restoration plan would be required to be developed for the project is case the provisions of PS-5 are triggered.
6.	PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	This standard requires the project to identify the risks and impacts in accordance with the PS-1, and should also consider direct and indirect project related impacts on biodiversity and ecosystem services and identify any significant residual impacts. In case critical habitat is assessed to be impacted by a project, biodiversity conservation plan/ action plan will have to be prepared and implemented as per IFC PS 6.
7.	PS 7: Indigenous Peoples	This standard requires the project to identify, through an environmental and social risks and impacts assessment process, all communities of Indigenous Peoples within the project area of influence who may be affected by the project, as well as the nature and degree of the expected direct and indirect economic, social, cultural (including cultural heritage), and environmental impact on them. In case any adverse impacts on IP is envisaged, FPIC process will be trigerred and Indigenous Peoples Plan (IPP) will be required to be developed and implemented. However, as discussed in Table 2.2. FPIC is not likely to tbe triggered for this Project.
8.	PS 8: Cultural Heritage	This standard requires the project to protect cultural heritage from the impact of project activities and support its preservation and also to promote the equitable sharing of benefits from the use of cultural heritage.

2.4 IFC/ World Bank Group Environmental, Health and Safety (EHS) Guidelines

2.4.1 General EHS Guidelines (2007)

The General EHS Guidelines of the World Bank Group are technical reference documents on EHS performance levels and measures for industrial and infrastructure projects, with general examples of Good International Industry Practice (GIIP). The applicability of various standards stipulated under the EHS Guidelines are specific to the hazards and risks associated with each type of project, based on their location, capacity and other project factors. The General EHS Guidelines cover aspects with respect to air emissions and quality, water and wastewater quality, noise, hazardous materials and waste management, hazards and mitigation measures related to occupational health and safety, Life and Fire Safety (L&FS), Traffic Safety, Emergency Preparedness and Response, and general EHS concerns during construction and decommissioning activities.

Effective management of EHS issues begins with early identification of potential risks and impacts during the screening and review stage for every sub-project. An organized and hierarchical approach should be adopted to integrate EHS management and mitigation measures into the project cycle including the incorporation of EHS considerations into the site selection process, planning, project layout designing, engineering, and development.

2.4.2 EHS Guidelines for Gas Distribution Systems (2007)

The WB/IFC EHS Guidelines for Gas Distribution Systems are applicable to the distribution of low pressure natural gas from the city gate station to residential, commercial, and industrial users and provide guidance through general and industry specific examples of Good International Industry Practices (GIIP). Some of the key parameters considered for assessment of gaps are management of

construction phase impacts such as fugitive dust generation, excavated soil disposal, surface run off management, operational issues such as traffic management, corrosion prevention of pipelines, leak and corrosion detection systems, maintenance procedures for all infrastructural components, etc.

The above aspects have been taken into account during the preparation of the ESMPF with the objective of ensuring project compliance with these provisions. The same shall be referred to during preparation of site-specific ESMPs during asset implementation phase.

2.5 International Treaties and Conventions

The various international treaties and conventions signred/ ratified by India are presented below:

Table 2.4 International Treaties and Conventions

S. No.	International Conventtions	India's Role and Participation	Relevance to the Project
1.	Montreal Protocol on Ozone Depleting Substances (and subsequent Amendments)	India signed the Montreal Protocol along with its London Amendment on 17-9-1992 and also ratified the Copenhagen, Montreal and Beijing Amendments on 3rd March, 2003.	The project site offices will use refrigerations and air conditioning units. Provisions of the convention and rules will be applicable in such case.
2.	UN (Rio) Convention on Biological Diversity (CBD)	India is a party since: 1994-02-18 by: Ratification; Protocol - Party since: 2003-09-11. The objectives of the CBD are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from commercial and other utilization of genetic resources. The agreement covers all ecosystems, species, and genetic resources.	The project will ensure conservation of biodiversity in accordance with AIIB and IFC requirements, as well as under national regulations.
3.	The Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971 (Ramsar Convention)	This convention was signed by India in 1981 and ratified in February 1982. The convention requires protection of identified wetlands of international importance as identified under Ramsar Convention.	The project will avoid Ramsar protected sites and maintain considerable distance during project component siting.
4.	Conventions on the Conservation of Migratory species of wild animals and migratory species	India is contracting party to the convention on conservation of migratory species of wild animals and migratory species.	The project will ensure conservation of migratory species during construction and O&M activities, through implementation of environmental measures and good practices.
5.	Paris Agreement	Paris Agreement, agreed within UNFCCC dealing with green house gas emission mitigation, adaptation and finance, signed in 2016. Not considered as the amendment of Kyoto Protocol. India has Ratified and acceded to the agreement.	The project is supporting the agreement through reduction of GHGs by providing alternative fuel options to transport and commercial users.
6.	International Labour Organization conventions	India has also ratified many of the International Labour Organization	The project needs to act in accordance with the labor laws

S. No.	International Conventtions	India's Role and Participation	Relevance to the Project
		conventions that are relevant to the Project including: • C1 Hours of Work (Industry) Convention, 1919 (14:07:1921, ratified); • C5 Minimum Age (Industry) Convention, 1919 (09:09:1955, ratified): • C11 Right of Association (Agriculture) Convention, 1921 (11:05:1923, ratified): • C14 Weekly Rest (Industry) Convention, 1921 (11:05:1923, ratified); • C29 Forced Labour Convention, 1930 (30:11:1954, ratified) & C105 Abolition of Forced Labour Convention, 1957 (18:05:2000, ratified); • C100 Equal Remuneration Convention, 1951 (25:09:1958, ratified); • C107 Indigenous and Tribal Populations Convention, 1957; • C111 discrimination (Employment and Occupation) Convention, 1958 (03:06:1960, ratified)	in India that are developed in line with ILO requirements.

2.6 Gap Analysis of Indian Regulations and International E&S Safeguards

Based on the review of the applicable legislations, a comparative analysis has been carried out with the international E&S safeguards to understand any gaps between regulatory and international requirements, and accordingly identify suitable modifications in the existing practices at AG&P to address these gaps. The detailed gap analysis is presented in **Appendix C**. A brief summary of the gaps is presented below:

- The projects which are exempted from the Environmental Clearance process are not mandatorily required to undertake impact assessment studies and develop management plans. Although, there may be an inclusion of E&S assessment and management plans as part of the project feasibility study or detailed project reports prepared for such projects;
- There are regulations around pollution prevention related to air emission, wastewater, hazardous waste, however the stipulated guidelines are not adequately enforced and implemented at project level hence there is a need to have strict monitoring processes implemented by the project developer;
- There are guidelines and regulations for protection of biodiversity, however some of the requirements such as assessment of critical habitat, implementation of additional plans etc. are not in line with international standards requirements;
- There are no specific regulatory requirements related to disclosure of environmental and social details of projects;
- Assessment of project induced specific community health and safety risks are not a mandatory requirement for projects and there is no legal requirement for disclosure of information to the community about the progress of the project and related health and safety issues;

- For projects that have been granted SIA exemption from the state government, there is no mandatory requirement to assess the impact of land acquisition/ procurement on the livelihood of affected families due to the project activities. Some states have exempted projects from conducting SIA, for sectors like rural infrastructure, affordable housing, and industrial corridors[3];
- There is no legislation to establish a Project-specific Stakeholder Engagement Plan, if there is a private procurement of land on willing buyer and willing seller basis;

2.7 Environment and Social Policies of AGPCGPL

This section presents the various environment, safety and social policies adopted by AG&P that is applicable to AGPCGPL as well.

2.7.1 Environment, Health and Safety

[3] https://rotiodisha.nic.in/files/Project%20Report_16th%20batch/RFCTLAR&R/Anuja%20Tarini%20Mishra_16th%20Batch.pdf (Assessed on May 08, 2020)

AG&P (including AGP CGD India Pvt Ltd and AGP City Gas Pvt Ltd) places a premium on the health and safety of its personnel and the protection of the environment. HSE is more than just a business priority. It is a core value that affects the lives of our employees as well as our business operations.

We are committed to achieving company-wide HSE excellence in all our operations, services and products. We strive to preserve the environment and provide a healthy and Injury-free workplace for our employees, customers, sub-contractors and the communities where we operate. Maintaining the highest standards in HSE is critical to our productivity.

To deliver on our commitment to the highest HSE standards, we will:

- Create and Uphold a positive HSE culture, teamwork and harmonious relationships at all levels within the organization
- Maintain a competent and focused workforce including employees and contractors to ensure safe execution of city gas distribution projects, operations and maintenance
- Operate in accordance with our HSE Management System and compliance obligations
- Avoid health and safety risks and minimize environmental impact on our customers and the community, arising from construction activities, operations and maintenance, transportation and storage of LNG, CNG and distribution of Natural gas
- Comply with all statutory HSE requirements
- Identify and assess any hazards and environmental impacts associated with our business and establish controls to minimize risk as much as possible
- Maintain an effective emergency response plan to support business continuity
- Continually improve HSE practices and performance in order to safeguard the health and safety of our employees and stakeholders and protect the environment by implementing regular training
- Ensure Contractors and Vendors comply to our HSE Policy and procedures

We believe all the injuries, occupational illnesses as well as safety and environmental incidents are preventable.

All managers and supervisory teams are responsible for maintaining our high HSE standards. Their primary responsibility is to implement HSE programs and ensure compliance within their respective jurisdictions.

Our employees are the company's most important asset. We maintain open channels of communication to obtain feedback and build HSE awareness.

Everyone is encouraged to consider health, safety and environmental protection in everything that we do. The “Safety of a person overrides all the project targets”

This HSE policy has been signed by the Managing Director and is effective from 27 December 2019.

2.7.2 Other Associated Policies

In addition to the HSE Policy, AG&P has a Code of Conduct for Employees which presents the company’s mission and vision to execute work with excellence while maintaining the highest standards of quality, safety, international environment benchmark and ethical behaviour. The mission statement is as presented below.

- AG&P's mission is to change the way infrastructure is delivered to critical projects by making it simpler, easier and faster for clients to generate value.
- We will accomplish our mission by offering innovative, customer-centric solutions and services across three lines of business: Gas Logistics (LNG supply chain design, development and marketing); Modular Construction; and FieldCOM (manpower services and site works).
- We will hire the best talent in the industry across all business functions: engineering, procurement, construction, fabrication and assembly, hook-up and commissioning, operations, maintenance, legal, financial and management services to enable us to design and deliver the highest quality solutions with speed and efficiency.
- We will remain strictly child labor-free with rigorous policies banning child labor and strict adherence to all applicable laws regarding the protection of children and the elimination of child labor practices.
- We will train our workforce to the highest international standards of quality and safety while fostering environment integrity.
- We will be an equal opportunity employer and will not discriminate on the basis of gender, age, marital status, race, color, ethnicity, sexual orientation, disability or religion.
- We will own and operate outstanding manufacturing facilities with state-of-the-art, automated systems and processes to ensure reliable and efficient 24/7 production.
- We will obtain independent certifications for the quality and safety of our workforce and operations wherever we do business.
- We will work with the best partners around the globe to provide value-added services across the infrastructure lifecycle.
- We will establish a rigorous compliance framework to support the highest standards of ethical behavior among our employees, clients, contractors and vendors.
- We will protect the community and the environment wherever we do business through socially responsible action.

Apart from the mission statement, the Code of Conduct Manual also states the Code of Ethics, general rules, other policies on anti-corruption, quality, anti-sexual harassment, child labour, equal opportunity, guidelines on working hours, attendance, leave, employment termination, and company's processes related to disciplinary actions.

2.7.3 Existing Land Procurement Process of AGPCGPL

AGPCGPL has a procedure on land procurement, which defines the process of land procurement applicable for all the CGD Projects.

The land procurement process for has been described below:

- **Identification of land:** Land team identifies the land along with the respective GA team. This includes type of land, area, and distance from other fuel stations. Land parcels are identified through identified land procurement agencies.
- **Approaching the landowner and negotiations:** AGPCGPL has created a land task force and the members include Land team, GA Head, Head HR, PR & Admin, Finance Head, Global Procurement Head and COO. The assessment and negotiation with the landowners are undertaken by the land task force.
- **Legal due diligence:** Once land is identified and negotiations are undertaken, a legal due diligence/title search report of the land and land papers are undertaken by the hired land agency.
- Following documents are obtained prior to land procurement process:

- Details pertaining to the property to be purchased such as Survey No, area, location, Concerned Sub Registerar Office etc.;
- Copies of all title deed conferring title in favour of present landowner with regard to the Subject property and such title/parent documents tracking back to at least 30 years;
- Latest Encumbrance certificate for the last 30 years for the property;
- Power of Attorneys involved in the title tracing;
- Death certificate, Legal Heirship Certificate, Succession Certificate, Will, Probate, Settlement deed, if any involved in the title tracing;
- Partnership Deed, Trust Deed, Release Deed, Exchange Deed, if any, involved in the title tracing;
- Revenue Documents: Patta, Chitta, Adangal, A Register extract (Old & New) permanent Land Register / Town survey land register / Settlement land register.
- Tax details.
- Land use Certificate.
- Approvals with regard to land conversion obtained by the present owner of the subject property.
- NOC from Tahsildar confirming that the land is owned and possessed by the present owner and that the same is free from any land acquisition proceedings, Land reforms proceedings, land ceiling proceedings.

In order to ensure that the land procurement process complies with all requirements of AIIB ESF and IFC PS 5 (as applicable), a Resettlement Planning Framework in provided in *Section 7* of this ESMPF, and further details related to land requirement and procurement process is explained.

2.7.4 COVID- 19 SOP of AG&P

Subsequent to the initial news of the COVID -19 spread at a global level, the Admin Department of AG&P started taking following actions from January 2020 onwards and communicated following measures across AG&P India operations;

1. Self-Declaration Health forms for travelers from foreign countries to AGP locations
2. Thermal checking of all visitors, employees at AGP offices
3. Hand sanitizers at toilet entrances, washroom entrances and office entrances. The reception was also placed with hand sanitizers.
4. The cleaning frequency for offices, pantry, washroom was increased, the surfaces were sanitized once every two hours.
5. The Site employees at working sites of Jodhpur were made aware about the Corona Virus Spread and COVID-19 cases and were asked to wash hands frequently with soap and water.
6. The awareness posters were displayed on site.
7. The Health self-declaration forms were circulated and were got filled in by some foreign visitors who came for due diligence to AGP sites,
8. AGP employees from Manila Office who were visiting were asked to fill in self-declaration forms
9. The employees were asked not make big gatherings, take lunch together with many people etc
10. AGP also started monitoring the Government and WHO guidelines and updates on regular basis and were communicating with all employees.

The detailed SOP is presented in **Appendix G.**

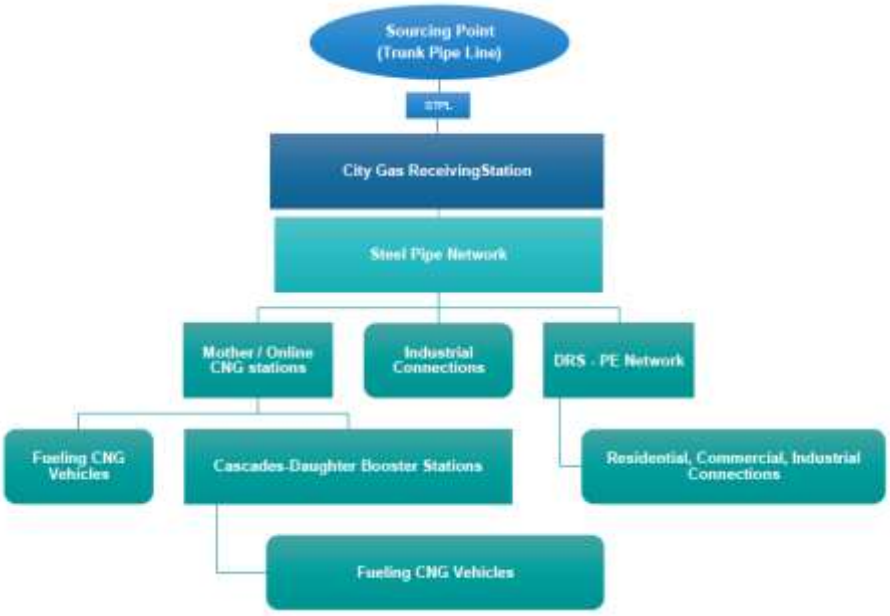
3. DESCRIPTION OF THE PROJECT

3.1 AGPCGPL Business Model

AG&P's city gas distribution network will cater to households, transport and industrial / commercial users. AGPCGPL employs either of or a combination of two gas sourcing and distribution models as described below:

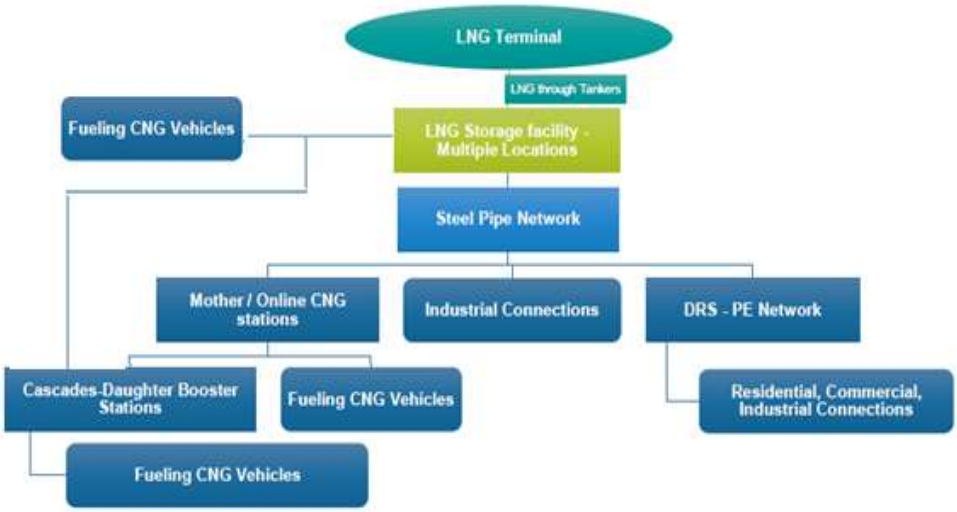
3.1.1 Conventional Model

The conventional model for a CGD network entails gas sourcing from the trunk pipeline passing nearest to a GA. The distribution of gas within the demand areas will be through low pressure steel pipelines.



3.1.2 LNG Storage and LCNG Station Model

Considering the size of the GA that would require the concurrent establishment of facilities to make gas available to all customers, standalone Liquefied Natural Gas (LNG) storage with Liquefied Compressed Natural Gas (LCNG) dispensing facilities or LNG storage with regasification facilities will be set up. LNG tankers (17 tonnes capacity) will transport LNG from a nearby terminal to these storage facilities which will be located in prospective demand centres. APGCGL owns LNG tankers estimated around 350 in number. The distribution of gas within the demand areas will be through low pressure steel pipelines.



In terms of infrastructure development, AGPCGPL needs to obtain permit for laying pipelines in existing RoW of Highways and Roads. For storage tanks and CNG stations, AGPCGPL intends to purchase land. The extent of land estimated for such infrastructure is estimated to be minimal and will range from 0.5 - 1 acres. Thus, the total land required for the Project for all the GAs, is estimated to be not more than 123.5 acres (or 50 hectares). This land will be direcly purchased by AGPCGPL on willing buyer willing seller basis as per their land procurement process and as per the policy described in ***Section 2.7.3*** and further details in ***Section 7***.

3.2 Overview of Activities Triggering E&S Management Requirements

Many aspects of CGD asset development activities have the potential to cause adverse impacts on the physical, biological and social environment. Site-specific factors such as proximity of the work site to environmentally sensitive areas, the scale of the work, and the type of materials used determines the level of risk that a construction and operation activities poses to the environment and on the community.

The stage wise activities undertaken by the AGPCGPL during construction, installation of network components and operation and maintenance activities are presented below:

3.2.1 GA Bidding Process

In order to develop a portfolio of CGD assets, AG&P participates in bidding for new licenses in bidding rounds of PNGRB. Acquisition of existing CGD licenses from third parties is not envisaged by the company at this point of time.

Development of an asset starts from the bidding stage, on submission of bids by AG&P to PNGRB. Once bids are requested for a geographical area through PNGRB's bidding process, a selected team of professionals within AG&P corporate entity work towards submission of the bid. The feasibility of the particular geographical area is decided through a preliminary demand based market analysis undertaken by the team with the help of internal financial models and market research. Preliminary studies with respect to identification of demand areas within a GA are undertaken at the bidding stage, using various parameters including desk-based and onsite surveys such as CNG station mapping. In case of infrastructure dense areas, a site team is mobilized for onsite verification to assess if installation of pipelines or isolated storage tanks (up to 66000 standard cubic meters (scm) of gas storage capacity) are feasible. Detailed studies on these aspects are carried out post issue of authorization by PNGRB.

AG&P participates in the bid through consortium of its subsidiaries. For bids which are won by the Company, grant of authorization (also referred as CGD license) is issued by PNGRB, outlining the details of network component requirements, extent of geographical area, districts and charge areas

covered, required number of connections and users, technical specifications and duration of contract period. AG&P thereafter establishes a special purpose vehicle for execution of the GA network under each bidding round. AGPCGPL is responsible for the execution of assets under 10th bidding round.

3.2.2 Infrastructure Planning

To summarize, following activities are undertaken at the pre-construction and planning stage:

- Determination of the quantum of gas required for the project and the dimensions of the project assets, through market surveys;
- Identification of locations for setting up receiving stations, trunk pipeline, storage facilities, boosting stations, district regulating systems, dispensing outlets, PE network etc.
- Identification of warehouse locations at respective GA locations;
- Land identification and initiation of procurement process;
- Obtaining statutory approvals from various government agencies;
- Execution of agreements with gas suppliers and oil marketing companies;
- Selection and hiring of construction contractors for the construction phase for Civil Works, construction of LCNG Stations, ROU Services, LNG-CNG and Transportation services;
- Identification and appointment of the project execution team done on GA basis with a dedicated team deployed at each GA.

As part of the infrastructure network at each GA, either AGPCGPL will employ of or a combination of two gas sourcing and distribution models described in ***Section 3.1***. Key steps and considerations have been described as follows:

- In case of conventional model with trunk pipeline, a City Gas Receiving Station (CGRS) will be developed that will receive natural gas from GAIL supply points or tap off points, sourced from DBPL through high pressure sub-transmission pipeline (STPL). Each GA will have at least one CGRS to receive gas. The strategy will be to develop the CGRS locations adjacent to or nearest to the GAIL Tap-off points. Natural gas will be odorized, compressed and stored in stationary gas cascades at the CGRS location prior to subsequent supply into the network. This model will be implemented for catering to the residential and transportation sector end users.
- In case of the LNG Storage model, gas will be sourced from nearest LNG terminals through LNG Semitrailers / Rigid chassis trucks hired by AGPCGPL. The trucks will transport LNG upto the company's LNG storage facility within the GA. The storage facility will have associated LCNG dispensing or regasification facilities. This model will be implemented for catering to the commercial and industrial sector end users.
- Thereafter, both models will have feeder lines comprising the primary, secondary and tertiary network downstream of the CGRS or LNG storage. The primary network will typically comprise of underground mild steel (MS) pipelines that can transport gas at 49 bar pressure.
- Downstream facilities such as CNG/LCNG dispensing mother stations, online stations and District Regulating Stations (DRS) will be connected to the CGRS or LNG storage through underground mild steel (MS) pipelines while further they will be connected to the secondary network though medium density polyethylene (MDPE) pipeline.
- From the mother/online CNG stations, gas will be transported to daughter booster stations (DBS) via mobile cascades mounted on light commercial vehicles (LCV) for supply to transport sector end users in the form of CNG dispensing systems. Such dispensing system will also be installed at existing retail fuel outlets operated and maintained by oil marketing companies (OMC).

- In order to supply to domestic PNG users (residential), commercial users and industries, MDPE lines will be developed as tertiary network via a district regulating system. The DRS will shall be reduced in compliance with regulations. Risers will be used for final supply to households.

3.2.3 Asset Construction

AGPCGPL will enter into contract with various contractors and suppliers for all activities including procurement, construction, commissioning and handover of the Project. Construction activities are reportedly short term and will be spread over a duration of 5-6 months for installation of key network elements such as CGRS, daughter booster stations and steel pipeline network at each GA. Further details are provided in *Section 3.3*.

The construction contractors will be responsible for obtaining regulatory permits and approvals specific to construction activities and ensuring compliance to permit conditions, however primary responsibility for monitoring will lie with AGPCGPL. The construction contractors will also be responsible for engagement of workforce, procurement of raw materials, management of wastes, provision of fire safety arrangements at construction sites, and reporting to AGPCGPL on various aspects. AGPCGPL project team will supervise all onsite activities being undertaken by the construction contractors.

As part of infrastructure development at OMC retail fuel outlets, the OMC will be responsible for all civil works at the retail outlet as per the blue print for the project provided by AGPCGPL. After civil works is completed by OMC, AGPCGPL will install their gas-dispensing infrastructure at a designated area within the retail fuel outlet. Please note that the construction of the CNG assets (which would be owned by AG&P) are clearly demarcated from the liquid fuel asset of the OMCs. Accordingly, the E&S requirements would be limited to the investment made/assets created by AGPCGPL.

3.2.4 Asset Management during Operations

Post commissioning, AGPCGPL will supply natural gas for transportation end users, households and industrial users during their authorization period. The operation and maintenance of the common utilities and infrastructure provided within the network including steel and MDPE pipelines, CRGS locations, office infrastructure, gas installations at the daughter booster stations and online stations, DRS, risers at domestic user end, etc. will be done by AGPCGPL. Further, the company has entered into a technical services contract with Osaka Gas for providing support/supervision for operation, maintenance & emergency procedures of LCNG facilities etc.

The operations/dispensing activities at the OMC outlets are done by the designated staff of the OMC. AGPCGPL would be responsible for the maintenance of CNG compressor & dispensing equipment at the OMC retail fuel outlets.

3.3 Asset Development Arrangements for Sub-projects

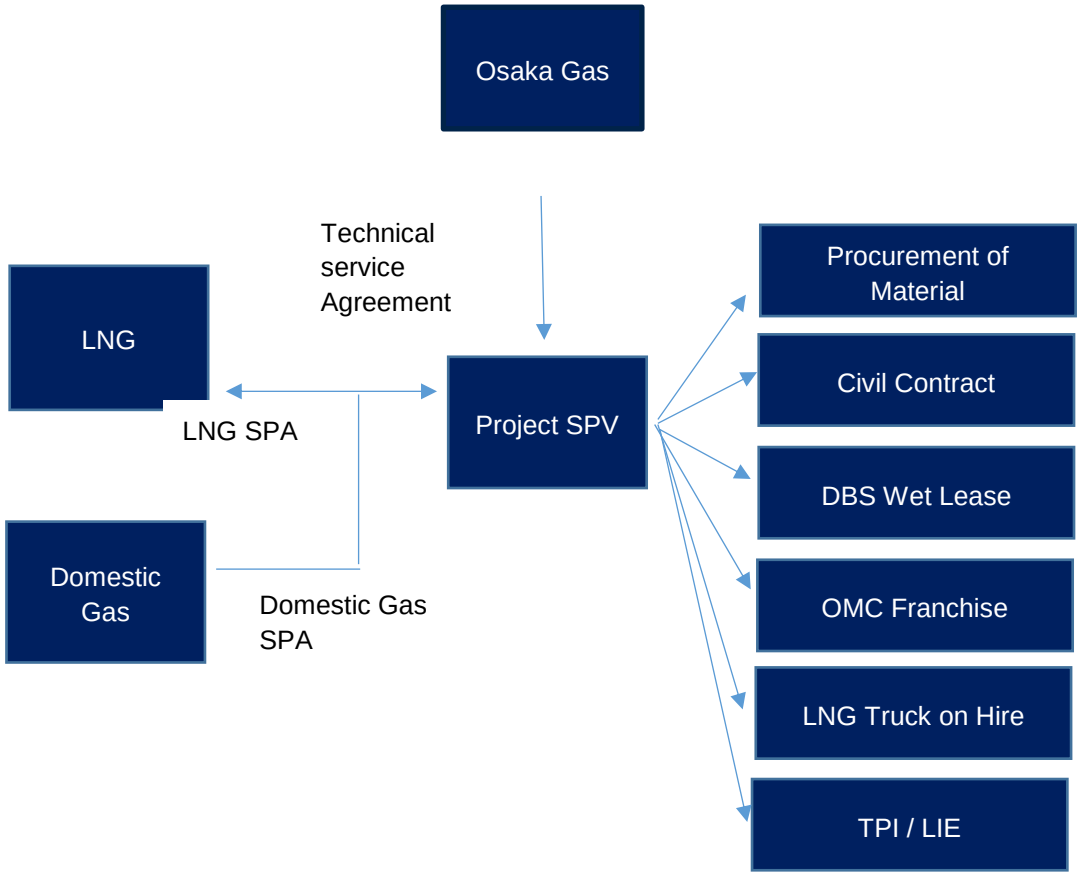
As part of the project execution, AGPCGPL will also have contractual arrangements at following levels:

- Procurement of equipment, materials e.g. pipelines etc. through the centralized Group procurement team of AG&P Manila
- Centralized IT team of AG&P Manila to help in managing the ongoing SAP implementation for CGD operations
- Construction contracts/ civil contracts with various contractors /sub-contractors for laying of pipelines, for civil works, providing connections etc. at multiple locations

- Technical partnership with Osaka Gas Co., Ltd. (Osaka Gas) through a technical services agreement for review of the network design and Review, engineering review, Operations & Maintenance Philosophy and training in handling LNG equipment
- Master Service Agreements (MSA) with OMCs such as IOCL, HPCL and BPCL to install CNG stations at their existing fuel stations/ retail outlets (more than 300 potential retail outlets have been identified)
- Wet-lease agreements with credible vendors for the supply and installation of equipment and for operating CNG stations.
- MOU/ Contract with Logistics Providers for hiring LNG Semi-trailers / Rigid chassis trucks to deliver LNG from the nearest LNG terminal to various storage locations
- Third Party Inspection (TPI) agencies to be appointed by the company and Lenders Independent Engineer (LIE) for overall execution monitoring

The following figures illustrate the contractual structure that would be implemented for development and operations of each GA and associated network components:

Figure 3.1 Contractual Structure



3.4 Description of Sample Sub-Projects

ERM has assessed two sample geographical areas (or sub-projects) as part of ESMPF development – Mysore GA and Alappuzha GA. The project area comprises of total 6 districts in 2 states, i.e. Karnataka (Mysore, Mandya and Chamarajanagar) and Kerala (Alappuzha, Kollam and

Thiruvananthapuram). As per the Detailed Feasibility Report for the two geographical areas, there are a total of 36 Charge Areas (CA) and total geographical area is 23,004 sq km in the two states.

Table 3.1: Details of the Sample Geographical Areas

State	District	Tehsils	Details
Karnataka	Mysore (Mysuru)	1. Piriyapatna 2. Krishnarajanagara 3. Hunsur 4. Heggadadevankote 5. Nanjangud 6. Tirumakudal - Narsipur 7. Mysore	Geographical Area: 16,917 sq km Population Covered: 58,27,687 Total Households:13,54,715
	Mandya	1. Krishnarajpet 2. Nagamangala 3. Pandavapura 4. Shrirangapattana 5. Mandya 6. Maddur 7. Malavalli	
	Chamarajanagar	1. Kollegal 2. Yelandur 3. Chamarajanagar 4. Gundlupet	
Kerala	Alappuzha	1. Cherthala 2. Ambalappuzha 3. Kuttanad (Mancombu) 4. Karthikapally (Haripad) 5. Chengannur 6. Mavelikkara	Geographical Area: 6,087 sq km Population Covered: 80,64,591 Total Households:20,43,210
	Kollam	1. Karunagappally 2. Kunnathur 3. Kollam 4. Kottarakkara 5. Pathanapuram 6. Punalur	
	Thiruvananthapuram	1. Nedumangad 2. Kattakada 3. Neyyattinkara 4. Thiruvananthapuram 5. Chirayinkeezhu (Attingal) 6. Varkala	

Source: DFR, AGP

The map of the project areas is showcased in ***Figure 3.1*** & ***Figure 3.2.***

Figure 3.2 Geographical Area of Project District of Karnataka

Source: DFR, AGP

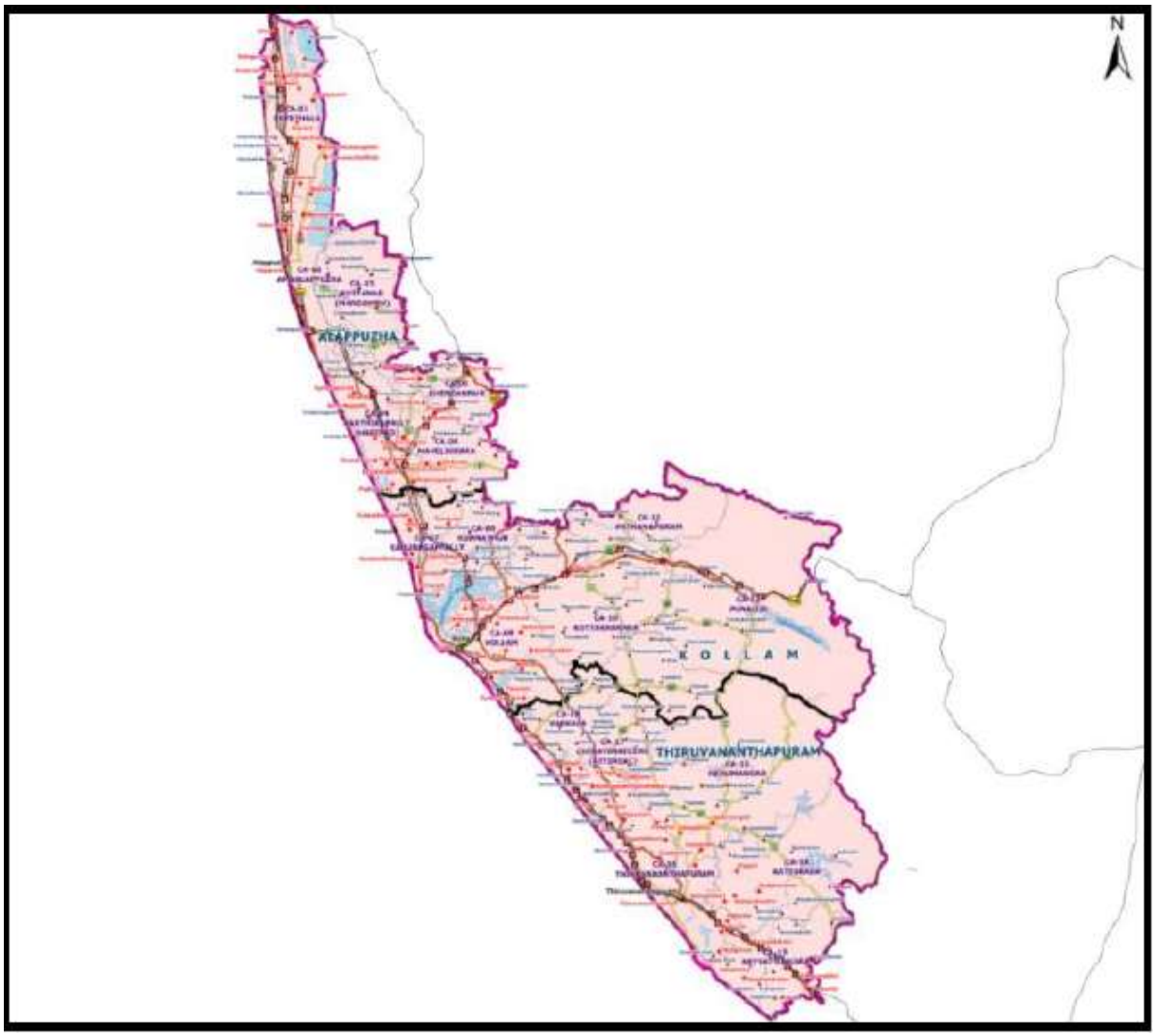
As per PNGRB bid document, the Geographical Area covered in the state of Karnataka is 16,917 sq km, Population is 58.27 Lakhs (approx.) and Number of households is 13.54 lakhs. It is sub-divided into 18 Charge Areas (CAs) as mentioned in **Table 3.2.**

Table 3.2: Details of the Charging Area- Mysore GA, Karnataka

CA	District Name	Charging Area Name
CA-01	Mysore	Piriyapatna
CA-02	Mysore	Krishnarajanagara
CA-03	Mysore	Hunsur
CA-04	Mysore	Heggadadevankote
CA-05	Mysore	Nanjangud
CA-06	Mysore	Tirumakudal - Narsipur
CA-07	Mysore	Mysore
CA-08	Mandya	Krishnarajpet
CA-09	Mandya	Nagamangala
CA-10	Mandya	Pandavapura
CA-11	Mandya	Shrirangapattana
CA-12	Mandya	Mandya
CA-13	Mandya	Maddur
CA-14	Mandya	Malavalli
CA-15	Chamrajanagar	Kollegal

CA-16	Chamrajanagar	Yelandur
CA-17	Chamrajanagar	Chamarajanagar
CA-18	Chamrajanagar	Gundlupet

Figure 3.3 Geographical Area of Project District of Kerala



Source: DFR, AGP

As per PNGRB bid document, the Geographical Area covered in the state of Kerala is 6,087 sq km, Population is 81 Lakhs (approx.) and with 21 lakhs households. It is sub-divided into 18 Charge Areas (CAs) as mentioned in **Table 3.3**

Table 3.3: Details of the Charging Area- Alappuzha GA, Kerala

CA	District Name	Charging Area Name
CA-01	Alappuzha	Cherthala
CA-02	Alappuzha	Ambalappuzha
CA-03	Alappuzha	Kuttanad (Mancombu)
CA-04	Alappuzha	Karthikapally (Haripad)
CA-05	Alappuzha	Chengannur

CA	District Name	Charging Area Name
CA-06	Alappuzha	Mavelikkara
CA-07	Kollam	Karunagappally
CA-08	Kollam	Kunnathur
CA-09	Kollam	Kollam
CA-10	Kollam	Kottarakkara
CA-11	Kollam	Pathanapuram
CA-12	Kollam	Punalur
CA-13	Thiruvananthapuram	Nedumangad
CA-14	Thiruvananthapuram	Kattakada
CA-15	Thiruvananthapuram	Neyyattinkara
CA-16	Thiruvananthapuram	Thiruvananthapuram
CA-17	Thiruvananthapuram	Chirayinkeezhu (Attingal)
CA-18	Thiruvananthapuram	Varkala

3.4.1 Current Status Activities at Sample GA

3.4.1.1 MMC GA

- LCNG Station, Nanjangud
  - Property registration of the land completed in August'2020
  - Initial PESO approval and Factory Layout approval are obtained. Balance Permission of Consent to Establish (CTE), DM and KIADB plan approval is under process.
  - Contract awarded for Civil, Electrical and Erection of LCNG equipment (Turnkey).
  - Civil work in progress. Site cleaning, demolition of existing structure and soil cutting activities are completed.
  - Excavation for Dyke area foundation is in progress.
- Layout preparation under progress for the LCNG station at Hebbal
- Status of Daughter Booster Stations (DBS) as follows:
  - Feasibility survey of all shortlisted ROs have been completed in all three districts.
  - PESO initial approval received for 13 ROs.
  - Civil work started at 02 ROs (01 in Mysuru and 01 in Mandya)
  - Work order awarded for Procurement of CNG equipment, Mechanical and electrical work.
  - Commissioning of 02 DBS is planned by Jan'21

3.4.1.2 AKT GA

- LCNG station layout at Cherthala has been completed
- BPCL ST Augustine Fuels, Aroor DB Station
  - Compressor Foundation work completed.
  - SS Tube Trench is under progress.
  - U/G Cable Duct work is under progress.
  - Earth pit construction is under progress.
  - Light pole civil construction is under progress.

- Electric panel available at site.
- SS Tubes for construction received at site.
- Awaiting for additional electric load sanction from KSEB.
- Stationary Cascade, Booster compressor, CNG Dispenser available at site.
- Mass flow meter is available.
- MCV is available at GA.

- HPCL VAVA Fuels, Eramallor DB Station
  - Compressor Foundation work completed.
  - SS Tube Trench is under progress.
  - U/G Cable Duct work is under progress.
  - Awaiting for additional electric load sanction from KSEB.
  - Stationary Cascade, CNG Dispenser available at site. 6. Fencing work is Under progress.
  - Mass flow meter is available.
- HPCL Natesh Fuels, Kalavoor – DB Station
  - Compressor Foundation work completed.
  - SS Tube Trench is under progress.
  - U/G Cable Duct work is under progress.
  - Stationary Cascade, CNG Dispenser available at site.
  - Fencing work is under Progress at site.
  - Mass flow meter is available.
  - Awaiting for additional electric load sanction from KSEB.
- HPCL Prima Fuels, Alappuzha
  - Compressor Foundation work completed.
  - SS Tube Trench is under progress.
  - U/G Cable Duct work is under progress.
  - Awaiting for additional electric load sanction from KSEB.
  - Stationary Cascade, CNG Dispenser available at site.
  - Fencing work is under progress.
  - Massflow meter is available.

3.5 Network Components

The sub-projects will include the following components:

- Sub-transmission pipeline (STPL) or LNG storage cum regasification facility;
- Feeder line comprising the primary, secondary and tertiary network downstream of the STPL or LNG storage with regasification facility;
- Downstream facilities such as CNG/LCNG dispensing stations and District Regulating Stations (DRS) connected to the secondary polyethylene (PE) network; and
- CNG cascade trucking facilities connected to the PE network (virtual pipeline mode).

The planned CGD network was developed based on the various pressure levels defined in the T4S regulations released by the PNGRB. The various pressure levels considered while designing the network are illustrated below:

Sub-Transmission Pipeline (STPL)	• High-pressure pipeline, owned by AGPCGPL, connecting the main transmission pipeline; i.e., GAIL's DBPL pipeline for majority of GAs in the 10th round to the City Gas Receiving Station (CGRS).
Primary Network	• CGD pipeline network that operates at a pressure above 100 psig (7 bar) and below 711 psig (49 bar), to supply of gas from "one or more CGRS/LNG storage with regasification facility" to the secondary gas distribution network or service lines to bulk customers. • Downstream facilities like CNG mother stations/online stations/DRS will be connected through the primary network.
Secondary Network	• CGD pipeline network that operates at a pressure below 100 psig (7 bar) and above 1.5 psig (100 mbar), designed to ensure uninterrupted supply of gas to the tertiary network or to industrial consumers through service lines.
Tertiary Network	• CGD pipeline network that operates at a pressure less than 1.5 psig (100 mbar), designed to ensure uninterrupted gas supply to service lines. • This is typically used to supply gas to domestic and commercial PNG consumers.
Pressure reducing stations	• The pressure at each stage will be reduced before reaching the succeeding lower level through various pressure reducing devices like District Regulating Station (DRS) and Service Regulator (SR). • Before the gas is distributed to individual consumers, the pressure shall be reduced in compliance with regulations for ensuring safe operations.

3.5.1 Existing Facilities – OMC Retail Outlets

As discussed, as part of the Project implementation, AGPCGPL has entered into Master Service Agreements (MSA) with oil marketing companies (OMC) such as IOCL, HPCL and BPCL to install CNG stations at their existing fuel stations/ retail outlets. More that 300 potential retail outlets have been identified for the Project.

The OMC will be responsible for all civil works at the retail outlet as per the blue print for the project provided by AGPCGPL. After civil works is completed by OMC, AGPCGPL will install their gas-dispensing infrastructure at a designated area within the retail fuel outlet. The infrastructure will be operated and maintained by staff appointed and trained by AGPCGPL. It is important to note that there will not be any interdependency AGPCGPL and OMC for retail outlet operations.

The installation of gas-dispensing infrastructure within OMC outlets is due to locational advantage, hence the OMC outlets are not associated facility[4] [5] to the Project. AGPCGPL will ensure that any operational impacts are mitigated through the ESMP.

3.6 Construction Activities and Construction Methods

For various types of installations the construction activities are as described below.

3.6.1 Steel Pipelines

The construction activities involved in laying of distribution steel pipeline are as follows:

[4] Associated facilities are activities that are not included in the description of the Project set out in the agreement governing the Project, but which, following consultation with the Client, the Bank determines are: (a) directly and materially related to the Project; (b) carried out, or planned to be carried out, contemporaneously with the Project; and (c) necessary for the Project to be viable and would not be constructed or expanded if the Project did not exist.

[5] Existing facility (EF) are those facilities which already exist or are under construction which the project may be involved or linked with in some way, if the Project involves rehabilitation, upgrading, expansion or privatization etc. of existing facilities

- Route surveys: After award of the GA, the next stage is to identify locations for laying pipelines and various installations like Steel Distribution Pipelines, plastic pipelines, City Gate Stations, CNG stations, LCNG Stations, Compressor Stations etc. Route survey is undertaken by competent survey agencies who have all the details of the topographies of the area. The land survey is conducted for ownership, any archeological sites, religious sites, forest, CRZ areas, river, canals, roads (national, state, and rural), sites of archeological sites, religious and sites of environmentally sensitive areas like CRZ, Forest, wildlife sanctuaries etc. The route survey teams are required to follow all safety instructions like wearing Personal Protective Equipment, following road safety rules etc. The current route planning for each GA is optimized to achieve the shortest route of STPL / Steel pipeline and avoidance of forest areas and related approvals. The route also avoids HT transmission lines and foreign pipeline crossings with minimum turning points. As per the current route planning for the two sample projects, no additional ROW requirement is envisaged.

- Clear the site (grading of soil): Based on route survey, ROW permissions are sought. The route soil is graded for laying of pipelines by using the Soil excavators e.g. JCB machines. The ROW is leveled so that trenches for pipeline can be created. Minimal tree cutting is ensured, however in case trees are to be felled, then local authorities permission is accordingly obtained and the tree loss is compensated through plantation activities.

- Trenching and Excavation: For excavation of soil and creation of trenches, backhoe are used. It is ensured that during excavation, the width and depth of the trenches are as per the technical standards of PNGRB are followed to avoid soil condition deteriorations and disturbing of soil conditions. For pipes, the width of soil to be excavated for trench is kept at 300 mm to 600 mm as per the size of pipe and depth of 1.2 meters is followed.

- Transporting the pipes: The steel pipes are transported from the pipe yards to site and are placed on the wooden blocks or sand bags so that they don't create hazards on site of rolling down. Minimal disturbance to pedestrians and vehicle movements is ensured on sites. The Pipes are carried on site via Truck Trailers and arranged on site by using Hydra Machines or cranes. It is ensured that the Hydra Cranes used have proper load charts, test certificates for maximum loading, PUC certificates & licenses etc.

- Stringing the pipes along the trench: The pipes are arranged at ROW for tie-in joints by using cranes and are arranged on site as shown below.

- Bending pipes on site for matching the topography: This work is done for pipe pieces at pipe yard as it is hazardous job and hence it is avoided on site.

- Applying coating and wrapping to welded finished joints: This work is done on site and for surface cleaning and finishing, copper shots technology is used to avoid pollution and hazards on site.

The coating is provided as per PNGRB Technical standards. The pipes are welded on site and then lowered in to trenches by Hydra Machines / cranes and the coating work is done thereafter.

- Examination of pipes or Holiday testing: The welded pipes and connections are checked for coating damages or leaks by holiday testing before reinstating of the soil.

- Reinstating the soil of excavated trenches: After the lines are laid in the trenches and all work of construction is over, the trenches are reinstated by placing soil and it is ensured that reinstating is done as original state. This activity is done by the JCBs and proper finishing is done by compacting the soil to its original state.

- Cleaning and testing of pipelines: The pipelines are cleaned for ensuring no debris is inside by pigging the pipe with foam pigs and cleaning inside by water. The pipes are then dried by hot air and after that either hydro testing or pneumatic testing or both are done. The Hydro test water is drained in to public sewer after testing the water to match the recommended quality, otherwise it is disposed off as per local pollution control norms.

- Commissioning of pipes: Work Permits are taken for commissioning of pipelines and those are purged with nitrogen and ensured that there is no oxygen inside (O2 level is brought to below 2%), when the gas is 100% then the commissioning is complete. Here the venting of gases is undertaken by closely monitoring the gas percentage released in atmosphere and it is done as per PNGRB purging and venting procedure given in PNGRB standards.

3.6.2 Construction of PE/PNG works

- Laying of PE (Polyethylene) Pipelines: The PE Pipelines are carried from stores by trucks/tempos and are staked near to site. The coils are unloaded from the truck /tempo by mobile cranes (Hydra Machines). The unrolling is done manually and laid manually in trenches. After laying the pipelines, the welding of pipe joints and fittings are undertaken by electrofusion welding machines.


- Jointing of PE Pipes: The jointing of PE Pipes is undertaken by electrofusion welding method. The PE pipe pieces remaining after welding works are collected and reconciliation done and are recycled. The plastic wrappings of the fittings etc. are collected and given for recycling.

- Horizontal Direction Drilling for Steel and PE Pipe laying: At places where it is not possible to have open cut, Horizontal Direction Drilling method is used for laying of pipelines i.e. PE Pipes or steel pipes. The areas include rivers, canals, public drains or natural drains, roads, high ways etc. This method is used to ensure the soil conditions are not disturbed by the construction activities.

3.6.3 Civil Construction for CNG/LCNG Stations

Civil works are undertaken either on private land purchased by AGPCGPL from land owners, or at existing retail fuel stations. All care for environment and safety is taken while developing such stations during constructions i.e. working at height precautions, excavation safety, electrical safety, loading and unloading safety etc. Particular precautions include safe stacking of material, safe welding and cutting, material handling etc.

3.6.4 PE/PNG Construction activities

PE/PNG construction activities involve working at height if the connection is to be given to residential consumers in housing towers. Working at height permits and use of rope access having fall safe locks is used for safety of employees doing work at height.

3.7 Technical EHS Designs and Considerations

AG&P has the following EHS designs incorporated into its project, operations and maintenance activities:

- The City Gate Station works on the principle off two stream and a redundancy mechanism i.e. the pressure reduction is ensured by on line stream (Active Stream) and backed up by a Monitoring Stream (Monitoring Stream) i.e. if the active Stream fails the Monitoring Streams takes over the operation automatically. This prevents any accidents due to high pressure or low pressure and hence ensures safety of the operation of the whole network and also reduces the chances of leakage of gas in to atmosphere.
- The streams are also having the Safety Relief Valves (SRV`s) which protects the piping system if there is sudden rise of set pressures in the piping system, this ensures safety of the installation.

- There is a system of venting which is erected as vent line which is 3 meters high from the working plat forms this is for safe emission of gas in case of emergencies or commissioning, testing etc. The height ensures safe dispersion of gas in atmosphere.
- To control the corrosion, ICCP (Impressed Current Cathodic Protection) is applied to all steel pipelines which are laid underground to protect them from corrosion and eventual leaks and accidents due to those leakages.
- The gas pipelines are patrolled by AG&P Contractors in a fixed schedule for patrolling to ensure that the third party excavations or other hazards are identified and damages to pipelines are avoided.
- AG&P also ensures third party utility coordination meetings to make aware about their installations and pipeline routes to all third party entities.
- The PE Pipelines are the most vulnerable for third party damages as are made of MDPE and hence AG&P provides warning tapes while laying at 200 mm depth on pipelines warning of gas pipe inside with emergency contact number if it is breached to be contacted. Markers on line route and warning displays are also provided at strategic locations containing emergency numbers. On these lines also patrolling is ensured by trained contractors and also dial before you dig campaign is run. The third party utility coordination meetings are done with all third party entities.
- The DRS also consists of two streams to regulate the gas supplies i.e. active and monitor with slam shut valve and also Safety Relief Valve (SRV). in addition to this the Over Pressure Trip and Under Pressure trips are provided to control the leak of gas and to safe guard the customers from incidents of fire and explosions.
- The CNG and LCNG stations are governed by PESO Licenses, Factories Act and Rules, Environment Protection Act and Rules as principle legislations. The PNGRB Regulations also describes the various Safety related design measures which include safe distances for installations from each other, Safety Management System, ERDMP (Emergency Response and Disaster Management Plan) etc.
- The vent lines are also designed as per PNGRB Technical and Safety Standards. The compressors are fully protected by acoustic enclosures to dampen the noise levels to acceptable levels. The stations are provided with applicable fire and safety measures like firefighting system, alarm system, safe assembly points, STC (Safety and Technical Competencies Trainings) process, wind socks etc.
- The stations are governed by Hazardous waste disposal legislation and hence provided with dedicated stores with all protection measures and disposal as per Hazardous waste management rules to CPCB approved vendors.

3.8 Project Implementation Schedule

Implementation schedule for the entire Project consisting of 9 GAs are provided below.

Table 3.4: Infrastructure Phase for 9 GAs

Year		1	2	3	4	5	6	7	8	9	10	15	20	25
Station Infrastructure														
City Gate Station	nos.	8	8	8	8	8	8	8	8	8	8	8	8	8
LNG Storage Tanks	nos.	-	34	57	83	111	151	178	206	211	216	245	284	332
Additional Storage Locations (other than LCNG stations)	nos.	4	8	10	13	14	18	22	23	23	23	23	23	23
LNG Truck tankers	nos.	-	48	84	121	164	220	260	302	308	320	362	416	494
LCNG Station	nos.	-	12	18	28	33	44	57	67	67	67	67	67	67
Mother Station	nos.	-	7	10	19	23	29	34	39	39	39	39	39	39
Online Station (COCO)	nos.	-	-	-	-	-	-	-	-	-	-	-	-	-
CNG Station (OMC)	nos.	-	13	28	44	65	83	105	125	125	125	125	125	125
Daughter Booster Station	nos.	-	176	350	519	693	861	1,022	1,120	1,120	1,120	1,120	1,120	1,120
Steel Pipeline														
12" pipeline	kms	180	354	555	728	822	824	824	824	824	824	824	824	824
10" pipeline	kms	-	-	-	-	-	-	-	-	-	-	-	-	-
8" pipeline	kms	12	23	23	23	48	71	94	94	94	94	94	94	94
6" pipeline	kms	-	-	-	-	-	-	12	12	12	12	12	12	12
4" pipeline	kms	18	199	382	611	793	1,018	1,251	1,498	1,498	1,498	1,498	1,498	1,498
Total Steel PL	kms	210	576	960	1,362	1,663	1,914	2,181	2,428	2,428	2,428	2,428	2,428	2,428
PE Trunk	kms	55	110	165	220	275	330	385	440	440	440	440	440	440
PE Pipe (Based on No. of Domestic & Commercial connections proposed)	kms	0	5,179	10,363	15,553	20,750	31,098	41,453	51,815	51,890	51,918	52,095	52,347	52,709

Source: Feasibility Report

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4. DESCRIPTION OF ENVIRONMENT AND SOCIAL BASELINE CONDITIONS

Two geographical areas namely - **Mysore Mandya Chamarajanagar (MMC) GA and Allapuzha Kollam and Thiruvananthapuram (AKT) GA**, have been considered on sample basis for understanding the baseline conditions with respect to environmental and socio economic settings of the project sites and surrounding areas and potential E&S impacts on environmental and social parameters during project construction, operation and decommissioning stages. Understanding the baseline also helps in planning and strategizing environmental and social management to minimise any potential impact due to the Project activities on surrounding environment.

4.1 Sample GAs

The two GAs considered on sample basis for understanding the E&S baseline conditions are – (i) Mysore Mandya Chamarajanagar (MMC) GA and (ii) Allapuzha Kollam and Thiruvananthapuram (AKT) GA.

The MMC GA is located in the State of Karnataka and is spread over three districts - district Mysore, district Mandya and district Chamarajanagar. The AKT GA is located in the State of Kerala and is spread over three districts - district Allapuza, district Kollam and district Thiruvananthapuram.

Figure 4.1 Location of the two GAs considered for baseline data collection on sample basis

Table 4.1 Details of the Study Area – Two GAs

Aspect	GA # 1	GA # 2
State	Karnataka	Kerala
Name of the GA	**GA Mysore, Mandya and Chamarajanagar** (also referred to as "Mysuru GA" or "GA MMC")	**GA Alappuzha, Kollam and Thiruvananthapuram** (also referred to as "Alapppuzha GA" or "GA AKT")
District in the GA and Tehsils within the districts	A. District Mysore (Mysuru) 1. Piriyapatna 2. Krishnarajanagara 3. Hunsur 4. Heggadadevankote 5. Nanjangud 6. Tirumakudal - Narsipur 7. Mysore B. District Mandya 1. Krishnarajpet 2. Nagamangala 3. Pandavapura 4. Shrirangapattana 5. Mandya 6. Maddur 7. Malavalli C. District Chamarajanagar 1. Kollegal 2. Yelandur 3. Chamarajanagar 4. Gundlupet	A. District Alappuzha 1. Cherthala 2. Ambalappuzha 3. Kuttanad (Mancombu) 4. Karthikapally (Haripad) 5. Chengannur 6. Mavelikkara B. District Kollam 1. Karunagappally 2. Kunnathur 3. Kollam 4. Kottarakkara 5. Pathanapuram 6. Punalur C. Thiruvananthapuram 1. Nedumangad 2. Kattakada 3. Neyyattinkara 4. Thiruvananthapuram 5. Chirayinkeezhu (Attingal) 6. Varkala

4.2 Baseline E&S Data Collection

Normally, the E&S data collection is undertaken through –

- Primary data collection [6]
  - Environmental monitoring – water quality sampling for groundwater and surface water, air quality sampling, noise levels, traffic, soil quality sampling, and surveys of the study area;
  - Interactions with community and government departments like revenue office etc. for collection of socio-economic data, land securing, community concerns;
  - Ecology baseline data through limited survey over 3-4 days. Any additional studies if warranted such as critical habitat assessment,
- Secondary information collected through literature study/ desk-based review of information available in public domain.
  - Environmental setting
  - Social setting
  - Ecological setting

The data on the two sample sites has been collected through secondary sources and based on site visit of the two GA's as discussed in ***Section 1.5.7***. Information on various environmental aspects

[6] Primary environmental monitoring and ecological survey in the selected GAs is not covered under ERM agreed scope of work.

(like soil, geology, hydrogeology, hydrology, drainage pattern, etc.) and social aspects was collected as part of the secondary data collection. Type of secondary data and their different sources is as given in ***Table 4.2***

Table 4.2 Secondary Baseline Data Collection

S. No.	Environmental Attributes	Sources of information / data presented in sub-sections
1.	Long term meteorological data	■ India Meteorological Department (IMD)
2.	Geology, Hydrogeology and hydrology	■ District Resource Map ■ Geological Survey of India ■ Central Ground Water Board, district
5.	Natural Hazards	■ Building Material and Technology Promotion Council of India (BMTPC); ■ India Meteorological Department (IMD)
6.	Social	■ Primary Census Abstract data 2011; ■ Village Directory Data (2011); ■ District Statistical Handbook - 2011 for the District; and ■ Published research papers, articles and other information available in public domain on aspects such as irrigation, drinking water supply system, livelihood pattern, land, local governance and decentralisation, civil society and NGOs as well as economic policies and regional development plans the state is pursuing.

The details of ecologically protected areas in the remaining seven GAs, apart from the two sample GAs, are provided in **Appendix I.**

4.2.1 GA Mysuru, Mandya and Chamarajanagar

A brief description of the existing environmental settings in the selected GA is detailed in the sections below.

4.2.1.1 Environment Baseline

The following table presents the environmental settings within the three districts of the MMC GA.

Environmental Parameters			
Parameters	**District Mysuru**	**District Mandya**	**District Chamarajanagar**
a) Physical features			
Topography	Mysore (Karnataka) district is an administrative district located in the southern part of the state of Karnataka. The district is located between latitude 11°45' to 12°40' N and longitude 75°57' to 77°15' E. It is the second most populous district in Karnataka after Bangalore. Mysore district is bounded by Mandya district to	Mandya district is an administrative district of Karnataka. Mandya district is located between north latitude 12°13' to 13°04' N and east longitude 76°19' to 77°20' E. The district is bordered on the south by Mysore District, on the west by Hassan District, on the north by Tumkur District and on the east by	Chamarajanagar is the southernmost district in the state of Karnataka. It is located between 11˚ 40' to 12˚ 48' North latitude and 74˚ 52'to 76˚ 07' East longitude. Chamarajanagar district borders the state of Tamil Nadu and Kerala. Specifically, it borders Mysuru district of Karnataka to the west and north, Mandya and Ramanagara

Environmental Parameters			
Parameters	**District Mysuru**	**District Mandya**	**District Chamarajanagar**
	the east and northeast, Chamrajanagar district to the southeast, Kerala state to the south, Kodagu district to the west, and Hassan district to the north. The district lies on the undulating tableland of the southern Deccan plateau, within the watershed of the Kaveri River, which flows through the northwestern and eastern parts of the district. The Krishna Raja Sagara reservoir, which was formed by building a dam across the Kaveri, lies on the northern edge of the district.	Ramanagara district. The district has forest area of 24765 hectares, which is associated with the rocky hills. More than half of the total land area in the district is put to agricultural use	districts of Karnataka to the north-east, Dharmapuri district of Tamil Nadu to the east, Salem and Erode districts of Tamil Nadu to the south-east, Nilgiris district of Tamil Nadu to the south and Wayanad district of Kerala to the south-west. The district has a forest cover of half of total area. Most of the district lies in the leeward region of the Nilgiris and consists of mainly semi-arid rain-dependent flatlands along with forested hills.
Geology	The district has a vast expanse of Magnetite gneisses. This high-grade schist is considered as oldest group of supracrustal rocks. These high-grade schists are noticed as rafts within the gneissic complex in the southern parts of the districts and form the type which belongs to H.D.Kote taluk Sargur group. This belt starts from north-east of Sargur and it is the oldest group of rocks formed about 3000 million years ago. This consists of mainly Kyanite, Silimanite, Graphite and other minerals. The youngest igneous rocks called Chamundi Granite (800 million Years) are found in the area.	The rock formations in the district belong to the most ancient period of the earth's history and are divisible into The Dharwad Schists with occur as narrow linear belts and The Peninsular Gneisses and Granites. There are two well defined belts of Dharwad Schists of continuation from Chitradurga and Tumkur District, which are recognized as Bellibetta and HadnurSchists belts respectively. The main type of rock forming the schists is dark brown blend schist, both of coarse and fine variety. In Mandyadistrict, gneisses are found in bands of typical exposure in quarries at Chinnakurali. A porphyritic variety is found forming Gavimatha Hill south of K.R.Pet. The rock formations in the district belong to the most ancient period of the earth's history and are divisible into The Dharwad Schists with occur as narrow linear belts and The Peninsular Gneisses and Granites. There are two well defined belts of Dharwad Schists of continuation from Chitradurga and Tumkur	The district may be classified as partly maidan and general tableland with plain, undulating and mountainous. The southern and eastern ghats in the district converge into group of hills. The landmass of the area forms an undulating tableland and lofty mountain ranges covered with vast forests. Master slope runs from south to north towards Cauvery River. Normally the slopes are covered by debris and colluvium filled channels.

Environmental Parameters			
Parameters	**District Mysuru**	**District Mandya**	**District Chamarajanagar**
		District, which are recognized as Bellibetta and Hadnur Schists belts respectively. The main type of rock forming the schists is dark brown blend schist, both of coarse and fine variety. In Mandya district, gneisses are found in bands of typical exposure in guarries at Chinnakurali. A porphyritic variety is found forming Gavimatha Hill south of K.R.Pet.	
Soils	The main soil type of the district is red sand loamy; it varies from sandy soil to typical cotton soil. In the district western taluks like, Periyapatana, Hunsur and H.D. Kote taluks consist of hilly tracks with Red shallow soil. Deep red loamy soil with patches of black soils were found in T. Narasipura and Nanjangud Taluks. In T. Narasipura taluk alkaline soils are also found.	The soil of Mandya district is derived from granites and gneisses interpreted with occasional patches of schist in SR Patna, Mandya and Pandavapura taluks. The soils range from red sandy loams to red clay loam very thin in ridges and higher elevations and comparatively thick in valley portions. The soils in Mandya, Malavalli, Maddur and Nagamangala taluks are thin gravelly and underlain with a murrum zone containing weathered rock. The soils are highly leached and poor in bases. The water holding capacity is low. On the other hand the soil under the old channel areas of Malavalli, Pandavapura and S.R. Patna are high in clay. The infiltration rates of red loamy and red soils are 2 to 12 cm/ hr and 1 to 3 cm/ hr.	The soils of the district are derived from Granitic gneisses and Charnockite rocks. Red soil is present in upland areas and also noticed at the contact of granites and schist. These soils are admixture of sand and silt. Organic matters in these soils are low. Black soils are clayey and black in colour, mostly of transported in origin, occurring along depressions where regular irrigation practices are in progress.
Landuse	The general land use of Mysore district is given in the Table below, which clearly illustrates the percentage distribution of land under forest cover, net sown area, cultivable waste, barren and non-cultivable land and land put under non-agricultural uses.	About 46.12% of the Geographical area of the district is under cultivation.65.37% of cultivated area is irrigated under tank, canal and wells etc. 73.80% of the area of irrigation in Mandya district is under canal command. The district has 24765 ha. of forest area which constitute about 4.97 % of the	The general land use of Chamrajanagar district is given in the below. which clearly illustrates the percentage distribution of land under forest cover, net sown area, cultivable waste, barren and non-cultivable land and land put under non-agricultural uses.

Environmental Parameters

<table>
<tr><th>Parameters</th><th>District Mysuru</th><th>District Mandya</th><th>District Chamarajanagar</th></tr>
<tr>
<td></td>
<td>
Land Utilization of Mysore District
<table>
<tr><th>S. N</th><th>Type of Land Utilization</th><th>% of Total Area</th></tr>
<tr><td>1</td><td>Forest</td><td>9</td></tr>
<tr><td>2</td><td>Land put to non-agriculture use</td><td>11</td></tr>
<tr><td>3</td><td>Barren and uncultivable land</td><td>7</td></tr>
<tr><td>4</td><td>Permanent pastures and other grazing lands</td><td>7</td></tr>
<tr><td>5</td><td>Land under miscellaneous crops</td><td>1</td></tr>
<tr><td>6</td><td>Cultivable waste land</td><td>3</td></tr>
<tr><td>7</td><td>Fallow lands other than current fallows</td><td>5</td></tr>
<tr><td>8</td><td>Current fallows</td><td>8</td></tr>
<tr><td>9</td><td>Net sown area</td><td>49</td></tr>
</table>
</td>
<td>
total geographical area of the districts.
Land Utilization of Mandya District
<table>
<tr><th>S. N</th><th>Type of Land Utilization</th><th>% of Total Area</th></tr>
<tr><td>1</td><td>Forest</td><td>4.97</td></tr>
<tr><td>2</td><td>Land put to non-agriculture use</td><td>16.74</td></tr>
<tr><td>3</td><td>Barren and uncultivable land</td><td>16.72</td></tr>
<tr><td>4</td><td>Fallow Land</td><td>15.36</td></tr>
<tr><td>5</td><td>Net sown area</td><td>46.20</td></tr>
<tr><td>6</td><td>Net irrigated area</td><td>30.20</td></tr>
</table>
</td>
<td>
Land Utilization of Chamrajanagar District
<table>
<tr><th>S. N</th><th>Type of Land Utilization</th><th>% of Total Area</th></tr>
<tr><td>1</td><td>Cultivable Land</td><td>33.7</td></tr>
<tr><td>2</td><td>Forest Area</td><td>48.4</td></tr>
<tr><td>3</td><td>Land under non-agricultural use</td><td>8.1</td></tr>
<tr><td>4</td><td>Permanent Pastures</td><td>4.0</td></tr>
<tr><td>5</td><td>Cultivable Wasteland</td><td>1.3</td></tr>
<tr><td>6</td><td>Land under Misc tree crops and groves</td><td>0.8</td></tr>
<tr><td>7</td><td>Current fallows</td><td>1.4</td></tr>
<tr><td>8</td><td>Other fallows</td><td>2.4</td></tr>
</table>
</td>
</tr>
<tr><td colspan="4">b) Water Environment</td></tr>
<tr><td></td><td>District Mysuru</td><td>District Mandya</td><td>District Chamarajanagar</td></tr>
<tr><td>Drainage</td><td>Mysore district has a number of perennial and non-perennial rivers. The Cauvery, which is the major river system of the district, traverses the Mysore plateau from northwest to east along with its tributaries, Kabini, Suvarnavathi, Laxmanathirtha and others. The Cauvery rises at Talacauvery in Kodagu district and flows along the boundary of Periyapatna taluk, enters into the district through K R Nagar taluk. It</td><td>The Cauvery river system drains the district towards the Bay of Bengal. The important rivers in the district are Cauvery, Hemanvathy, Shimsha, Lokapavani and Viravaishnavi all of which flow towards south and finally eastwards cutting through eastern range of hills. Apart from these rivers the district is endowed with number of streams, which along with the rivers form sub dendratic drainage pattern. The district is</td><td>The district falls in Cauvery river basin. There are no major rivers flowing in the district, however Cauvery the perennial river flows along the border of Kollegal taluk of C.R.Nagar. It has a catchment area of 1787 sq.km. with total course of about 88kms. in the district. The stream flows in rainy season only, effluent upto Umbale and influent to the rest of its course. The area is characterized by sub-dendritic to sub-parallel drainage pattern. The drainage</td></tr>
</table>

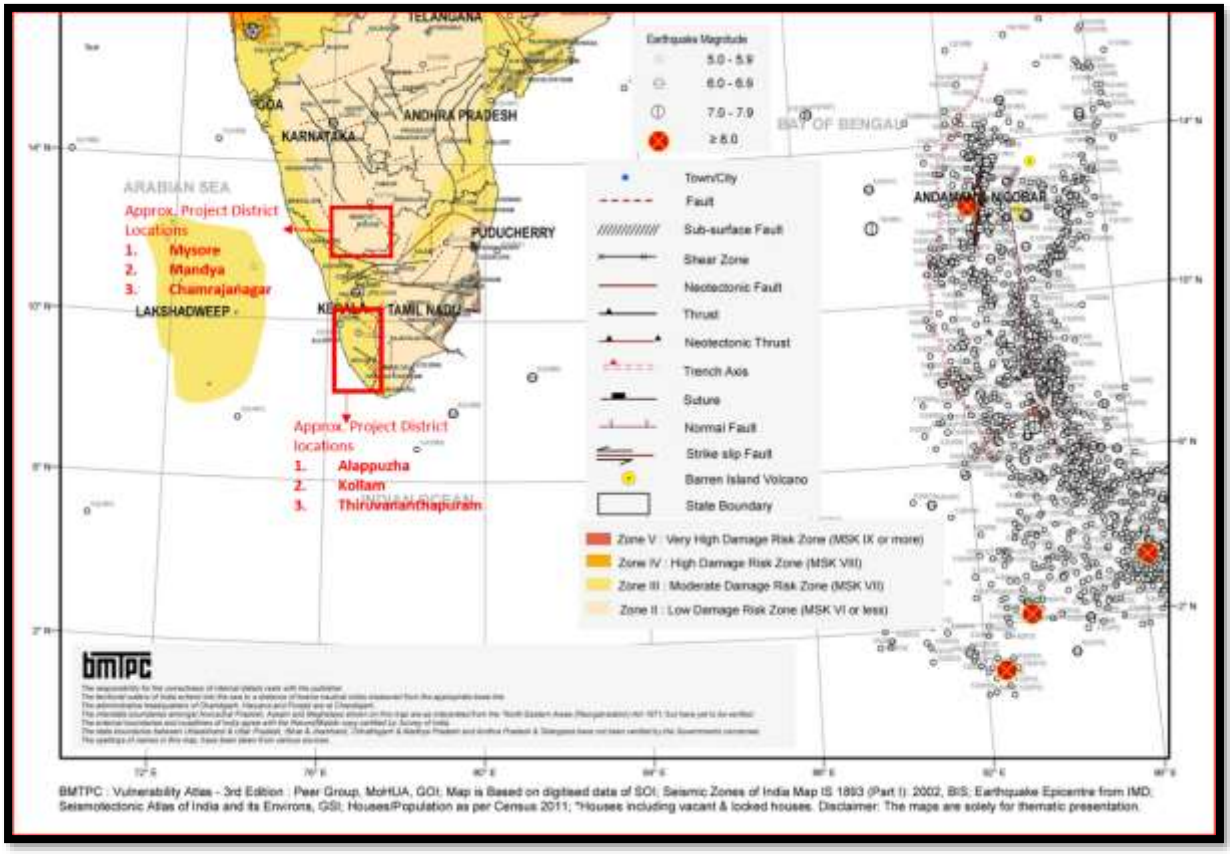
Environmental Parameters			
Parameters	**District Mysuru**	**District Mandya**	**District Chamarajanagar**
	further moves into T. Narasipur and Kollegal before reaching Tamil Nadu. The total catchment area of the river is the second largest in the State and it covers nearly 18 per cent of the land area of the State. It is the only river which has been harnessed for irrigation from ancient times and it is estimated that as much as 95 per cent of its surface flow is put to use before it enters into the Bay of Bengal.	characterized by sub dendratic drainage probably dissected by numerous streams. The drainage density in the district ranges from 1.12 to 2.73 km sq km.	density of the area varies from 0.25 to 3.58 km/km2..
Hydrogeology	The area forms a part of hard rock terrain comprising of granites, gneisses, charnockites and amphibolites. Pegmatite veins and dolerite dykes are common intrusive in the area. The flat and low-lying areas are covered by a thick mantle of fertile soil, while, the elevated portions and hills are capped by laterite. Faults are observed trending E-W to NW- SE, especially in the southern part of the district. There are alluvial aquifers of limited aerial extent and thickness having primary porosity occurring along river courses. Hard rocks do not posses primary porosity and the ground water occurs under phreatic conditions in weathered zones of granites and gneiss. Water is under semi-confined to confined conditions in joints and fractures of these rocks at deeper levels. Fractured granites and gneisses form prolific deeper aquifers in some parts of the district.	Mandya district is covered by the geological formations ranging in age from Archaean, Granitic gneiss, Dharvar etc to recent alluvium. Various intrusive later traverse these formations. Based on the hydrogeological conditions in different rock types occurring in the district the entire district comes under hard rock area except for areas adjacent to the major streams and rivers where alluvium occurs as local pockets. The ground water also occurs in the inter-granular spaces in the alluvial patches along the stream courses under water table conditions at shallow depth.	Hydrogeologically, the area forms the part of hard rock terrain comprising of peninsular gneiss, charnockites and alluvium. Among these charnockites are wide spread formation in C.R.Nagar and Kollegal taluks and part of Yalandur taluk, where as entire Gundlupet taluk, parts of C.R.Nagar and Yalandur taluks occupied by gneisses. Alluvium of about 5.00m thickness is occurring along the major tributaries of Cauvery river like Suvarnavathy and Chikkahole etc. The valley fill area extends to very limited stretch with an average thickness of 6 to 18.00m bellow, which the basement is likely to be encountered. Occurrence and movement of ground water are controlled by the degree of weathering, fracturing, the geomorphological set up and precipitation
GW resources	Ground water in the district generally occurs under unconfined to semiconfined conditions. In the shallower zones it is under phreatic	The ground water occurs in the secondary porosity of weathered formations like granitic gneiss, granite and schists etc under water table	Groundwater occurs under water table conditions in weathered and fractured crystalline gneisses and charnockites up to 25m and

Environmental Parameters			
Parameters	**District Mysuru**	**District Mandya**	**District Chamarajanagar**
	conditions and in deeper zones it is under semi-confined conditions In terms of water quality, as per Central Groundwater Authority (CGWA), district is affected by contamination through high concentration of nitrate[7]. As per Central Groundwater Board (CGWB) brochure for the year 2013, the district falls under the **Over-exploited category**. In terms of groundwater availability, as per CGWB report on Aquifer Mapping and Management Plan for the district published in the year 2017, the groundwater is available at the deport of 10-30 meters below ground level (mbgl). The depth of groundwater level ranges from 2 mbgl to 10 mbgl in pre monsoon and 2 mbgl to 5 mbgl in post monsoon period	conditions at shallow depth of 40 mbgl and generally under semi-confined to confined conditions in the jointed and fractured portions of the above rocks down to the depth upto 200mbgl. In terms of water quality, as per Central Groundwater Authority (CGWA), district is affected by contamination through high salinity, high amount of magnesium, and high concentration of nitrate[8]. As per Central Groundwater Board (CGWB) brochure for the year 2013, the district falls under the **Safe category**. In terms of groundwater availability, as per CGWB report on Aquifer Mapping and Management Plan for the district published in the year 2017, the groundwater is available at the deport of 0.53 to 21.28 meters below ground level (mbgl). The depth of groundwater level ranges from 1.23 to 13.85 mbgl in pre monsoon and 1.49 to 17.77 mbgl in post monsoon period.	semiconfined conditions in deep-seated fractures and is common to the depth range of 40mbgl to 90mbgl. In terms of water quality, as per Central Groundwater Authority (CGWA), district is affected by contamination through high salinity, high amount of fluoride, high concentration of nitrate[9]. As per Central Groundwater Board (CGWB) brochure for the year 2013, the district falls under the **Safe category.** In terms of groundwater availability, as per CGWB report on Aquifer Mapping and Management Plan for the district published in the year 2017, the groundwater is available at the deport of 34.00m to 90.00 meters below ground level (mbgl). The depth of groundwater level ranges from 1.42 to 6.75 mbgl in pre monsoon and 0.01 to 7.97 mbgl in post monsoon period.
c) Climate and Meteorology			
	District Mysuru	**District Mandya**	**District Chamarajanagar**

[7] Extracted from CGWA website showcasing profile of groundwater in Mysore.
http://cgwb.gov.in/District_Profile/karnataka/2012/MYSORE-2012.pdf
[8] Extracted from CGWA website showcasing profile of groundwater in Mandya.
http://cgwb.gov.in/District_Profile/karnataka/Mandya_brouchere.pdf
[9] Extracted from CGWA website showcasing profile of groundwater in Chamrajanagar.
http://cgwb.gov.in/District_Profile/karnataka/CHAMARAJNAGARA_BROCHURE.pdf

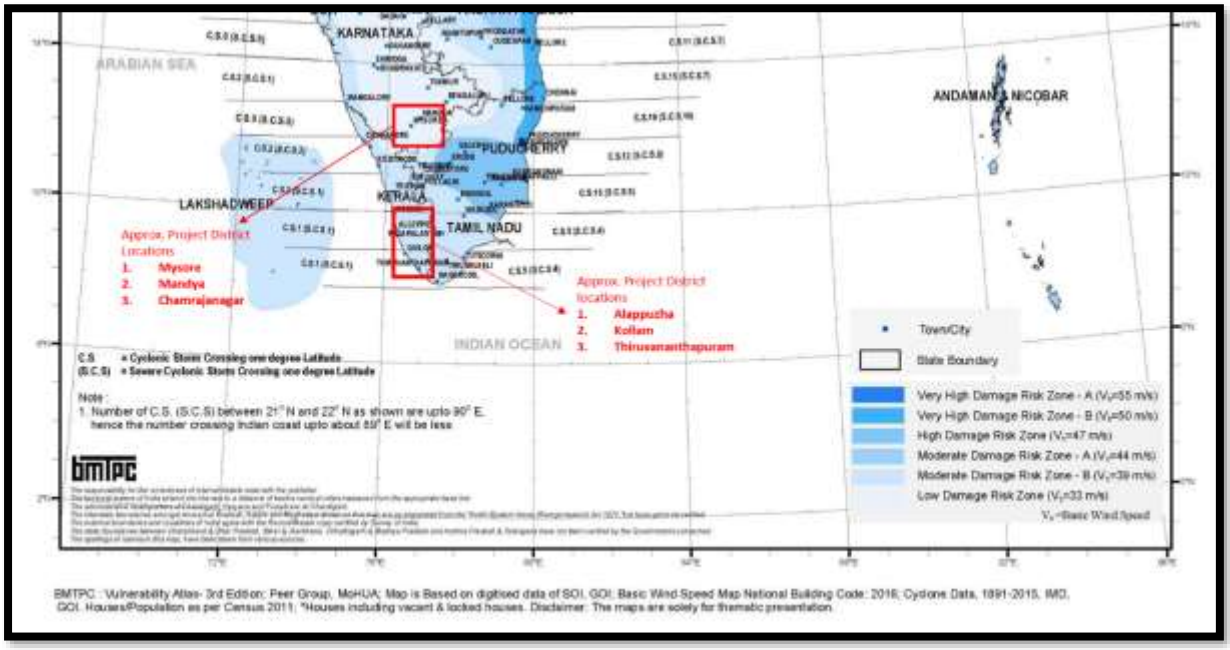
Environmental Parameters			
Parameters	**District Mysuru**	**District Mandya**	**District Chamarajanagar**
Regional Meteorology	The long term meteorology (period 1981-2010) of the region based on data recorded at the nearest observatory station of India Meteorological Department (IMD) at Bikaner is presented and described in subsequent sections.	The long term meteorology (period 1981-2010) of the region based on data recorded at the nearest observatory station of India Meteorological Department (IMD) at Bikaner is presented and described in subsequent sections.	The long term meteorology (period 1981-2010) of the region based on data recorded at the nearest observatory station of India Meteorological Department (IMD) at Chamarajanagar is presented and described in subsequent sections.
Temperature	Temperatures vary considerably from season to season. The summers are generally hot and winters are cool. Mean maximum temperature ranges between 28°C during January to about 34.2°C during April and the mean minimum temperatures vary between 16.3C during January and 21°C during May.	Temperatures vary considerably from season to season. The summers are generally hot and winters are cool. Mean maximum temperature ranges between 28.5°C during December to about 35.1°C during April and the mean minimum temperatures vary between 15.2°C during January and 21.4°C during April.	The long term meteorology (period 1981-2010) of the region based on data recorded at the nearest observatory station of India Meteorological Department (IMD) at Chamarajanagar is presented and described in subsequent sections.
Rainfall	Long-term (1981 - 2010) average annual total rainfall for Mysore station is 798.6 mm, as per IMD Climatological Table. Most of the rainfall is received during the month of September and October and minimum in January.	Long-term (1981 - 2010) average annual total rainfall for Mandya station is 693 mm, as per IMD Climatological Table. Most of the rainfall is received during the month of September and October and minimum in January.	Long-term (1981 - 2010) average annual total rainfall for Chamarajanagar station is 693 mm, as per IMD Climatological Table. Most of the rainfall is received during the month of September and October and minimum in January.
Wind speed	The average wind speed in the area is 7.5 kmph, with highest in June Month (11.8 kmph) and lowest in October (5 kmph)	The average wind speed in the area is 4.1 kmph, with highest in June Month (6.7 kmph) and lowest in February & March (3 kmph)	The average wind speed in the area is 7.3 kmph, with highest in July Month (11.8 kmph) and lowest in November (4.8 kmph)
d) Natural Hazards			
	District Mysuru	**District Mandya**	**District Chamarajanagar**
Seismicity	The District is located in an area that is designated as Zone II that corresponds to MSK VI or less which is a low damage zone	The District is located in an area that is designated as Zone II that corresponds to MSK VI or less which is a low damage zone.	The District is located in an area that is designated as Zone II that corresponds to MSK VI or less which is a low damage zone.
Wind	The District is located in a an area that experiences wind velocities Vb= 33 m/s and the zone is classified as low damage risk zone	The District is located in a an area that experiences wind velocities Vb= 33 m/s and the zone is classified as low damage risk zone	The District is located in a an area that experiences wind velocities Vb= 33 m/s and the zone is classified as low damage risk zone
Cyclone	The District falls in an area which is not prone to cyclones.	The District falls in an area which is not prone to cyclones.	The District falls in an area which is not prone to cyclones.
Flood	The District falls in an area which is not prone to flooding incidents.	The District falls in an area which is not prone to flooding incidents.	The District falls in an area which is not prone to flooding incidents.

Figure 4.1 Earthquake Hazard Zonation Map



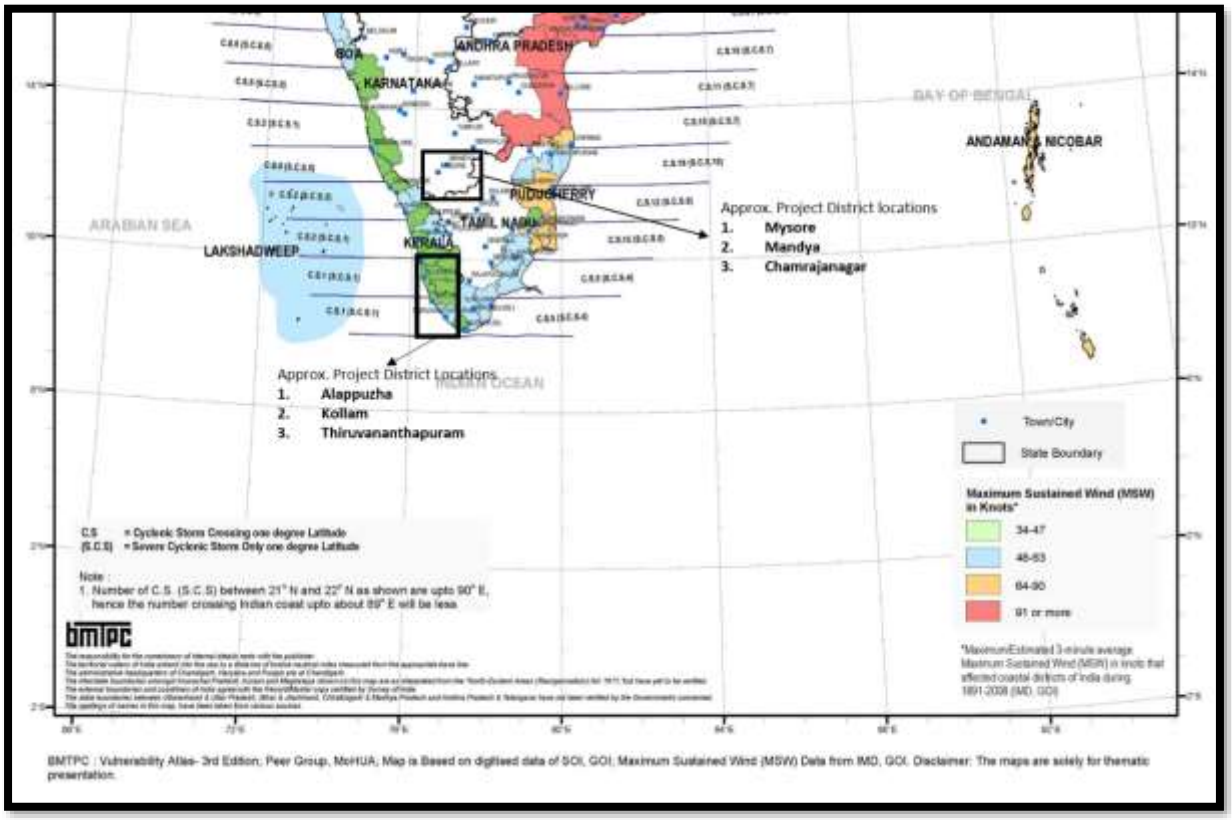
Source: BMTPC: Vulnerability Atlas

Figure 4.2 Wind Hazard Zonation Map



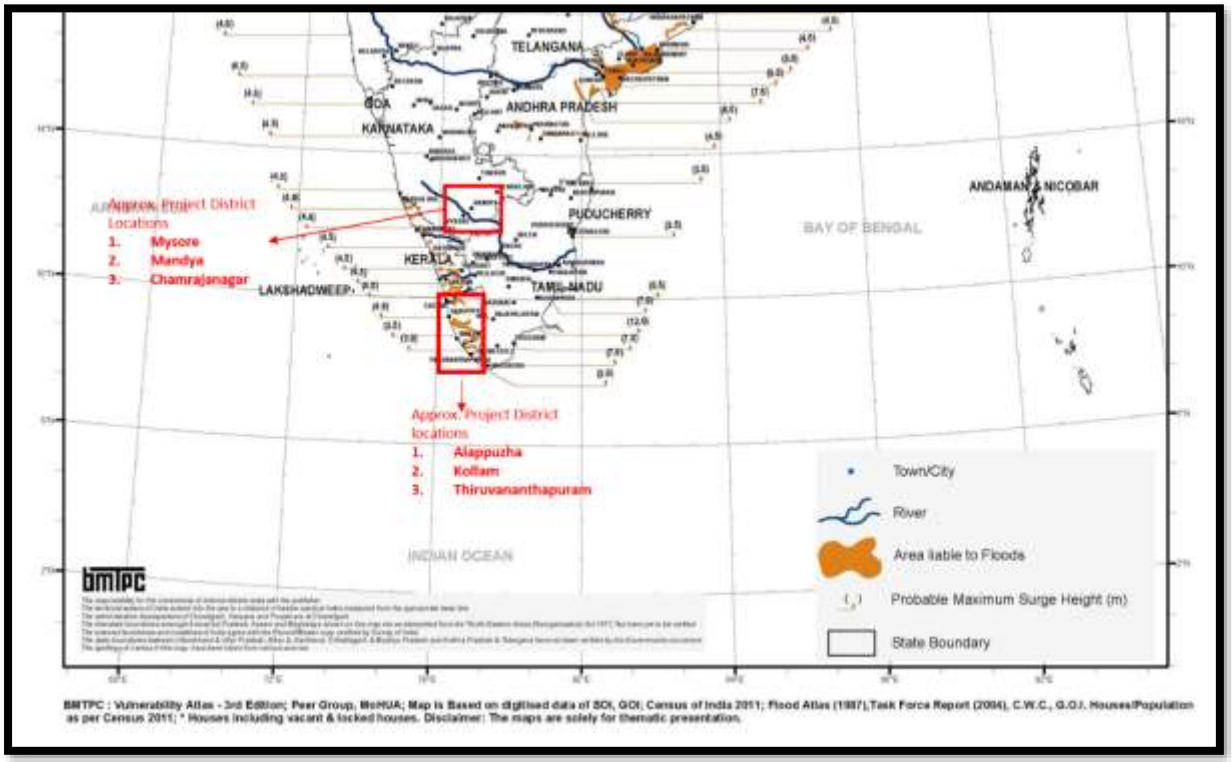
Source: BMTPC: Vulnerability Atlas

Figure 4.3 Cyclone Occurence Map



Source: BMTPC: Vulnerability Atlas

Figure 4.4 Flood Hazard Zonation Map



Source: BMTPC: Vulnerability Atlas

4.2.1.2 Ecological Baseline of the GA

The following sub-section presents the ecological settings in and around the three districts in which the MMC GA is spread. As discussed above, in view of the limitations with respect to primary data collection/ site visits, district level information on ecological settings has been collected and used in impact assessment. The secondary ecological data collected has been presented below -

A. District Mysore

The Mysore district consists of four (4) Eco-sensitive areas, which have been discussed below:

I. Rajiv Gandhi Nagarhole National Park

The Nagarhole National Park is one of India's premier Tiger Reserves adjoining the Bandipur Tiger Reserve. The park was declared the thirty seventh Project Tiger, Tiger reserves of India in 1999. It is part of the Nilgiri Biosphere Reserve.

Some of the carnivores in Nagarhole National Park are the Bengal tiger, Indian leopard, dhole (Cuon alpinus), sloth bear and the striped hyena (Hyaena hyaena). The herbivores in the park are chital, sambar deer, barking deer, four-horned antelope (Tetracercus quadricornis), gaur (Bos gaurus), wild boar (Sus scrofa) and Indian elephant. The Park is recognised as an Important Bird Area and has over 270 species of birds including IUCN recognised 'critically endangered' Oriental white-backed vulture (Gyps bengalensis), 'vulnerable' lesser adjutant (Leptopilos javanicus), greater spotted eagle (Aquila changa) and the Nilgiri wood-pigeon (Columba elphinstonii). 'Near threatened' species like darters (Anhniga melanogaster), oriental white ibis (Threskiornis melanocephalus), greater grey headed fish eagle (Icthyophaga ichthyaetus) and red-headed vulture (Sarcogyps calvus) too can be found here. Endemics include the blue-winged parakeet (Psittacula columboides), Malabar grey hornbill (Ocyceros griseus) and the white-bellied treepie (Dendrocitta leucogastra).

II. Nugu Wildlife Sanctuary

Nugu Wildlife Sanctuary is situated north of Bandipur National Park in Mysore district. The flora of the Nugu Wildlife Sanctuary and Bandipur National Park areas are similar. Nugu (30.32 Sq.Km.) was declared as Wildlife Sanctuary on 17th June 1974.

The area Nugu Wildlife Sanctuary is spread about 30.32 sq km and covered by scrub forest and cultivation adjacent to the reservoir and by degraded dry deciduous forest in the southern portion of the sanctuary. Common species found at Nugu Wildlife Sanctuary include Anogeissus latifolia, Emblica officinalis, Santalum album, Albizzia sp. and Dendrocalamus strictus. Nugu Wildlife Sanctuary also houses animals like Elephant, Leopard, Jungle Cat, Wild Pig, Spotted Deer, Sambar, Barking Deer, Mouse Deer, Jackal, Hare, Common Mongoose, Common Otter, Small Indian Civet, Common Palm Civet and Porcupine.

III. Arabithittu Wildlife Sanctuary

Arabithittu Wildlife Sanctuary comprises of Arabithittu State Forest located in Hunsur Taluk of Mysore district of Karnataka State. Total extent of the sanctuary is 13.50 Sq. Km. Though the area was declared as "Arabithittu Game Reserves" as per Government Notification No.AFO.55 FWL.74 dated 5.6.1974, it is further declared as Arabithittu Wildlife Sanctuary as per Notification No.AHFFD-3-FWL-85 dated 30.4.1985 which is in succession of the earlier notification.

The sanctuary harbours several animals like Panther, Spotted Deer, Wild Boar, Indian Porcupine, Indian Hare, Common Mangoose, Fox. As for bird species, Peafowl, Partridges, Mynas, Black drongo etc are found within the WLS. The Forest is of dry deciduous scrub type and is having good stock of santalum album. The area contains good coppice growth of Anogeissus latifolia (Dindal).

Figure 4.5 Map of Arabithittu Wildlife Sanctuary

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

IV. Krishnarajasagar Reservoir

The Krishnarajasagar Reservoir is a Freshwater Reservoir consisting of Marshes and comes under the jurisdiction of Major Irrigation Department, Govt. of Karnataka. The Reservoir is recognized as an Important Bird Area (IBA) and Key Biodiversity Area (KBA) consisting of Threatened and Vulnerable species, such as Oriental White Ibis Threskiornis melanocephalas and Spot billed Pelican Pelecanus philippens.

B. District Mandaya

Mandaya district consists of three (3) Eco-sensitive areas, which have been discussed below:

I. Adichunchunagri Wildlife Sanctuary

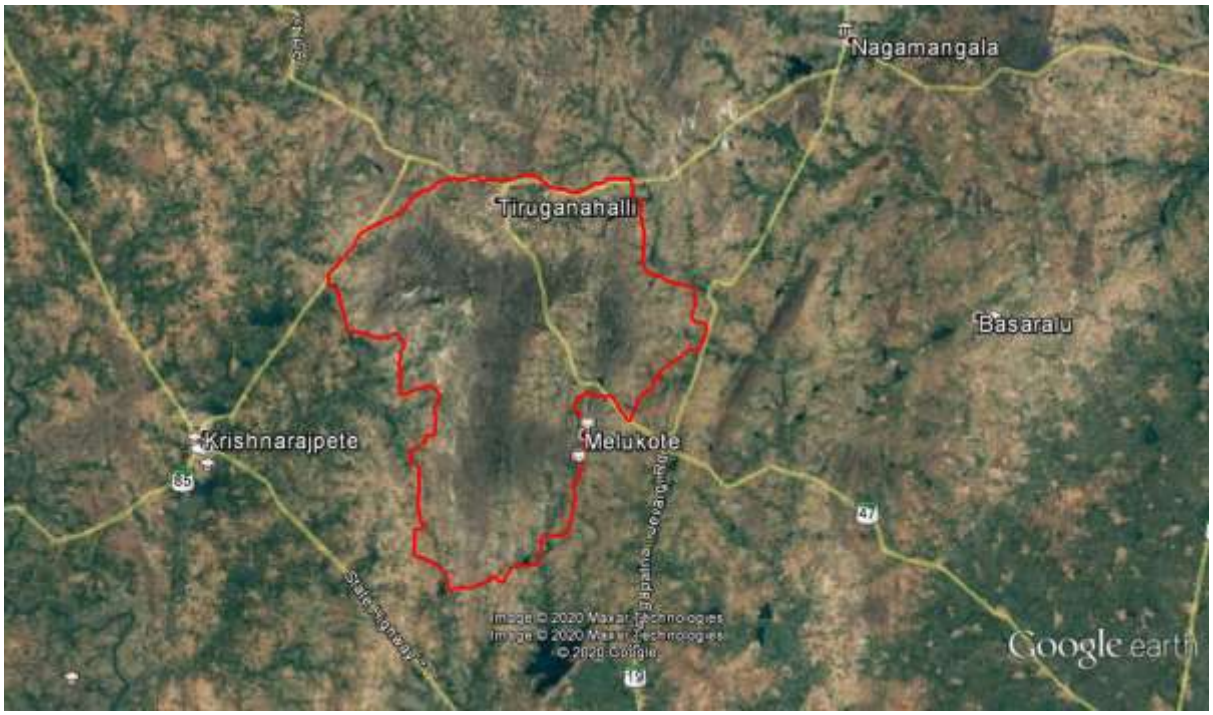
The Adichunchanagiri Wildlife Sanctuary (AWLS) is located in Nagamangala Taluk of Mandya district of Karnataka and is spread over 0.88 square kilometres. This was created mainly for the conservation of peacocks. It also houses nearly 250 species of birds. It has mainly scrub forest and plantations and was created mainly for the conservation of peacocks. Adichunchanagiri Peacock Sanctuary houses animals like Bonnet Macaque, Fruit Bat, Jungle Cat, Common Mongoose and Hare. The sanctuary has a variety of butterflies and birds.

II. Melkote Temple Wildlife Sanctuary

Melkote Temple Wildlife Sanctuary (49.82 sq. km) is situated in Mandya district. This was declared as sanctuary on 17th June 1974 specifically to protect the habitat of Grey Wolf (Canis lupus pallipes). Sanctuary is named after Melkote temples situated on the border of the sanctuary. The sanctuary comprises of two zones, Mudibetta (4.48 sq. km) and Narayandurga (45.34 sq. km). There are few villages between the two zones, and surrounding area is cultivated. The landscape is rocky, with Tropical dry deciduous and scrub vegetation.

Tropical dry land scrub forest dominates the area. The sanctuary is quite rich in bio-diversity supporting rare species like Memecylon spp (plant), Southern Rustic (butterfly), Bamboo Pit Viper (snake), Brown Rock Pipit (resident bird), and Ultramarine Flycatcher (migratory bird).

Figure 4.6 Map of Melkote Temple Wildlife Sanctuary



Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

III. Ranganathittu Wildlife Sanctuary

Ranganathittu Bird Sanctuary, is a bird sanctuary in the Mandya District of the state of Karnataka in India. It is the largest bird sanctuary in the state, 40 acres in area, and comprises six islets on the banks of the Kaveri river.

Dominant floral species is the WLS are Terminalia arjuna (Arjun tree), bamboo groves, and Pandanus trees. Eucalyptus and acacia trees are also planted, which may lead to long-term eradication of native species. The endemic and threatened lily Iphigenia mysorensis of the family Colchicaceae also grows in the sanctuary. Roughly 170 bird species[10] have been recorded. Of these, the painted stork, Asian openbill stork, common spoonbill, woolly-necked stork, black-headed ibis, lesser whistling duck, Indian shag, stork-billed kingfisher, egret, cormorant, Oriental darter, spot-billed pelican and heron breed at Ranganathittu regularly. As for mammals, small mammals including bonnet macaque, smooth coated otter, colonies of flying fox and common small mammals such as common palm civet and Indian gray mongoose are found within the WLS.

C. District Chamrajanagar

Chamrajanagar district consists of four (4) Eco-sensitive areas, which have been discussed below:

I. Malaimahadeswara Wildlife Sanctuary

Malai Mahadeshwara Wildlife Sanctuary is a protected Wildlife sanctuary in the Eastern Ghats and is located in Chamrajanagar district in the state of Karnataka in India. The sanctuary was established in 2013 with an area of 906.187 km2 (349.881 sq mi) out of the total area of 1,224 km2 (473 sq mi).The sanctuary is part of a contiguous tiger habitat, located very close to the tri-junction of the states of Karnataka, Kerala and Tamil Nadu. The sanctuary has Cauvery Wildlife Sanctuary (Karnataka) to its

North and East, Sathyamangalam Tiger Reserve (Tamil Nadu) to its South and Biligirirangaswamy Temple Tiger Reserve (Karnataka) to its West.

The predominant forest type of the sanctuary is dry and moist deciduous forests. As per some research reports published, Lantana invaded substantial areas around Malai Mahadeshwara Hills. Indian Elephant (Elephas maximus) is found in good numbers within the sanctuary. After the creation of the sanctuary in 2013, the tiger (Panthera tigris tigris) population has been steadily increasing. The sanctuary also has other fauna like gaur (Bos gaurus), wild boar (Sus scrofa), leopard (Panthera pardus), dhole, spotted deer (Axis axis), barking deer (Muntiacus muntjak), sambar (Cervus unicolor), four-horned antelope (Tetracerus quadricornis), black-naped hare (Lepus nigricollis), chevrotain, common langur, bonnet macaque, honey badger (ratel) etc.

Figure 4.7 Map of Malaimahadeswara Wildlife Sanctuary

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

II. Bandipur National Park

Bandipur National Park, an 874-sq.-km forested reserve in Gundlupet taluq of Chamarajanagar district in the southern Indian state of Karnataka, is known for its small population of tigers. The park harbors Indian elephants, spotted deer, gaurs (bison), antelopes and numerous other native species. Together with the adjoining Nagarhole National Park (643 km2 (248 sq mi)), Mudumalai National Park (320 km2 (120 sq mi)) and Wayanad Wildlife Sanctuary (344 km2 (133 sq mi)), it is part of the Nilgiri Biosphere Reserve totaling 2,183 km2 (843 sq mi) making it the largest protected area in southern India and largest habitat of wild elephants in south Asia.

Bandipur supports a wide range of timber trees including teak (Tectona grandis), rosewood (Dalbergia latifolia), sandalwood (Santalum album V), Indian-laurel (Terminalia tomentosa), Indian kino tree (Pterocarpus marsupium), giant clumping bamboo (Dendrocalamus strictus), clumping bamboo (Bambusa arundinacea) and Grewia tiliaefolia. The commonly seen mammals along the public access roads in the park include chital, gray langurs, Indian giant squirrels and elephants. Peafowl are among the most commonly seen birds in Bandipur along with grey junglefowl, crows and drongos. Bandipur is home to over 200 species of birds including honey buzzards, red-headed vultures, Indian vultures, flowerpeckers, hoopoes, Indian rollers, brown fish

owls, crested serpent eagles, changeable hawk-eagles, bee-eaters and a whole lot of kingfishers and ospreyss are a common sight in winter.

Figure 4.8 Map of Bandipur National Park

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

III. Cauvery Wildlife Sanctuary

The Cauvery Wildlife Sanctuary is a protected area located in the Mandya, Chamarajanagar and Ramanagar districts of Karnataka, India. The sanctuary is named as it is located above the north of Cauvery river in Tamil Nadu state and south of river connects to the Cauvery Wildlife Sanctuary of Karnataka state. On 12 March 2014, the Government of Tamil Nadu declared Cauvery North Wild Life Sanctuary under clause (b) of sub-section (1) of Section 26-A of the Wild Life (Protection) Act, 1972 in Gazette No.II(2)/EF/254/2014.

The Major portion of the forests are of South Indian dry deciduous type, the predominant species being Hardwickia binata and Albizzia amara. The sanctuary of harbours variety of faunal life classified under schedule I of Wildlife Protection Act namely Indian Elephant, Gaur, Leopard, Four horned antelope, Mouse deer etc., The Spotted deer, Sambar, Barking Deer are found in large number. The river Cauvery being the important lifeline of the Sanctuary supports a diversified aquatic fauna, predominant species being Crocodiles found in Schedule I of Wildlife Protection Act, Otters and Masheer Fish. Masheer Fish which is a huge river fish found in specified stretches of the river needs to be protected with high priority.

Figure 4.9 Map of Cauvery Wildlife Sanctuary

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

IV. Biligiri Rangaswamy Temple Wildlife Sanctuary

The Wildlife Sanctuary is located in Chamarajanagar district of Karnataka state. It covers Chamarajanagar, Yelandur and parts of Kollegal Taluks. This WLS, situated in the middle of the bridge between the Western Ghats and the Eastern Ghats in South India, was constituted as a Wildlife Sanctuary in 1974.

BRT Wildlife Sanctuary was declared as a Tiger Reserve in 2011. Total area of the Tiger Reserve is 574.82 Km². The Tiger Reserve has two sub-divisions, namely, Chamarajanagar and Yelandur sub-divisions, and comprises six ranges, namely Chamarajanagar (territorial), K. Gudi, Punajanur, Yelandur, Kollegala and Bylur wildlife ranges. The forests of BRT Tiger Reserve are principally of dry deciduous type, and are interspersed with moist deciduous, semi-evergreen, evergreen and shola patches occurring at varying altitudes. Animals including tiger, elephant, leopard, wild dog, bison, sambar, spotted deer, barking deer, four horned antelope, sloth bear, wild boar, common langur, bonnet macaque, varieties of reptiles, 250 species of birds, etc. are found in the Tiger Reserve.

4.2.1.3 Socio-economic Baseline of the GA MMC

The section below provides a brief description of the socio-economic status for MMC GA at State and District level. Secondary sources such as Census of India, 2011 have been referred to compile this section.

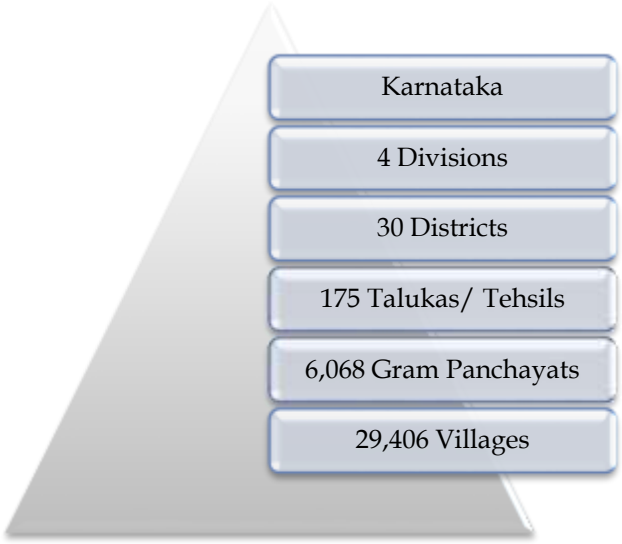
Karnataka State profile

Karnataka state is confined roughly within 11° 35' North and 18° 30' North latitudes and 74° 5' East and 78° 35' East longitudes. The state shares its boundaries with Goa state to the northwest, Maharashtra state to the north, Telangana state and Andhra Pradesh state to the east, Tamil Nadu state to the south east, and Kerala state to the southwest.

Karnataka's geographical area is 1,91,791 square kilometres accounting for 5.83% of the total geographical area of India. It is the eighth largest state in the Country[10].

The capital of the state is Bengaluru. The state of Karnataka is divided into 30 districts, 4 administrative divisions, 175 talukas/ tehsils[11], 6,068 gram panchayats[12], 270 towns and 29,406 villages.

Figure 4.10 Administrative structure of Karnataka



Source: Department of Information and Public Relations, Karnataka

Table 4.3 Demographic details of Karnataka

Attribute	Number	% of India
Area (sq. km)	3,08,252	5.83
Total population	61,095,297	5.05
Males	30,966,657	4.96
Females	30,128,640	5.12
Sex ratio	973	NA
Percentage of rural Population	61.32	NA
Percentage of urban population	38.68	NA
Population density (individuals per sq. km.)	319	NA
Percentage of SC population	17.1	NA
Percentage of ST population	7.00	NA
Total literacy rate	75.36	NA
Male Literacy rate	82.47	NA

10 https://www.karnataka.gov.in/empri/Documents/Profile%20of%20Karnataka.pdf

11 Tehsil is an administrative division of India denoting a sub-district. Tehsils are also referred to as "taluks" or "mandal" in some states. Tehsils can consist of multiple villages and a few towns. The Panchayat samitis are usually the administrative governing bodies of the tehsils

12 A Gram Panchayat is the cornerstone of a local self-government organization in India and has a Sarpanch as its elected head. The Panchayat Act specifies the functions, powers and duties of the Gram Panchayats which includes sanitation, drinking water, maintenance, repair, construction and protection of public streets etc.

Female Literacy Rate	68.08	NA
Rural Literacy	68.7	NA

Source: Census of India, 2011

District profiles

Mysore District-Karnataka

Mysore district is an administrative district located in the southern part of the state of Karnataka. The district is divided into 7 talukas namely Mysore, Tirumakudalu Narasipura, Nanjangud, Heggadadevanakote, Hunsur, Piriyapatna and Krishnarajanagara. The district is bounded by Mandya district to the east and northeast, Chamrajanagar district to the southeast, Kerala state to the south, Kodagu district to the west, and Hassan district to the north.

Mandya District-Karnataka

Mandya district is located between north latitude 12°13' to 13°04' N and east longitude 76°19' to 77°20' E. It has an area of 4,961 KM2. The district is bordered on the south by Mysore District, on the west by Hassan District, on the north by Tumkur District and on the east by Ramanagara district.. Mandya district consists of 7 taluks grouped under 2 subdivisions. The Mandya subdivision comprises Mandya, Maddur and Malavalli taluks, while the Pandavapura subdivision comprises Pandavapura, Srirangapatna, Nagamangala and Krishnarajpet Taluks.

Chamarajanagar District- Karnataka

Chamarajanagar is the southernmost district in the state of Karnataka. It has a total of 4 Talukas, which are namely Chamarajanagar, Gundlupet, Kollegal and Yelandur. Chamarajanagar district borders the state of Tamil Nadu and Kerala. Specifically, it borders Mysuru district of Karnataka to the west and north, Mandya and Ramanagara districts of Karnataka to the north-east, Dharmapuri district of Tamil Nadu to the east, Salem and Erode districts of Tamil Nadu to the south-east, Nilgiris district of Tamil Nadu to the south and Wayanad district of Kerala to the south-west.

Socio-economic profiling

The Socio-Economic Profiles of Districts with GA are given in Table below.

Table 4.4 Socio-economic profile of districts within MMC GA

Attribute	Mysore	Mandya	Chamarajanagar	Karnataka
Population	3,001,127	1,805,769	1,020,791	61,095,297
% of SC population	17.9	14.7	25.2	17.1
% of ST population	11.1	1.2	11.8	7.00
Sex Ratio	985	995	993	973
% total literacy rate	78.5	70.4	61.4	75.36
Total Female Literacy	67.1	32.9	54.9	68.08
Rural Population	41.5	82.9	82.83	61.33

Source: Census of India, 2011

Demographic Profile

As can be seen from ***Table 4.32,*** Out of the three districts, Mysore is the most populous district. In terms of the Sex ratio, Mandya district has the highest number of females per 1000 males in the population. Overall, it ranks 8th in the state in terms of Sex ratio, followed by Chamarajanagar district.

Out of the three districts, Mysore has the largest concentration of urban population. Looking at the difference between census of India, 2011 and 2001, the proportion of rural population has declined and the proportion of urban population has increased over the last decade in the district.

Social Stratification

Chamarajanagar district has the highest population of Scheduled Caste (25.4 percent), amongst the three districts and also second highest in the state. Whereas, both Chamarajangar and Mysore district has less than 15 % Of ST population[13]. Mandya district has the lowest ST and SC population amongst the three and stands at 22nd position in the state. The district contributes the least Scheduled Tribe population (1.2 percent) to the total population of t Karnataka accounts for amongst the lowest proportions of ST population in the Country (7%).

There are 50 scheduled tribe communities living in Karnataka, according to the Constitution (Scheduled Tribes) Order (Amendment) Act 2003. Out of these, 14 are either exclusively found in Karnataka or are predominant inhabitants of the state. The, Jenu Kurubas, , Koraga, inhabiting Karnataka are primitive tribal groups. Most of them are dependent on hunting, forests, cultivation, beekeeping or working as daily labourers for landlords in plantations. Most of them are found in Mysore district.

There are no schedule V areas[14] declared in these districts.

Literacy rate

Out of the three districts, Mysore has a literacy rate of 78.5 percent and is placed at 18th position in the State. This is greater than the literacy rate of the state. Chamarajanagr district has the third lowest literacy rate of 61.4 percent in the State of Karnataka. Further, there are also regional and gender disparities in the rate of literacy across the taluks, across the socio-economic groups.

Livelihood

Agriculture is the main source of income for majority of population of Karnataka. Most of the agriculture is rainfed. Some of the important crops grown in the state and the districts are cotton, grams, groundnut, jowar, maize, ragi, paddy, sugarcane, sunflower and tur. However, in recent years the area under food crops is continuously declining due to lack of sufficient rain and irrigation facilities[15].

Industry is the second major contributor to District domestic product, employment and total output. However, the industries are not spatially distributed across the taluks and districts; most of the major industries are located in and around Mysuru Banagalore, Bagalkot etc[16].

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[13] The Scheduled Tribes are tribes notified under Article 342 of the Constitution, which makes special provision for 'tribes, tribal communities, parts of, or groups within which the President may so notify'.

[14] In the Constitution of India, the expression "Scheduled Areas" means such areas as the President may by order declare to be Scheduled Areas. The criteria followed for declaring an area as Scheduled Area are preponderance of tribal population; compactness and reasonable size of the area; under-developed nature of the area; and marked disparity in economic standard of the people. These criteria are not spelt out in the Constitution of India but have become well established. (Source: Official website of the Ministry of Tribal Affairs (MoTA), Government of India (GoI). URL: http://tribal.nic.in/Content/DefinitionofScheduledAreasProfiles.aspx. Accessed on 23.052020

[15] https://raitamitra.karnataka.gov.in/english

[16] http://dcmsme.gov.in/dips/Karnataka_dipr.html

4.2.1.4 Site Setting and Key Observations during Site Visit

A total of 40 km pipeline is proposed for this GA, however, the route has been finalized for 15 km. As observed during the site visit, the 15 kms pipeline will be laid along service land of the state highway and National Highway 212. The entire pipeline path is mainly urban and periurban area. Further, there are no Schedule Tribe areas or settlements along the pipeline route that might be impacted. Majority of the Right of Way (ROW) falls along the main state and national highway. However, there are patches of small agricultural land, shops and residential areas along Srinagapatnam- Jevargi Road. The pipeline is not envisaged to impact any of the agricultural land or structures. There was no encroachment observed in the identified RoW of the pipeline.

Further, the pipeline will not be laid along any protected area or forestland. The sub-project will not fell any trees falling withing the identified RoW.

4.2.2 GA AKT

A brief description of the existing environmental settings in the selected GA is detailed in the sections below.

4.2.2.1 Environment Baseline

The following table presents the environmental settings within the three districts of the AKT GA.

Environmental Parameters			
	Alappuzha District	**Kollam District**	**Thiruvananthapuram District**
a) Physical features			
Topography	Alappuzha is the smallest district in kerela. It lies between North Lattitudes 9° 05’ and 9° 54’ and East longitude 76° 17’ and 76° 36’. The district is surrounded by Lakshadweep sea on the west, Kottayam and Pathanamthitta districts in the east, Kollam district in the south and Ernakulam district in the north. Alappuzha is on a landmass between the broad Arabian sea and a network of rivers flowing into it. Major rivers are the Manimala, the Pamba, and the Achankovil. The most important lake is Vembanad has a diverse topography. It is a sandy strip of land intercepted by lagoons, rivers and canals. There are neither mountains nor hills in the district except some scattered hillocks lying between Bharanikkavu and	Kollam district has a single revenue division with headquarters at Kollam district. It lies between North latitudes 8°45’ and 9°07’ and East longitudes 76° 29’ and 77° 17’. It has a geographical area of 2491 sq km. The district is located on the southwest part of Kerala State, extends from Lakshadweep Sea to the Western Ghats, and is bordered by Trivandrum district on the South and Alleppey and Pathanamthitta districts in the North and Tirunelveli district of Tamil Nadu State in the East and Lakshadweep Sea in the west. Kollam has plains, mountains, lakes, lagoons and backwaters, forests, farmland and rivers that make up the topography of the district. Three rivers Achenkovil, Kallada and Ithikkara flow through this District. The	Thiruvananthapuram is the southernmost district of the coastal state of Kerala. It is located between 8.17°N 76.41°E and 8.54°N 77.17°E. The district covers an area of 2,192 square kilometres and is the second most populous district in Kerala after Malappuram district. There are three distinctive topographic units, which can be identified in the district from west to east. The low land or coastal plain are seen in areas between Thiruvananthapuram and Anjego and between Vizhinjam and Poovar. 60% of the district comes under the midland unit, which is occupied, by valleys and hillocks making an undulating topography. The terrain in the eastern part of the district represents the highland

	Chengannur blocks in the eastern portion of the district. The district has a contiguous long coastline of 82 Km. Water bodies constitute 13% of the district and Kuttanad area lies below sea level.	Sasthamcotta lake, is the only major fresh water lake in the state is in Kollam Distric	
Geology	A major part of the district forms part of the coastal plains. The general elevation of the area is less than 6 m above mean sea level with some parts of the area below mean sea level in the range of 1-2 m. Typical coastal geomorphic features such as beaches, shore platforms, spit and bars, beach ridges etc are seen. A small part of the district in the southeast forms part of mid land hard rocks.	The district can be broadly divided into three geological provinces – the westernmost Quaternary alluvial deposits followed by a narrow N-S zone of late Tertiary sediments and the easternmost Precambrian metamorphic. The Precambrian metamorphic are represented by Khondalite, Charnockite and Migmatitie groups. Towards west, the rocks of Archaean age are uncoformably overlain by sedimentary rocks of Mio-Pliocene age. The midland portion representing the Tertiary sedimentary terrain and the western part of the Archaean terrain is extensively lateritised and the laterite is 5 to 10m thick. The coastal plain is covered by Quarternary.	The district can broadly be divided into two geological divisions viz. (i) the eastern part represented by the Archaean crystalline rocks and (ii) western coastal fringe occupied by Tertiary and Quaternary sediments. The Archaean crystalline rocks comprise Khondalite Group, Charnockite Group and Migmatite Group. All these rocks are intruded by a number of dolerite dykes, but their distribution is restricted to the midland region of the district.
Soils	The western or coastal tract of the district comprises recent sediments, viz. Alluvium, blown sands, etc. At Alappuzha, Cherthala and other places in the neighbourhood, coherent layer of sand is found to overlie mud. The mud is highly acidic in reaction and sulphurous incrustations have been noted in several areas. In western part of the Kuttanadu area soil is highly acidic and sediments consist of alternating beds of loose sand and hard, stiff clay of variegated colours.	There are five major soil types encountered in the district. They are Lateritic soils, Brown Hydromorphic soils, Greyish Onattukara soils, Riverine and Coastal Alluvium and Forest Loam. Lateritic soil is the most predominant soil type of the district and it occurs in the midland and hilly areas and it is derived from laterites. Brown hydromorphic soil is confined to the valleys between undulating topography in the midlands and in the low lying areas of the coastal strip.	The major types of soil found in the district are red loams, coastal alluvium, riverine alluvium, lateritic soil, brown hydromorphic soil and forest loam. Most predominant soil in the district is lateritic soil and is mainly found along the midland, which are mostly reddish brown to yellowish red in colour. Brown hydromorphic soils are mostly confined to valley bottom in the midland and low lying areas of coastal strip. Red loamy soils are highly porous, friable and low in organic matter, which is mainly seen in southern part of the district, and Coastal alluvium is mainly found along the coastline while river alluvium is found along the banks of rivers and their tributaries.
Landuse	The general land use of Alappuzha district is given in the below. which clearly illustrates the percentage	The general land use of Kollam district is given in the below. which clearly illustrates the percentage distribution of	The general land use of the district is given in the below. which clearly illustrates the

<table>
<tr>
<td></td>
<td>distribution of land under forest cover, net sown area, cultivable waste, barren and non-cultivable land and land put under nonagricultural uses.

Table 4.5 Land Utilization of Alappuzha District
<table><tr><th>S. N</th><th>Type of Land Utilization</th><th>% of Total Area</th></tr><tr><td>1</td><td>Built up land</td><td>1.34</td></tr><tr><td>2</td><td>Agriculture land</td><td>86.04</td></tr><tr><td>3</td><td>Water bodies</td><td>12.4</td></tr><tr><td>4</td><td>Waste land</td><td>0.21</td></tr><tr><td>5</td><td>Others</td><td>0.02</td></tr></table></td>
<td>land under forest cover, net sown area, cultivable waste, barren and non-cultivable land and land put under nonagricultural uses.

Table 4.6 Land Utilization of Kollam District
<table><tr><th>S. N</th><th>Type of Land Utilization</th><th>% of Total Area</th></tr><tr><td>1</td><td>Built up land</td><td>3</td></tr><tr><td>2</td><td>Agriculture land</td><td>56</td></tr><tr><td>3</td><td>Forest</td><td>34</td></tr><tr><td>4</td><td>Water Bodies</td><td>5</td></tr><tr><td>5</td><td>Waste Land</td><td>0.02</td></tr><tr><td>6</td><td>Others</td><td>0.18</td></tr></table></td>
<td>percentage distribution of land under forest cover, net sown area, cultivable waste, barren and non-cultivable land and land put under non-agricultural uses.

Table 4.7 Land Utilization of Thiruvananthapuram District
<table><tr><th>S. N</th><th>Type of Land Utilization</th><th>% of Total Area</th></tr><tr><td>1</td><td>Forest Area</td><td>22.8</td></tr><tr><td>2</td><td>Land put to non agricultural use</td><td>12.3</td></tr><tr><td>3</td><td>Barren & Uncultivable land</td><td>0.1</td></tr><tr><td>4</td><td>Cultivable Waste</td><td>0.2</td></tr><tr><td>5</td><td>Fallow other than current fallow</td><td>0.2</td></tr><tr><td>6</td><td>Current fallow</td><td>1.3</td></tr><tr><td>7</td><td>Net area sown</td><td>61.0</td></tr></table></td>
</tr>
<tr><td colspan="4">b) Water Environment</td></tr>
<tr><td></td><td>Alappuzha District</td><td>Kollam District</td><td>Thiruvananthapuram District</td></tr>
<tr><td>Drainage</td><td>The district is drained by three west flowing rivers , viz Achenkovil, Kallada and Ithikara, originating in the eastern hilly region. These rivers together with their tributaries exhibit dendritic pattern of drainage. The Ithikara river originates from the Madatharaikunnu hills, south west of Kulathupuzha and drains into the Paravoor backwaters near Meenad, Kallada river originating from the Western Ghats drains into Ashtamudi backwaters near Kollam and Achenkovil river originates from the Western Ghats joins Pamba river at</td><td>The important rivers draining the district are Neyyar, Karamana, Vamanapuram, Mamom and Ayirur, which form three main drainage basins such as Neyyar, Karamana and Vamanapuram basin. A number of backwaters are seen along the western parts of the district viz. Poovar Kayal, Poonthura Kayal, Vellayani Kayal, Veli Kayal, Kadinamkulam Kayal, Anchuthengu Kayal and Edava-Nadayara Kayal. Among this only Vellayani Kayal is freshwater lake which is supplying water to major portion of Nemom block.</td><td>The important rivers draining the district are Neyyar, Karamana, Vamanapuram, Mamom and Ayirur, which form three main drainage basins such as Neyyar, Karamana and Vamanapuram basin. A number of backwaters are seen along the western parts of the district viz. Poovar Kayal, Poonthura Kayal, Vellayani Kayal, Veli Kayal, Kadinamkulam Kayal, Anchuthengu Kayal and Edava-Nadayara Kayal. Among this only Vellayani Kayal is freshwater lake which is supplying water to major portion of Nemom block.</td></tr>
</table>

	Veeyapuram and finally debouches into the Vembanad lake.		
Hydrogeology	Ground water occurs in the porous granular formations such as alluvium, laterite, the Tertiary sediments and weathered and decomposed crystalline rocks as well as in the fissures, joints and fractures in the fresh crystalline rocks. The aquifers in the district can be grouped into four distinct geological formations in which they occur viz alluvial aquifers, laterite aquifers, Tertiary sedimentary rock aquifers and crystalline rock aquifers.	The district is characterised by the outcrops of crystalline rocks of Archaean age in the eastern part and is overlain by sedimentary formations ranging in the age from Miocene to Recent along the western coast. Based on the water bearing properties, the entire district can be broadly classified into crystalline formation and sedimentary formation. The crystallines include khondalites, charnockites, migmatites and intrusives occur at shallow or deep with or without fractures. The sedimentary formation comprise the recent alluvium that is mainly composed of sand and clay, tertiary formation such as Warkali, Quilon and Vaikom beds and laterites which occur as a capping over crystallines.	The district is characterised by the outcrops of crystalline rocks of Archaean age in the eastern part and is overlain by sedimentary formations ranging in the age from Miocene to Recent along the western coast. Based on the water bearing properties, the entire district can be broadly classified into crystalline formation and sedimentary formation. The crystallines include khondalites, charnockites, migmatites and intrusives occur at shallow or deep with or without fractures. The sedimentary formation comprise the recent alluvium that is mainly composed of sand and clay, tertiary formation such as Warkali, Quilon and Vaikom beds and laterites which occur as a capping over crystallines.
GW resources	Ground water occurs under phreatic condition in the shallow zone and confined condition in the deeper zones in the Tertiary sedimentary rocks. In terms of water quality, as per Central Groundwater Authority (CGWA), district is affected by contamination through high salinity due to sea water ingress[17]. As per Central Groundwater Board (CGWB) brochure for the year 2013, the district falls under the Safe category.	Groundwater occurs in all the geological formations from Archaean crystallines to Recent alluvium under phreatic as wells under semi-confined condition. In weathered crystallines and in shallow sedimentary formations groundwater occurs under phreatic condition while semi-confined condition exists in deep fractured crystalline rocks and laterites. In terms of water quality, as per Central Groundwater Authority (CGWA), district is affected by water contamination through high chloride concentration	Groundwater occurs in all the geological formations from Archaean crystallines to Recent alluvium under phreatic as wells under semi-confined condition. In weathered crystallines and in shallow sedimentary formations groundwater occurs under phreatic condition while semi-confined condition exists in deep fractured crystalline rocks and laterites. In terms of water quality, as per Central Groundwater Authority (CGWA), district is affected by water contamination through high chloride concentration and alkalinity[19]. As per Central

[17] Extracted from CGWA website showcasing profile of groundwater in Kollam.
http://cgwb.gov.in/District_Profile/Kerala/kollam.pdf

19 Extracted from CGWA website showcasing profile of groundwater in Thiruvanathpuram.
http://cgwb.gov.in/District_Profile/Kerala/Trivandrum%20.pdf

	In terms of groundwater availability, as per CGWB report on Aquifer Mapping and Management Plan for the district published in the year 2017, the groundwater is available at the deport of 5.6 to 28 meters below ground level (mbgl). The depth of groundwater level ranges from 1.67-25.40 mbgl in pre monsoon and 0.07-22.32 mbgl in post monsoon period.	and alkalinity[18]. As per Central Groundwater Board (CGWB) brochure for the year 2013, the district falls under the Over-Exploited category. In terms of groundwater availability, as per CGWB report on Aquifer Mapping and Management Plan for the district published in the year 2017, the groundwater is available at the deport of 19.6 – 200.5 meters below ground level (mbgl). The depth of groundwater level ranges from 1.26–20.34 mbgl in pre monsoon and 1.05 – 22.86 mbgl in post monsoon period.	Groundwater Board (CGWB) brochure for the year 2013, the district falls under the Over-Exploited category. In terms of groundwater availability, as per CGWB report on Aquifer Mapping and Management Plan for the district published in the year 2017, the groundwater is available at the deport of 19.6 – 200.5 meters below ground level (mbgl). The depth of groundwater level ranges from 1.26–20.34 mbgl in pre monsoon and 1.05 – 22.86 mbgl in post monsoon period.
c) Climate and Meteorology			

18 Extracted from CGWA website showcasing profile of groundwater in Thiruvanathpuram. http://cgwb.gov.in/District_Profile/Kerala/Trivandrum%20.pdf

	Alappuzha District	Kollam District	Thiruvananthapuram District
Regional Meteorology	The long term meteorology (period 1981-2010) of the region based on data recorded at the nearest observatory station of India Meteorological Department (IMD) at Alappuzha is presented and described in subsequent sections.	The long term meteorology (period 1981-2010) of the region based on data recorded at the nearest observatory station of India Meteorological Department (IMD) at Kollam is presented and described in subsequent sections.	The long term meteorology (period 1981-2010) of the region based on data recorded at the nearest observatory station of India Meteorological Department (IMD) at Thiruvananthapuram is presented and described in subsequent sections.
Temperature	Temperatures vary considerably from season to season. The summers are generally hot and winters are cool. Mean maximum temperature ranges between 29.2°C during July to about 33.5°C during March & April and the mean minimum temperatures vary between 22.4°C during January and 25.5°C during April.	Temperatures vary considerably from season to season. The summers are generally hot and winters are cool. Mean maximum temperature ranges between 29.2°C during July to about 33.5°C during March & April and the mean minimum temperatures vary between 22.4°C during January and 25.5°C during April.	Temperatures vary considerably from season to season. The summers are generally hot and winters are cool. Mean maximum temperature ranges between 30.1°C during July to about 33.5°C during March and the mean minimum temperatures vary between 22.3°C during January and 25.5°C during April & May.
Rainfall	Long-term (1981 - 2010) average annual total rainfall for Alappuzha station is2826 mm, as per IMD Climatological Table. Most of the rainfall is received during the month of July and August and minimum in January.	Long-term (1981 - 2010) average annual total rainfall for Kollam station is 2700 mm, as per IMD Climatological Table. Most of the rainfall is received during the month of June and July and minimum in January.	Long-term (1981 - 2010) average annual total rainfall for Thiruvananthapuram station is 1761.1 mm, as per IMD Climatological Table. Most of the rainfall is received during the month of June and October and minimum in January.
Wind speed	The average wind speed in the area is 9.1 kmph, with highest in April & May (10.9 kmph) and lowest in January (8.1 kmph).	The average wind speed in the area is 8.2 kmph, with highest in June (12.1 kmph) and lowest in February (5.2 kmph)	The average wind speed in the area is 6.4 kmph, with highest in July & August (9 kmph) and lowest in November (4.2 kmph)

d) Natural Hazards

	Alappuzha District	Kollam District	Thiruvananthapuram District
Seismicity	The District is located in an area that is designated as Zone III that corresponds to MSK VII, which is a moderate damage zone.	The District is located in an area that is designated as Zone III that corresponds to MSK VII, which is a moderate damage zone.	The District is located in an area that is designated as Zone III that corresponds to MSK VII, which is a moderate damage zone.
Wind	The District is located in a an area that experiences wind velocities Vb= 44 m/s and the zone is classified as moderate damage risk zone	The District is located in a an area that experiences wind velocities Vb= 44 m/s and the zone is classified as moderate damage risk zone	The District is located in a an area that experiences wind velocities Vb= 44 m/s and the zone is classified as moderate damage risk zone
Cyclone	The District falls in an coastal zone which is prone to	The District falls in an coastal zone which is prone to cyclone	The District falls in an coastal zone which is prone to cyclone

	cyclone occurrence. The maximum sustained winds falls in the range of 34-47 knots, which classified as low damage due to cyclone hazard.	occurrence. The maximum sustained winds falls in the range of 34-47 knots, which classified as low damage due to cyclone hazard.	occurrence. The maximum sustained winds falls in the range of 48-63 knots, which is classified as medium damage due to cyclone hazard..
Flood	The District falls in an area which is prone to flooding incidents, with a probable maximum surge height of 4m..	The District falls in an area which is flooding incidents, with a probable maximum surge height of 3.5 m..	The District falls in an area which is flooding incidents, with a probable maximum surge height of 3 m.

4.2.2.2 Ecological Baseline of the GA

The following sub-section presents the ecological settings in and around the three districts in which the AKT GA is spread. As discussed above, in view of the limitations with respect to primary data collection/ site visits, district level information on ecological settings has been collected and used in impact assessment. The secondary ecological data collected has been presented below -

A. District Alappuzha

Alappuzha district consists of one (1) Eco-sensitive areas, which has been discussed below:

I. Vembanad Lake

Vembanad Lake, which occupies an area of 79,400 ha, has been identified as an Important Bird and Biodiversity Area based on the presence of significant congregations of one or more bird species at certain times in their lifecycle or seasonal migration. It is the second largest Ramsar Site in India.

Vembanad was included in the list of wetlands of international importance, as defined by the Ramsar Convention for the conservation and sustainable utilization of wetlands. It is home to more than 20,000 waterfowls - the third largest such population in India. It is also an ideal habitat for shrimps. Major livelihood activities of the people living on the shores of the lake include agriculture, fishing, tourism, inland navigation, coir retting, lime shell collection. The uncontrolled mining of shells from the lake bed is also posing a threat to the eco-system. The sewage effluents and the heavy load of organic material released from the neighboring areas including a medical college at Alappuzha is let into the water and are responsible for the decrease in dissolved oxygen content in the water in the water body.

The Vembanad Wetland hosts many of migratory birds in the season. In addition to this the fragile ecosystem carries more than 100 birds as native. It comes in the way of Central Asian flyway. Some of the IUCN Red List (Least Concern, LC) birds here are Little Cormorant, Garganey and Whiskered Tern.

B. District Kollam

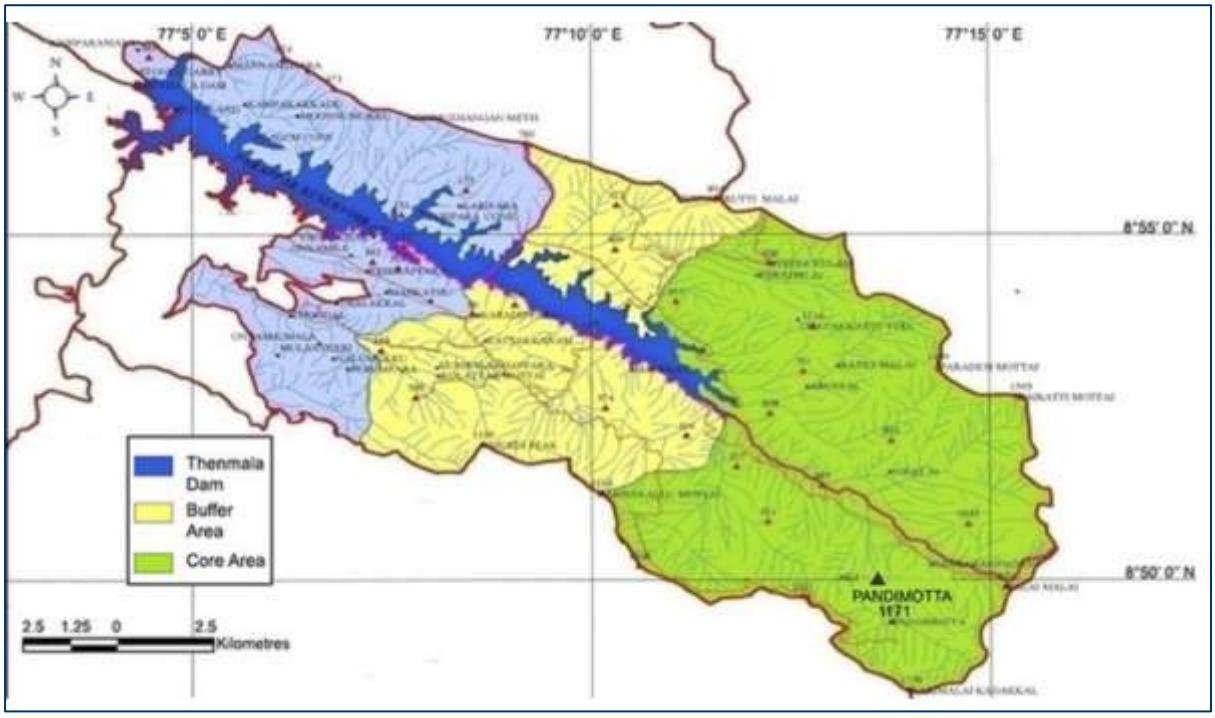
Kollam district consists of one (1) Eco-sensitive areas, which has been discussed below:

I. Shendurney Wildlife Sanctuary

Shendurney Wildlife Sanctuary is a protected area in the Western Ghats, India, located in Kollam district of Kerala and comes under the control of Agasthyamalai Biosphere Reserve. It was established in 25 August 1984 and comprises 172.403 square kilometres (66.565 sq mi). The name is a corruption of the Chengurinji, a tree endemic to the region (Gluta travancorica). The sanctuary has an About 1257 species of flowering plants belonging to more than 150 families are reported from this sanctuary of which 309 species are endemic to Western Ghats. Birds from 267 species including migratory, endemic and endangered species have been reported here.

Tropical evergreen and semi-evergreen forest cover a major area of the sanctuary. It has a presence of lion-tailed macaque, a highly endangered species. A brood of the highly elusive nocturnal forest bird, the Great Eared Nightjar was spotted for the first time at Shendurney Wildlife Sanctuary. The Great Eared Nightjar (Eurostopodus macrotis bourdilloni) belongs to the nightjar family is also found in the sanctuary.

Figure 4.11 Map of Shendurney WLS



C. District Thiruvanathapurram

Thiruvanathapurram district consists of two (2) Eco-sensitive areas, which has been discussed below:

I. Peppara Wildlife Sanctuary

The Peppara Wildlife Sanctuary is a wildlife sanctuary near Thiruvananthapuram, Kerala, India. It consists of the catchment area of the Karamana river, which originates from Chemmunjimottai, the tallest hill within the sanctuary. The sanctuary is named after the Peppara dam, commissioned in 1983 to augment the drinking water supply to Thiruvananthapuram city and suburban areas. Considering the ecological significance of the area, it was declared a sanctuary in 1983. The terrain is undulating with elevation ranging from 100 m to 1717 m. The area of the sanctuary is 75 km2 with tropical moist evergreen forests and myristica swamps.

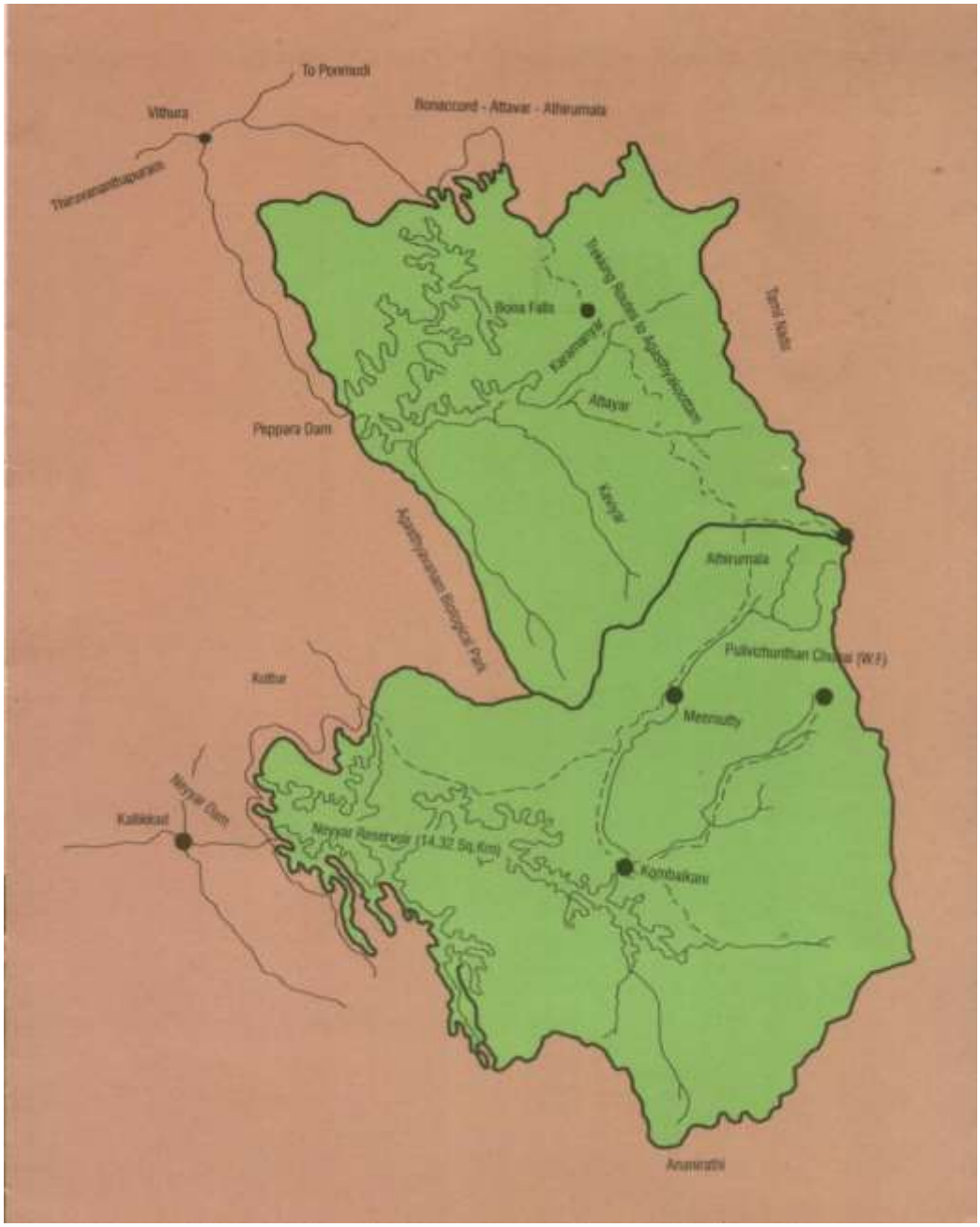
Common tree species are Terminalia paniculata, T. bellerica, Pterocarpus marsupium, Palaquium ellipticum, Mesua ferrea, Hopea parviflora, Bombax ceiba, Syzygium cumini, Lagerstroemia microcarpa, Albizia procera, Alstonia scholaris, etc. The sanctuary has several mammals, birds, reptiles and amphibians. 43 species of mammals, 233 species of birds, 46 species of reptiles, 13 species of amphibians and 27 species of fishes are reported from the sanctuary. The common mammals found are tiger, leopard, sloth bear, elephant, sambar (deer), bonnet macaque, Nilgiri langur, Nilgiri tahr.

II. Neyyar Wildlife Sanctuary

The Neyyar Wildlife Sanctuary in the state of Kerala is spread over the southeast corner of the Western Ghats, and covers a total area of 128 km2 (49 sq mi). It is located between 77° 8’ to 77° 17’ east longitude and 8° 29’ to 8° 37’ north latitude, central location 8° 33′ N 77° 12.5′ E.

This sanctuary has a substantial natural vegetation cover. The diversity of its flora makes the sanctuary an ideal gene pool preserve. There are 39 species of mammals, including tiger, leopard, sloth bear, elephant, sambar, barking deer, bonnet macaque, Nilgiri langur and Nilgiri tahr. 176 species of birds, 30 species of reptiles, 17 species of amphibians and 40 species of fishes are reported from the sanctuary. A crocodile farm, set up in 1977 at Neyyar, is home to around 20 mugger crocodiles. The Crocodile Rehabilitation and Research Centre was inaugurated at Neyyar Wildlife Sanctuary in May 2007. Neyyar Elephant Rehabilitation Centre complex within the area cares for several elephants, from elephant calves to an 87-year-old elephant, and offers elephant rides and elephant feeding. There is also a deer rehabilitation centre within the sanctuary.

Figure 4.12 Map of Neyyar and Peppara WLS



4.2.2.3 Socio-economic Baseline of the GA AKT

The section below provides a brief description of the socio-economic status for AKT GA at State and District level. Secondary sources such as Census of India, 2011 have been referred to compile this section.

Kerala State profile

Kerala has a total area of 38,863 sq km, with a coastline comprising of 590 km and inland water spread over 400,000 hectares. Thiruvananthapuram is Kerala's capital city. As per Census 2011, there are 14 districts, 63 taluks, 520 towns and 1018 villages in the State of Kerala. The 14 administrative districts include Kochi, Kozhikode, Kollam, Thirissur, Alapuzha, Palak kad, Thalassery, Ponnani and Manjeri.

The total population of Kerala as per Census 2011 is 3,34,06,061 with 1,60,27,412 males and 1,73,78,649 females. The decadal rate of growth of population in Kerala during 2001- 2011 was 4.91%. The sex ratio for Kerala is 1084 against national figure of 940. Kerala is the only Indian State where the sex ratio has historically been above the national trend[20].

Rural and urban population in the State is almost equally distributed as 48 % and 52 % respectively. Among States/UTs Kerala occupies first position in terms of literacy. The effective literacy rate of the State of Kerala is Census 2011 is 94.00% (Rural-92.98%, Urban – 95.11%). Whereas, all India literacy rate is 72.99%.

The Scheduled Caste (SC) population of Kerala State is 3,123,941 which is 9.8% of overall population. Scheduled Tribes in Kerala with a population of 3.64 lakh constitute 1.14% of the population of state.

Table 4.8 Demographic profile of Kerala

Attribute	Number	% of India
Area (sq. km)	3,08,252	5.83
Total population	3,34,06,061	2.7
Males	1, 60, 274, 12	1.4
Females	1, 73, 786, 49	1.3
Sex ratio	1084	NA
Percentage of rural Population	48	NA
Percentage of urban population	52	NA
Population density (individuals per sq. km.)	860	NA
Percentage of SC population	9.8	NA
Percentage of ST population	1.14	NA
Total literacy rate	94.00	NA
Male Literacy rate	96.11	NA
Female Literacy Rate	92.07	NA

Source: Census of India, 2011

District profiles

Alappuzha District-Karnataka

Alappuzha district lies between north latitude 9º 05' and 9º 54' east longitude 76° 17' and 76° 48'. Alappuzha District has 2 Revenue Subdivisions, 6 Taluks and 93 Villages under Revenue Department. It has 6 Municipalities, 1 District Panchayath, 12 Block Panchayaths, 72 Grama Panchayaths under Local Self Government Department.

Kollam District-Karnataka

Kollam (erstwhile Quilon) is a southern district of Kerala, located 70 km north of the state's capital Thiruvananthapuram. It is flanked by the Arabian sea on the west, Tamil Nadu on the east, Alapuzha and Pathanamthitta districts on the north and Thiruvananthapuram district on the south. The head quarters of the district administration is centred at Kollam City, the district's capital. Administratively, the district is composed of two revenue divisions viz. Kollam and Punalur with three taluks each under them.

[20] Gender Statistics in Kerala, 2017-18.

Thiruvananthapuram District- Karnataka

Thiruvananthapuram district is the southernmost district of the coastal state of Kerala. The district covers an area of 2,192 square kilometres (541,655 acres). Thiruvananthapuram district is divided into 6 taluks and 124 villages. The 6 Taluks in Thiruvananthapuram are Thiruvananthapuram, Nedumangadu, Chirayinkeezhu, Kattakada, Neyyattinkara and Varkala

Socio-economic profiling

The Socio-Economic Profiles of Districts with the GA are given in Table below.

Table 4.9 Socio-economic profile of districts within AKT GA

Attribute	Alappuzha district	Kollam district	Thiruvananthapuram district	Kerala
Population	2,127,789	2,635,375	3,301,427	3,34,06,061
% of SC population	9.45	12.5	11.3	9.8
% of ST population	0.31	0.4	0.8	1.14
Sex Ratio	1100	1113	1087	1084
% total literacy rate	95.72	94.09	93.02	94.00
Total Female Literacy	94.24	92.39	95.02	92.07
Rural Population	46.04	54.9	46.6	48

Source: Census of India, 2011

Demographic Profile

Out of the three districts, Thiruvananthapuram is the most populous district. In terms of the Sex ratio, Kollam district has the highest number of females per 1000 males in the population. This is in comparison with state sex ratio. The reasons for highest sex ratio in Kerala are better health, high literacy rate among women and better standard of living.

Out of the three districts, Kollam has the largest concentration of urban population.

Social Stratification

Kollam district has the highest population of Scheduled Caste (12.5 percent), amongst the three districts and also second highest in the state. There is negligible percentage of ST population in all the districts.[21]. There are no schedule V areas[22] declared in any of the districts.

[21] The Scheduled Tribes are tribes notified under Article 342 of the Constitution, which makes special provision for 'tribes, tribal communities, parts of, or groups within which the President may so notify'.

[22] In the Constitution of India, the expression "Scheduled Areas" means such areas as the President may by order declare to be Scheduled Areas. The criteria followed for declaring an area as Scheduled Area are preponderance of tribal population; compactness and reasonable size of the area; under-developed nature of the area; and marked disparity in economic standard of the people. These criteria are not spelt out in the Constitution of India but have become well established. (Source: Official website of the Ministry of Tribal Affairs (MoTA), Government of India (GoI). URL: http://tribal.nic.in/Content/DefinitionofScheduledAreasProfiles.aspx. Accessed on 23.052020

Literacy rate

Out of the three districts, Alappuzha has the highest literacy rate of 95.72 percent and is placed at 4th position in the State. This is greater than the literacy rate of the state. However, there is no significant difference between the literacy rate of the three district and state. The high literacy rate in three district is due to the fact that overall Kerala achieved substantial achievement in education over the past few years. At the state level even the gender gap in literacy in Kerala has been declining at a higher rate when compared to India.

Livelihood

Agriculture is the predominant economic activity with paddy being the main crop in Alappuzah district. Tourism also contributes the economy and livelihood due to districts varied and diverse geographical features[23]. On the other hand, more than 50% of the workforce of the Thiruvanthapuram is engaged in service sector. Agriculture is also one of the primary occupation of the people of the district. More than 15% of the total population of the district depends on Agriculture for their livelihood. Paddy is the most important crop cultivated in the wet lands. In addition, Coconut and Rubber, Banana and vegetables are the main crops. The fisheries sector has importance in the District due to the existence of 78 Km coastal line, reservoirs and inland water bodies[24].

4.2.2.4 Site Setting and Key Observations during Site Visit

A total of 40 km pipeline is proposed along the ROW of NH-47 (Salem-Kochi-Kanyakumari Highway) for this GA, however, the final route survey was under process during ERM site visit. Therefore, it was not finalised whether the pipeline will laid along the left hand side (LHS) or right hand side (RHS) of the road. The entire pipeline path is mainly urban and periurban area. Majority of the Right of way falls along the main state and national highway. However, there are areas of dense settlement such as Mararikulam, commercial areas and shops. Although, there is sufficient RoW available for the pipeline, it should be ensured that no shops or businesses are impacted during the laying of the pipeline. Further, there was no encroachment observed along the identified RoW of the pipeline.

It was also understood that the pipeline will not be laid along any protected area or forestland. The sub-project will not fell any trees within the identified RoW. The pipeline will not cover any major rivers; however, multiple small canals and backwaters will be crossed.

[23] District Planning office, Alappuzah

[24] District Planning office, Thiruvanthapuram

5. ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT OF SUB-PROJECTS AND MITIGATION

Overall, the Project has been assigned Category “B” in accordance with the Asian Infrastructure Investment Bank’s (AIIB) Environmental and Social Policy (ESP) and Environmental and Social Standards (ESS), and as Category B+ as per OeEB requirements. From the project development objectives, it is evident that the project (and the network components) will yield positive and beneficial impacts on the target population. The proposed project will lead to several impacts on the environmental and socio-economic conditions in the project area. However, adverse impacts will be limited and of short duration during the construction phase only. Most of the impacts will be beneficial, especially the availability of clean fuel in the form of natural gas.

Keeping this in view, the likely positive and negative environmental and social impacts have been identified and are listed below. The significance of these impacts would vary depending on the individual scheme components, its size and location. All perceived adverse impacts are in general, temporary, reversible and localized. No land acquisition is involved in the sample projects and therefore there will not be any physical or economic displacement. Most environmental risks will emerge out of construction related activities. Construction related hazards and risks need to be appropriately identified and mitigated through application of the Environmental and Social Management Plan.

5.1 Impact Assessment – Construction Phase

5.1.1 Impact on Wildlife/ habitat alteration

Habitat alteration is only considered a relevant potential impact during construction of gas distribution pipeline systems in newly developed rural or periurban areas. These impacts may be associated with excavation, trenching, pipe laying, backfilling, and the establishment of infrastructure such as regulating stations, which may create temporary or permanent terrestrial habitat alteration depending on the characteristics of existing vegetation and topographic features along the proposed right of way. The potential for impacts depend on the level of existing development, and will likely be less of an issue in urbanized areas or along existing utility rights-of-way corridors.

- Depending on the level of existing urbanization in the proposed project area, examples of habitat alteration from these activities may include landscape fragmentation, loss of wildlife habitat, including for nesting, and establishment of non-native invasive plant species. In addition, construction of distribution pipelines crossing aquatic habitats that may disrupt watercourses and wetlands, and require the removal of riparian vegetation.
- In case of gas pipelines passing through Protected Areas such as National Park, Wildlife Sanctuaries, Elephant Reserve, Tiger Reserve and wildlife corridor, there will be potential disturbance to wildlife habitats.

  However, the AGP sub-projects will only involve laying of pipelines in urban areas, hence, disturbance to wildlife is not envisaged.
- In case of areas where there is other wildlife (involving smaller animals) the risks are primarily due to falling of the animal into the excavation carried out for underground pipeline work. In addition, involve clearance of riparian vegetation due to installation of pipelines in close proximity to river banks may disrupt aquatic habitats. Furthermore, site clearance may require cutting of trees and scrubs which may result in habitat fragmentation.
- Operation of hot mix plant, if any,in close proximity to forest area may impact fauna due to noise.

Mitigation Measures

- To prevent and control impacts to terrestrial habitats, distribution pipeline rights-of-way and regulating stations will be sited to avoid critical habitat through use of existing utility and transport corridors, whenever possible.
- Efforts will be made to prevent intrusion of gas pipelines into wildlife habitats through optimization of route alignment. Alternative route analysis will be undertaken to avoid wildlife areas to the extent possible. Suitable design modifications will be undertaken for lines passing through wildlife corridor/ habitat. In case of gas pipelines, feeders, receiving stations are installed in such areas, requisite permissions and regulatory bodies will obtain No Objection Certificates (NOC). Necessary boundary and fencing will be provided to prevent encroachment of wildlife into the premises and reduce risk of accidents.
- To prevent and control impacts to aquatic habitats, distribution pipeline rights-of-way should be sited to avoid critical aquatic habitat such as watercourses, wetlands, and riparian areas, as well as fish spawning habitat, and critical fish over-wintering habitat, whenever possible.
- During construction, temporary woven wire mesh guards will be put around the excavated areas to prevent small wild animal from falling. No harm would be done to animals trapped in the excavated area. The nearest Forest Department officials will be informed to ensure safe release of the animal.
- Hot mix plants, if any, should be set up away from forest areas to reduce noise emission.
- Permissions for tree cutting as applicable should be obtained

5.1.2 Impact on Floral Biodiversity

City gas distribution systems, in general have impacts on floral biodiversity during site clearance, excavation, trenching and backfilling for installation of underground gas pipelines and establishment of infrastructures such gas receiving and regulating stations. Such activities may create temporary or permanent terrestrial habitat alterations depending on the characteristics of existing vegetation and topographic features along the proposed right of way.

The possibility of city gas distribution lines passing through forest or natural habitats and resulting in alteration of habitat will be low since the distribution network will be typically closer to human settlements and habitation and urban areas. During construction phase, there could be some disturbance to the soils and vegetation within the right of use due to movement of workers and vehicles along the RoW and access roads. The clearance of vegetation can also contribute to the spread of invasive species. Parts of plants, seeds, and root stocks can be carried by construction equipment or vehicle when it travels through such cleared stretches. Once introduced, invasive species will likely spread and impact appropriate habitat.

Mitigation Measures

Following measures would be adopted during planning, construction of gas distribution infrastructure.

- Route selection to avoid or minimise need to traverse through high vegetation or forest areas.
- For any gas pipelines passing through forest areas (NP, WLS, PF, RF, etc.) clearance under the Forest Conservation Act 1980 would be mandatory. Construction can be only started after necessary clearance is obtained.
- Wherever possible, existing paths/access roads will be used for the movement of man and machinery so that vegetation clearance is minimum.
- Tree felling (if required for installation of underground pipelines and establishment of gas receiving stations) permission should be obtained from the respective State Forest Department under the state specific legislations.

5.1.3 Impact on Geology

It is understood that no blasting or drilling operations will be undertaken during CGD installation activities. Therefore any ground disturbances are not envisaged. Installation of pipelines in seismic fault zones however may affect the integrity of the pipelines during an earthquake event. Furthermore, pipelines may also pass through river crossings and upstream areas. In case of pipelines involving river crossing, it would be undertaken by horizontal directional drilling (HDD).

Mitigation Measures

- Identification of active fault zones should be conducted as part of route survey to avoid installation of pipelines in close proximity to sesismic zones;
- Maintain considerable distance from large lakes, rivers and river crossings;
- Avoid CRZ areas
- River crossing points should be identified during the pipeline route survey to ensure crossing points minimise the impact on sensitive htdrological and ecological features. This may also include adequate design controls to minimise the impact on the hydraulic regime of the rivers;
- Wherever possible, construction of pipeline crossings will be undertaken during the period of low flow of the river;
- Oil spill clean up equipment should be available at the water crossings for quick response to oil spillage (if any).

5.1.4 Impact due to Disturbance to Soil

Impacts on soil may occur both during installation of underground gas pipelines and establishment of gas receiving stations. Some of the impacts are discussed below:

- Site clearance activities will result in removal of stabilized top soil that may increase soil erosion.
- Excavation of soil during installation of underground gas pipelines, and foundation for central gas receiving stations may result in left over excavated material. Unmanaged disposal of excess excavated material may result in loss of productivity of land. Excavated material, primarily subsoils, if mixed with top-soils can reduce the fertility of soil.
- Excavation works typically expose the soil and may result in aggravating the problem of erosion in certain areas which are prone to soil erosion. Cutting and filling activities will also lead to soil erosion caused by runoff, thereby affecting nearby waterbodies and adjoining land parcels.
- Improper waste disposal along the pipeline route and at the receiving station may also have impact on the soil and land environment during the construction phase.
- Corrosion and degradation of gas pipeline and related components overtime may lead to leakage of gas such as methane CH_4 during operation causing soil contamination

Mitigation Measures

Mitigation measures which would be considered to reduce impacts on soil are given below:

- Stripping of topsoil shall not be conducted earlier than required; (vegetation cover will be maintained for as long as possible) in order to prevent the erosion (wind and water) of soil
- All excavations should be filled before rainy season
- Excess excavated material should be removed by the contractor before completion of all construction works.

- Existing roads to access the site should be used to the extent possible and movement of vehicles through agricultural fields should be discouraged
- The disturbed areas and soil stock piles should be kept moist to the extent possible to avoid wind erosion of soil
- Construction contractor should ensure that no unauthorized dumping of waste is undertaken at the construction site.
- Municipal domestic waste generated at site to be segregated onsite and disposed through municipality or authorised vendor
- Ensure routinely disposal of hazardous waste such as used oil from DG sets through approved vendors and records are properly documented;
- Periodic inspection to identify leak and corrosion detection should be undertaken, including use of appropriate leak detection assessment techniques and equipment;

5.1.5 Impacts on Water Resources

Construction activities which involve civil works such as, levelling, concreting and curing of concrete may have significant water consumption though for a limited duration. However the requirement will b spread over a large duration hence stress on the local water resources are envisaged as minimum. Also operational phase water requirement will be limited to domestic purposes only. Water would be sourced from commercial water supplies of cities and groundwater use will be restricted.

Typically, unmanaged construction activities near any water bodies can lead to sedimentation, erosion and storm water runoff which may increase turbidity of nearby surface watercourses and affecting water quality. Mitigation measures are accordingy proposed below.

Mitigation Measures

In case groundwater requirement in envisaged for any of the sub-projects, ground water (GW) situation in the area within the GA will be assessed basis the district-level and block-level GW resources assessment data issued by Central Ground Water Board (CGWB) (Ministry of Water Resources, Government of India) before planning for any groundwater abstraction or use of borewells, during construction phase.

Use of groundwater in dry areas for construction works will be avoided to the extent possible. Water tankers (if required) for construction work and domestic purpose will be procured through authorised vendor. Water consumption logs will be maintained at all times, and conservation measures such as rain water harvesting will be implemented at gas receiving stations. The harvested water will either be used for ground water recharge/reuse depending on the feasibility.

For installation of any new bore well, if required, at the central gas receiving stations, permission from CGWA would be obtained. Each of these bore wells would be fitted with water meter to monitor ground water abstraction. Filling of water bodies along the route alignment will be minimised by providing retaining walls.

Following best practices will be adopted to reduce water usage for construction work:

- Use buckets etc. to wash tools instead of using running water;
- Use of auto shut off taps in labour accommodation (if any);
- Assess the groundwater status of the region where pipelines are being installed and identify way forward for source of water requirement
- Install water metres with main supply pipes/water tanks/bore well to assess quantity of consumed water at the central gas receiving stations;
- Use of admixture in the concrete production to reduce water consumption; and

- Reuse water for multiple hydro tests to conserve water.

5.1.5.1 Impact on Water Resources due to disposal of Hydrostatic testing water

The Project will involve hydrotesting of the gas pipelines prior to its commissioning and during O&M activities to ensure integrity and to detect possible leaks/ areas of stress corrosion cracking of the pipelines. The testing will either involve water or may involve chemical additives such as corrosion inhibitor, dye and oxygen scavenger. Discharge of such chemicals into the public sewer or water resources may result in increase in water turbidity and further deteriorate the water quality if not properly treated. The quantity of hydrotesting water will however not be significant.

Mitigation Measures

In order to prevent or minimise impact on environment due to release of hydrotesting water or chemical effluents, the following mitigation measures will be adopted**:**

- Reuse water for multiple hydro tests to conserve water and minimise discharge of potential contaminated effluent;
- Reduce use of corrosion inhibiting or other chemicals by minimising the storage time of test water in the pipeline;
- Selecting the least hazardous alternative with regards to toxicity, biodegradability and bioaccumulation potential;
- Discharge hydrotest water as per local regulatory requirement; and
- If discharge of hydrotest water to the surface water bodies is the only feasible option, a site specific hydrotest water disposal plan will be prepared considering location and rate of discharge, chemical used (if any), dispersion, associated environmental risks and required monitoring.

5.1.6 Impact due to Emissions and Discharges

Construction activities will result in water pollution from labour camps (if any) and fugitive and exhaust air pollution from the movement of vehicle carrying construction material and machinery used during site clearance and levelling of site etc. However, these impacts will be short term and will have limited footprint. Usually, setting up of labor camps are not involved in the CGD projects of AGP.

Impact on water quality will be due to soil runoff into the nearby water bodies due to removal of vegetation during site clearance. Water contamination may also result due to improper sanitation and discharge of wastewater into waterbodies from the construction site and labour camps (if any).

Accidental spillage of lubricant oil at construction site may result in soil and groundwater contamination.

Impacts on air quality is envisaged due to fugitive emission from construction activities, emission from heavy machinery such as hot mix plants, vehicle movement and diesel generators (if any) that operate on fuel. However it will be limited to locations near the construction sites.

Mitigation Measures

Every city gas distribution sub-project will develop an ESMP (prepared as part of the ESIA for each subproject) and all measures for pollution prevention as stated in the ESMP will be implemented. The ESMP would be made part of the standard bidding document of contractors.

Other measures that will be implemented during construction phase are:

- Septic tanks and soak pits/modular bio-toilets will be provided at all labour camps (if any) and construction sites. At the completion of the construction activities, site would be cleared of all the leftover materials and debris to avoid any runoff into water bodies.

- Construction site will be equipped with adequate spill kits and construction workers should be trained on spill kit usage to avoid soil and water contamination
- To prevent air pollution, vehicles carrying construction material and machinery will be required to move along the existing access road. Soil piles will be covered at the construction site to avoid fugitive emission into the air.
- Hot mix plants will be set up away from residential areas to reduce air and noise emission near habitations
- Adequate dust suppression measures such as regular water sprinkling on unpaved haul roads, at vulnerable areas of construction sites will be undertaken to control fugitive dust during material handling and hauling activities particularly near habitations especially in dry seasons.
- Vehicles used for transporting materials will be covered and PUC certified

5.1.7 Noise and Vibration Impacts

The principal source of noise during construction phase would be due to operation of machinery such as hot mix plants and vehicles. Certain machineries that produce noise level of more than 70 dB (A) can cause disturbance to the settlements located in close proximity to the construction site.

Mitigation Measures

- Regular maintenance of construction machinery, equipment and vehicles would be carried out to prevent excessive noise. Night time construction activity would be prohibited in case settlement/habitation is located within 500 m of the construction sites.

5.1.8 Occupational H&S Impacts

Construction of the city gas distribution system may have potential impact on occupational health and safety due to construction activities such as –

- fall hazard in excavated areas
- excessive noise levels during operation of heavy machineries
- confined spaces during pipe fitting and welding activities may increase risk of accidents and further lead to fatal conditions.
- accidental pipeline rupture or leakage and consequent exposure of workers to harmful gases and an explosive gas atmosphere during excavation, construction, and repair of gas distribution systems.
- In addition, excavation by non-gas utility personnel may result in accidental ruptures and exposure of untrained workers to explosion hazards or electrocution.

Mitigation Measures

- Workers at construction site would be provided with safety helmets as per (IS 2925: 1984). Also, general PPE’s like reflective jacket, industrial shoe, ear plugs, face masks etc. would be provided to all construction workers.
- Welding activities should be undertaken by trained personnels only;
- Welding should not be done while standing in water or on surfaces holding water that could present electrical shock;
- Trainings will be imparted to employees and contractor personnel with respect to safety procedures, together with provision of appropriate tools and equipment.

- Identification and location of existing gas and other buried utility infrastructure should be conducted prior to excavation for installation or repair of gas pipelines. Visual marking of gas lines should be done as part of installation, and should be updated as necessary on an ongoing basis.
- Installation of gas lines and components using sufficient separation distance and appropriate pipe protection layering to minimize potential interference with other underground infrastructure.

5.1.9 Community H&S Impacts

Construction activities may lead to disturbance to the neighbouring communities due to potential safety concerns, traffic diversions and disruptions and influx of workers..

The presence of gas distribution systems within populated areas may expose the public to hazards from gas leaks, fire and explosions. Gas leakage may result from accidental rupture of pipelines during installation and repair or from contact during excavation unrelated to the gas system.

Mitigation Measures

- Excavated areas shall be barricaded. To facilitate easy identification of these areas during the night, reflective tapes would be placed on the boundary so that the people can be easily warned.
- Traffic diversions and disruptions shall be avoided especially in urban areas.
- Gas utility operators should inform and advise affected communities, schools, businesses / commercial facilities, and residents about the potential hazards presented by gas infrastructure.

5.1.10 Impacts due to Loss of Land and Livelihoods

The pipeline sub-projects will only involve laying of pipelines in urban areas along with demarcated RoWs and may not involve land procurement. However, in certain cases, where there might be a requirement of procuring of private land parcels. This will be undertaken on willing buyer willing seller basis and loss of livelihood will not be envisaged. The following mitigation meausres will be adopted to mimize any such impacts.

Mitigation Measures

Mitigation measures to reduce impact due to loss of land and livelihoods include:

- Non-forest government land to be utilised to the extent possible, to reduce uptake of private land especially irrigated /double cropped agricultural land.
- If private land is procured or leased for development of central receiving gas station, land owners to be duly compensated
- In case, the pipeline needs to cross an agricultural field, installation works will be undertaken during the lean agricultural season in order to minimize the damage to standing crops.
- Movement of equipment and workers to be undertaken only through dedicated pathways and village roads.
- If any crop damage has been done due to laying of underground pipelines and movement of vehicles, compensation to be paid to the crop owners.
- Construction practices will be discussed with landowner and agreement reached on all practical points at the pre-construction meeting.

5.1.11 Impacts on Cultural Resources

The construction activities may have the potential of being conducted near culturally sensitive locations including movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious,

aesthetic, or other cultural significance, etc., thereby impacting the cultural spirit of the locals at the project site. During excavation works for underground pipelines, there may be a possibility of chance finds of any archaeological artefacts, etc. Archaeological artefacts, treasure are national resources and protected under the Indian Treasure Trove Act, 1878 as amended in 1949 and the Ancient Monuments and Archaeological Sites and Remains Act 1958. Efforts should be made to prevent damage to such artefacts.

Mitigation Measures

- In case of any chance finds during construction, the procedure as laid down in the Section 4 of Indian Treasure Trove Act, 1878 as amended in 1949 and the Ancient Monuments and Archaeological Sites and Remains Act 1958 will be followed.
- Care should be taken that none of the construction or maintenance activities restrict community access or disturb the cultural settings of the project area.
- If any religious institution along the site is going to be directly impacted upon by the proposed gas pipeline project, then specific discussions during final planning can be conducted.
- Implement the Chance Finds Procedure, if any physical heritage of importance is found during the implementation of the project.

5.1.12 Impact on Traffic

Construction activities such as excavation and installation of underground pipelines crossing roads may cause disruptions and traffic congestion.

Mitigation Measures

- Proper traffic diversion and management will be ensured during construction at the intersections and construction areas. Proper warning signs will be displayed at the construction sites.
- Before the installation work of crossing is started, suitable barricades, temporary bridge/ by pass work with railing will be provided for safety of traffic. Traffic lights will be used to permit working on alternate halves and steel sheets used to allow traffic to pass over the trench. The pipeline will then be laid in the trench, beneath the steel sheets and tied into main pipeline section. The trench will be back-filled and compacted to prevent subsidence of the restored road surface.
- Prior permission will be taken from concerned agencies/ State/Central Government authorities where the pipeline is expected to cross road, rail or water channel etc.

5.1.13 Impact on Labours

Installation of underground gas pipelines, establishment of gas receiving stations and operation and maintenance of the gas distribution system will require skilled, semi skilled and unkilled workers, which may include contractual and regular employees, and local and migrant workers. Potential risks associated with labour may include:

- Low or insufficient wages to workers
- Exploitation of migrant or temporary workers by labour contractors, including unlawful wage deductions (e.g. excessive recruitment fees, transportation/housing costs)
- Excessive overtime
- Lack of freedom of association or grievance mechanisms
- Exploitation of child workers and forced labour
- Discriminatory hiring and promotion practices
- Verbal and physical (sexual) harassment
- Non-compliance with national law relating to workers' organizations and collective bargaining

Mitigation Measures

- Standard labour contract agreements requiring contractors to adhere to statutory laws and applicable international standards
- Prohibition of use of Forced Labour
- Audit of sub-contractor compliance to Inter-state migrant workers Act, 1948
- Audit of contractual worker payments by AGPCGPL and third party
- Payment of wages as per Minimum Wages Act, 1948, Equal Remuneration Act, 1976 and Payment of Wages Act, 1936
- Maintain wage registers and overtime payment registers.
- Prohibition of use of child labour and Forced Labour and adherence to Child Labour (Prohibition and Regulation) Act, 1986 and The Bonded Labour System (Abolition) Act, 1976
- AGPCGPL should include clauses on abolition of child and forced labour in their agreements with contractors
- Contractors to maintain age records and AGPCGPL to monitor them
- Establish a grievance redress mechanism for contract workers
- Promoting gender equality practices in hiring and promotion process and adherence to The Protection of Human Rights Act, 1993 and The Workmen's Compensation Act, 1923;
- Constitute an Internal Complaints Committee
- Develop a Policy against Sexual Harassment

5.2 Impact Assessment – O&M Phase

5.2.1 Impact on Floral Biodiversity

Operation and maintenance activities will not affect the vegetation significantly, except during the standard clearance of additional vegetation growth around installations and lines.

Mitigation Measures

After completion of installation works, natural regeneration of trees or other plantation will be allowed. For maintenance activities also it will be ensured that vegetation clearance is as per the standard requirements.

5.2.2 Impacts on Water Resources

Water consumption during operation phase will be mainly due to domestic and drinking requirements. Approximately, 80% of domestic water supplies for the country is met through groundwater resources; however, there are many areas which are over-exploited due to indiscriminate withdrawals. Other areas have limited groundwater recharge rates due to climatic or topographical conditions. Excessive uses of water in such areas can be a cause of concern and lead to depletion of natural resources. There are chances of complete or partial filling of existing drainage due to installation of underground pipelines that may result in loss of water resources.

Mitigation Measures

For installation of any new bore well, if required at the central gas receiving stations, permission from CGWA would be obtained. Each of these bore wells would be fitted with water meter to monitor ground water abstraction. Filling of water bodies along the route alignment will be minimised by providing retaining walls.

Following best practices would be adopted to reduce water usage for construction work:

- Use buckets etc. to wash tools instead of using running water;
- Use of auto shut off taps/ faucets
- Install water metres with main supply pipes/water tanks/bore well to assess quantity of consumed water at the central gas receiving stations;

- Reuse water for multiple hydro tests to conserve water.

5.2.3 Impact due to Emissions and Discharges

Gas distribution system may result in gas leaks during operation phase due to equipment venting and aging. Gas pipelines principally consisting of methane (CH_4), a greenhouse gas, may result in air emission due to corrosion and degradation of pipelines and related components over time. In rare cases, gas leakage may also result due to movement of heavy traffic over gas pipelines leading to pipe breakage or due to excavation activities for installation of new pipelines. Emission of methane gas into air will also contribute towards climate change.

Electrical and electronic equipment (EEE) if used at the gas receiving stations have hazardous / toxics substances in the components which may cause harm/pose risk to health and environment during handling after its expiry & full usage.

Water pollution may result due to disposal of wastewater into nearby waterbodies from the central gas receiving stations. Groundwater contamination may occur due to oil spill and/or leakage of hazardous waste such as used oil from DG sets (if any) into the ground.

Mitigation Measures

- Installation and joining techniques of gas pipelines and pipeline components such as welding should meet international standards for structural integrity and operational performance;
- Installation of visual marking for gas pipeline to be undertaken to avoid damage to existing pipes due to installation of new pipes.
- Corrosion prevention of buried ferrous metal pipelines should be undertaken using coating or cathodic protection techniques. For underground applications, the use of polyethylene pipe which is not subject to corrosion should be considered as an alternative to ferrous metal pipeline material;
- Leak and corrosion detection programs should be undertaken, including use of appropriate leak detection assessment techniques and equipment;
- Areas of gas infrastructure subject to forces from heavy load traffic or physical land shifts should also be periodically monitored for leaks and ruptures;
- Regulating stations and vaults, may contain equipment (e.g. safety valves, filters) that may emit fugitive emissions of gas. Pipelines, valves, and other component infrastructure should be regularly maintained, and ventilation and gas detection / alarm equipment installed in station buildings should be regularly checked
- Septic tanks and soak pits/modular bio-toilets should be provided at the central gas receiving stations to avoid wastewater discharge into waterbodies.
- Hazardous waste such as used oil from welding rods and machines, DG sets and other lubricant oils should be stored on concrete/ paved surface to avoid leakage resulting in ground water contamination. Spill kits to be provided at gas receiving stations.
- Electrical equipment should be handled, stored and disposed as per E-waste Management Rules, 2016

5.2.4 Occupational H&S Impacts

O&M activities pertaining to the CGD system may have potential impact on occupational health and safety due to repairing and maintenance works. During O&M of gas pipelines and utilities, there can be a potential risks of electrocution due to presence of existing underground cables (if any) and resultant injuries unless safety protocols are followed.

Accumulation of natural gas in a confined space is a potentially fatal condition. Entry by workers into confined spaces and the associated potential for accidents may vary among gas distribution project phases and facilities. Specific and unique areas for confined space entry may include excavation trenches during construction and regulating stations and vaults, both above and below ground, which may also contain equipment (e.g. safety valves, filters) that may emit fugitive emissions of gas and create a potential for oxygen deficient and explosive atmospheres.

Mitigation Measures

- Removal of sources of ignition should be undertaken prior to gas venting for maintenance and repair activities.
- Development of emergency preparedness and response and disaster management plan and training of gas utility workers with respect to emergency shutdown and pressure reduction in the pipeline system.
- Work Permits should be mandated at all confined space entries.
- Installation of signage to alert unauthorized personnel to the hazards of confined spaces.

5.2.5 Community H&S Impacts

Improper operation of natural gas fuelled appliances and equipment may expose the user and the public to gas leakage and explosion hazards. Gas distribution system operators should make information available to customers (e.g. through flyers and internet-based information) regarding the safe operation of gas fuelled appliances and equipment

Mitigation Measures

- Gas utility operators should inform and advise affected communities, schools, businesses / commercial facilities, and residents about the potential hazards presented by gas infrastructure.
- Gas distribution system operators should establish an emergency preparedness and response plan and communicate this plan to the public as necessary.
- Gas system operators should implement a telephone notification system to respond to reports of leaks or questions of general safety from the affected community and other interested parties.
- Operators should also provide a pipe location service to assist outside contractors and the general public to determine the location of gas infrastructure prior to construction works proximate to gas pipelines.

5.3 Positive Impacts

The city gas distribution project is likely to have positive impact on local community due to economic opportunities to be created from the following:

- Civil works during construction phase including site clearance, excavation, laying of pipelines and establishment of gas receiving stations
- The project can alleviate poverty by increasing self- employment options for individuals possessing vocational or technical training skills like electricians, welders, fitters etc; and
- Contracting opportunities for locals possessing tractors, dumper trucks or other vehicles which would be needed to carry away excavated soil and other material. Creation of indirect employment for local community through supply of intermediate raw materials, repair outlets, etc.

However, these are likely to be temporary and limited to construction phase.

Substantial construction personnel including skilled, semi-skilled and unskilled labourers employed by various contractors will work at site during the peak period of construction phase which may include both males and females.

Pipeline natural gas is environmental friendly and cost effective than any other energy source. The project is likely to improve standard of living by providing access to clean fuel to low income groups, economically weaker sections across the GA.

Supply of pipeline gas in residential and commercial area will also have safety and health benefits as these do not require handling, storage, refilling and changing cylinders. In addition, pipeline natural gas is lighter than air and therefore dissipate rapidly in case of leakage avoiding spontaneous flammability.

Other positive benefits of the project include pollution reduction due to replacement of fuel like petrol and diesel with cleaner option of natural gas, reduction of GHG emissions, clean air support to government, etc.

5.4 E&S Observations related to OMC

Based on visit to the OMC sites as listed in *Section 1.5.7.1* and discussions with AGPCGPL site representatives, the observations are summarised below.

- As understood from AGPCGPL, the OMC will be responsible for all civil works and related infrastructure while AGPCGPL will undertake installation only of the CNG dispensing equipment. Subsequent O&M of the CNG dispensing system will be done by AGPCGPL and the activities will not be dependent on the other liquid fuel dispensing systems of OMC.
- In terms of permit and regulatory compliances, the OMC are responsible for obtaining all applicable regulatory permissions from authorities for the construction and operation phase. AGPCGPL will only verify the approvals obstained, which is necessary for the set up of their CGN system in the OMC premises. Tracking and monitoring of the permit compliances will be the responsibility of OMC.
- The OMC are Government organisations under the Ministry of Petroleum and Natural Gas and are the principal employer for all workers in the facility. Labour compliances and management will remain the responsibility of OMC. Under MSA signed with AGPCGPL, the OMCs have agreed to comply with all statutory norms. However, AGPCGPL can verify such compliance aspects on periodic basis, in line with the MSA agreement, to ensure smooth functioning of the outlet and their CNG dispensing equipment.
- Based on MSA agreement conditions with OMCs, AGPCGPL will ensure that facilities provided to staff and workers engaged by them at the OMC outlet for handling CNG are in accordance with the labour laws, such as working hours, leave, overtime payment, access to grievance mechanism, etc. This will be part of the periodic E&S audits undertaken by AGPCGPL at all network components.
- It is also understood that the OMC have internal grievance redressal systems for their employees and staff, while AGPCGPL will also implement such systems. AGPCGPL to ensure that their staff at OMC have access to such systems and adequate information is shared with them regarding GRM.
- Reportedly, the OMCs will provide drinking water, sanitation faiclities and resting areas for all the staff during O&M. Toilets are connected to septic tanks while packaged drinking water is purchased from vendors. The condition of these facilities should be checked periodically by AGPCGPL and any concerns should be raised with the OMC.
- The OMC (BPCL, IOCL) being reputed public sector organisations have EHS policies and procedures which are implemented at construction and operational sites. The policies and procedures are largely safety focused considering the nature of operations, and are based on PESO requirements. AGPCGPL to ensure that relevant provisions of this ESMPF and AGP's E&S procedures are also adequately implemented at the OMC sites.

- In terms of emergency response procedures, the guidelines of PESO are followed by the OMC. Fire hydrant systems are not required as per PESO, however, OMC provide adequate number of fire extinguishers at the site. First aid kits are provided by OMC. AGPCGPL during their periodic audits should verify the adequate implementation of such provisions and raise any corrective actions to be taken by the OMC.
- The use of PPE by workers at one of the construction sites of OMC was observed to be inadequate, however AGPCGPL to ensure that during oerpations, their staff, responsible for LCNG/CNG Fueling operations, are provided with adequate PPE gloves, reflective vests, hard hats, safety glasses etc.
- Reportedly, AGPCGPL will provide trainings to staff handling CNG, however in case they are required to participate in the mock drills (related to fire, emergency and other safety aspects) conducted by OMC during operations, AGPCGPL to ensure the same and maintain records.

The filled EHS checklists are provided in **Appendix J.**

5.5 Generic Environment and Social Management Plan

Based on the activities defined above, potential environment and social impacts have been assessed and respective management procedures have been developed as part of this ESMPF. The procedures define the frequency of monitoring and review process along with the roles and responsibilities.

A site-specific E&S impact assessment, identified during ESDD, for sub-projects will be undertaken by AGPCGPL, in order to inform the site-specific ESMPs, which further needs to be reviewed by AIIB before the phased construction commencement.

AGPCGPL will timely inform AIIB the subprojects' ESIA/ESMPs preparation plan and assign a GA ES focal for subprojects' preparation and implementation, once AGPCGPL will become aware of the implementation schedule in each GA.

Table 5.1 Environment and Social Management Plan

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
	PRE CONSTRUCTION PHASE						
1.	Site selection	Impact on Ecology	Identification of site for gas pipeline passing through or in close proximity to any forest should be avoided to the extent possible	Site Inspection and Record Maintenance	AGPCGPL's Project Team	Once during the reconnaissance survey during site selection phase	-
			Alternative route analysis should be undertaken to avoid wildlife areas to the extent possible.	Site Inspection and Record Maintenance	AGPCGPL's Project Team		-
			For any gas pipelines passing through forest areas (NP, WLS, PF, RF, etc.) clearance under the Forest Conservation Act 1980 would be mandatory. Construction can be only started after necessary clearance is obtained.	Site Inspection and Record Maintenance	AGPCGPL's Project Team		Permits and Licenses obtained
			Tree felling (if required for installation of underground pipelines and establishment of gas receiving stations) permission should be obtained from the respective State	Site Inspection and Record Maintenance	AGPCGPL's Project Team		Permits and Licenses obtained

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			Forest Department under the state specific legislations				
			Prior permission will be taken from concerned agencies/ State/Central Government authorities where the pipeline is expected to cross road, rail or water channel.	Site Inspection	AGPCGPL's Project Team		Permits and Licenses obtained
		Impact on Cultural Heritage	If any religious institution along the site is going to be directly impacted upon by the proposed gas pipeline project, then specific discussions during final planning should be conducted	Site Inspection	AGPCGPL's Project Team		Minutes of Meeting
			Good construction planning and communication between supervisory staff and teams will be adopted to minimise the adverse impact during construction	Record Maintenance	AGPCGPL's Project Team		Minutes of Meeting
2.	Land lease/procurement of land for establishment of	Loss of Land and Livelihood	Non-forest government land to be utilised to the extent possible, to reduce uptake of private land especially	Site Inspection and record maintenance	AGPCGPL's Corporate Team and Project Team	Once prior to land lease/ procurement (as applicable)	Land Documents

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
	CRGS and installation of underground gas pipeline		irrigated /double cropped agricultural land				
			If private land is procured or leased for development of central receiving gas station, land owners to be duly compensated	Record Maintenance and discussion with land owners/ aggregators	AGPCGPL's Project Team		Compensation documents
			Construction practices will be discussed with contractors and landowner and agreement reached on all practical points at the pre-construction meeting	Discussion with contractors and landowners	AGPCGPL's Project Team		Minutes of meeting
3.	Hiring of Workers	Lack of contracts or use of contracts not understood by workers, or use of contracts with terms that are different from actual working conditions	Standard labour contract agreements requiring contractors to adhere to statutory laws and applicable international standards	Discussion with Contractors	AGPCGPL's Project Team	During signing of Agreements with contractors	Worker agreements
		Discriminatory hiring and promotion practices	Promote gender equality practices in hiring and promotion process and adherence to The Protection of Human Rights Act, 1993	Discussion with Contractors	AGPCGPL's Project Team		Joining Letters

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			and The Workmen's Compensation Act, 1923				
	CONSTRUCTION PHASE						
1.	Health and safety precautions w.r.t COVID -19	Spread of COVID-19 in labour and site staff	Entry shall be denied for anyone who shows flu like symptoms or has temperature above 100F.Thermal scanning shall be done during exit also. Thermal screening of all workforce Physical check for signs of cough, cold and fever If signs noted, send the worker at dispensary and ask for his treatment, don't allow to work Records of screening to be maintained Keep workforce contact details daily	Site inspection Thermal screening of all workforce	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Daily	Healthy workers and staff, Attendance records
2.	Site Clearance and Excavation	Soil erosion	Stripping of topsoil shall not be conducted earlier than required; (vegetation cover will be maintained for as long as possible) in order to prevent	Site inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Once prior to site clearance and site preparation	EHS report and Site images

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			the erosion (wind and water) of soil.				
			Excess excavated material should be removed by the contractor before completion of all construction works	Site inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		EHS report and Site images
			The disturbed areas and soil stock piles should be kept moist to the extent possible to avoid wind erosion of soil	Site inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		EHS report and Site images
		Air emission	Adequate dust suppression measures such as regular water sprinkling on unpaved haul roads, at vulnerable areas of construction sites will be undertaken to control fugitive dust during material handling and hauling activities particularly near habitations especially in dry seasons.	Site inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Daily during excavation or movement of heavy load construction trucks and heavy equipment or during disposal of construction wastes	EHS reports and Site Images
3.	Transportation of construction	Soil compaction	Existing roads to access the site should be used to the extent possible and movement	Site Inspection	AGPCGPL's site HSE In-Charge and	During movement of	EHS report and Site Images

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
	material through vehicles		of vehicles through agricultural fields should be discouraged.		Contractor's EHS Manager	construction trucks	
	Improper waste disposal during construction work	Soil Contamination	Construction contractor should ensure that no unauthorized dumping of waste is undertaken at the construction site.	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Disposal frequency as per quantities stipulated under Construction And Demolition Waste Management Rules 2016	Site Images
			Municipal domestic waste generated at site to be segregated onsite and disposed through municipality or authorised vendor	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Daily disposal of wet / putrescible waste. Periodic didspoal of recyclable dry trash.	Waste agreements signed with third party
			Ensure routinely disposal of hazardous waste such as used oil from welding rods, DG sets through approved vendors and records are properly documented;	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Disposal frequency as per Hazardous Waste Rules, 2016	Waste agreements signed with third party and records of waste generated

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
4.	Water requirement for civil work, domestic purpose and drinking purpose	Depletion of water resources in areas with water scarcity	Use of groundwater in dry areas for construction works will be avoided to the extent possible	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Daily during construction works	Site Images
			Water tankers (if required) for construction work and domestic purpose will be procured through authorised vendor	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge	Monthly checking of water procurement records	Agreement with vendor
			Water consumption logs will be maintained at all times, and conservation measures such as rain water harvesting will be constructed at gas receiving stations..	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Water logs and images of rain water harvesting
			Use of auto shut off taps in labour accommodation (if any);	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Site Images
			Install water metres with main supply pipes/water tanks/bore well to assess quantity of consumed water at the construction site	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Water Consumption Records

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			Use of admixture in the concrete production to reduce water consumption.	Site Inspection and Record maintenance	Contractor's EHS Manager	During construction works	Material data sheet and Site Images
			Permission from CGWA to be obtained if groundwater is utilised for construction work	Record maintenance	AGPCGPL's site HSE In-Charge	Once prior to abstraction of GW	CGWA permission
			Filling of water bodies/drainage along the route alignment will be minimised by providing retaining walls.	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Site Images and monthly progress reports
5.	Poor management of waste	Water and land contamination	Septic tanks and soak pits/modular bio-toilets should be provided at all labour camps (if any) and construction sites. At the completion of the construction activities, site would be cleared of all the leftover materials and debris to avoid any runoff into water bodies	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Site Images and EHS reports
6.	Working with oil lubricants	Oil spillage causing, water, soil and land contamination	Construction site should be equipped with adequate spill kits and construction workers should be trained on spill kit	Site Inspection	AGPCGPL's site HSE In-Charge and	Monthly	EHS Report and training records

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			usage to avoid soil and water contamination		Contractor's EHS Manager		
7.	Vehicular Movement on unpaved road or agricultural fields	Fugitive emission causing air pollution	Vehicles carrying construction material and machinery would move along the existing access road.	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	During construction phase	Site Photos and EHS Report
			Transporting vehicles will move at a speed of 10-15 km/hr to avoid dust emission	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Regular monitoring	EHS Report
			Vehicles used for transporting materials will be covered and PUC certified	Site Inspection and Record Maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		PUC Certification and Site Images
8.	Operation of Hot Mix plant at construction site (if any is used during construction phase for any of the sub-projects)	Air and noise emission	Hot mix plants will be set up away from residential areas and forest areas to reduce air and noise emission near habitations	Site Inspection	AGPCGPL's site HSE In-Charge	Once during installation of hot mix plant	Site images

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
9.	Operation of machinery, equipment and vehicles at construction site	Noise Emission	Regular maintenance of construction machinery, equipment and vehicles would be carried out to prevent excessive noise.	Site Inspection and Record maintenance	AGPCGPL's site HSE In-Charge	Weekly	Vehicle and equipment maintenance records
			Night time construction activity would be prohibited in case settlement/habitation is located within 500 m of the construction sites	Site Inspection	AGPCGPL's site HSE In-Charge	Weekly	Site Image, Community complaints and worker attendance register
10.	Route Surveys and construction work such as excavation work and installation of gas pipeline	Illness, injury, accidents and fatality of workers	Workers at construction site would be provided with safety helmets as per (IS 2925: 1984). Also, general PPE's like reflective jacket, industrial shoe, ear plugs, face masks etc. would be provided to all construction workers.	Site Inspection and Record Maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Weekly during construction works	PPE records and accident statistics
			Trainings will be imparted to employees and contractor personnel with respect to safety procedures, together with provision of appropriate tools and equipment	Site Inspection and Record Maintenance	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		Training records and statistics on accidents

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
		Gas leakage and/or electrocution due to presence of existing underground gas lines and electric cables	Identification and location of existing gas and other buried utility infrastructure should be conducted prior to excavation for installation of gas pipelines. Visual marking of gas lines should be done as part of installation, and should be updated as necessary on an ongoing basis.	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Accident statistics
			Installation of gas lines and components using sufficient separation distance and appropriate pipe protection layering to minimize potential interference with other underground infrastructure	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Accident statistics and Site images
			Development of emergency preparedness and response and disaster management plan	Record Maintenance	AGPCGPL's site HSE In-Charge		Accident Statistics
		Injury to local community	Excavated areas shall be barricaded. To facilitate easy identification of these areas during the night, reflective tapes would be placed on the boundary so that the people	Site Investigation	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Accident Statistics

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			can be easily warned. Traffic diversions and disruptions shall be avoided especially in urban areas.				
			Emergency response plan should be communicated to the public as necessary	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Monthly	Accident Statistics and Site Images
			As part of the plan, gas system operators should implement a telephone notification system to respond to reports of leaks or questions of general safety from the affected community and other interested parties	Site Inspection and record maintenance	AGPCGPL's site HSE In-Charge		-
			Operators should also provide a pipe location service to assist outside contractors and the general public to determine the location of gas infrastructure prior to construction works proximate to gas pipelines.	Site Inspection and record maintenance	AGPCGPL's site HSE In-Charge		-

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
		Injury to wildlife if work carried out in close proximity to forest area	Efforts should be made to prevent intrusion of gas pipelines into wildlife habitats through optimization of route alignment. Alternative route analysis should be undertaken to avoid wildlife areas to the extent possible.	Site Inspection	AGPCGPL's site HSE In-Charge	Prior to route selection	-
		Accidents of wildlife	In case of gas pipelines, feeders, receiving stations are being installed near forest areas, necessary boundary and fencing should be provided to prevent encroachment of wildlife into the premises and reduce risk of accidents	Site Inspection	AGPCGPL's site HSE In-Charge	Daily reporting	Accident Statistics of wildlife
			To prevent and control impacts to aquatic habitats, distribution pipeline rights-of-way should be sited to avoid critical aquatic habitat such as watercourses, wetlands, and riparian areas, as well as fish spawning habitat, and critical fish over-wintering habitat, whenever possible	Site Inspection	AGPCGPL's site HSE In-Charge		Accident Statistics of wildlife

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			During construction, temporary woven wire mesh guards-will be put around the excavated areas to prevent small wild animal from falling. No harm would be done to animals trapped in the excavated area. The nearest Forest Department officials will be informed to ensure safe release of the animal	Site Inspection	AGPCGPL's site HSE In-Charge	-	Accident Statistics and Site images
11.	Entry to confined space	Worker Injury/fatality	Work Permits should be mandated at all confined space entries.	Record maintenance	AGPCGPL's site HSE In-Charge	Monthly	Accident Statistics and Site images
			Installation of signage to alert unauthorized personnel to the hazards of confined spaces.	Site Inspection	AGPCGPL's site HSE In-Charge		Accident Statistics and Site images
12.	Work carried out in close proximity to cultural heritage	Impact on Cultural Heritage	In case of any chance finds during construction, the procedure as laid down in the Section 4 of Indian Treasure Trove Act, 1878 as amended in 1949 should be followed	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		-
			Care should be taken that none of the construction or maintenance activities restrict	Site Inspection	AGPCGPL's site HSE In-Charge and		-

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			community access or disturb the cultural settings of the project area.		Contractor's EHS Manager		
			Implement the Chance Finds Procedure, if any physical heritage of importance is found during the implementation of the project.	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		-
13.	Construction work at road intersections	Traffic diversions and frequent accidents	Proper traffic diversion and management will be ensured during construction at the intersections and construction areas. Proper warning signs will be displayed at the construction sites	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		Accident Statistics
			Before the installation work of crossing is started, suitable barricades, temporary bridge/ by pass work with railing will be provided for safety of traffic. Traffic lights will be used to permit working on alternate halves and steel sheets used to allow traffic to	Site Inspection	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager		Accident statistics

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			pass over the trench. The pipeline will then be laid in the trench, beneath the steel sheets and tied into main pipeline section. The trench will be back-filled and compacted to prevent subsidence of the restored road surface.				
14.	Workers working at the construction site	Low or insufficient wages to workers including migrant workers	Payment of wages as per Minimum Wages Act, 1948, Equal Remuneration Act, 1976 and Payment of Wages Act, 1936	Site Inspection. Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Wage Register
			Maintain wage registers and overtime payment registers	Site Inspection. Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Wage Register

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			Audit of contractual worker payments by AGPCGPL and third party	Site Inspection. Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Audit Reports and implementation of action items
		Exploitation of migrant or temporary workers by labour contractors, including unlawful wage deductions (e.g. excessive recruitment fees, transportation/housing costs)	Audit of sub-contractor compliance to Inter-state migrant workers Act, 1948	Site Inspection. Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Audit Reports and implementation of action items
		Excessive overtime	Maintain wage registers and overtime payment registers	Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Wage register and overtime payment register
		Lack of freedom of association or	Establish a grievance redress mechanism for contract workers	Record Maintenance and	AGPCGPL's site team		Worker Grievance and

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
		grievance mechanisms		Discussion with Contractors			Complaint Register
			Constitute an Internal Complaints Committee	Record Maintenance and Discussion with Contractors	AGPCGPL's site team		-
		Exploitation of child workers and forced workers	Prohibition of use of child labour and Forced Labour and adherence to Child Labour (Prohibition and Regulation) Act, 1986 and The Bonded Labour System (Abolition) Act, 1976 AGPCGPL should include clauses on abolition of child and forced labour in their agreements with contractors	Site Inspection, Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Statistics on categories of Workers working at site
			Contractors to maintain age records and AGPCGPL to monitor them	Site Inspection, Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Statistics on categories of Workers working at site and age records

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
		Verbal and physical (sexual) harassment	Develop a Policy against Sexual Harassment	Site Inspection, Record Maintenance and Discussion with Contractors	AGPCGPL's site team		Worker grievance and complaint register
	OPERATION PHASE						
15.	Corrosion and degradation of gas pipelines	Soil and water contamination due to leakage of methane. Methane gas is a greenhouse gas which may contribute towards climate change	Periodic hydrostatic testing and inspection to identify leak and corrosion detection should be undertaken, including use of appropriate leak detection assessment techniques and equipment;	Site Inspection	AGPCGPL's HSE-In-Charge	15 days	Soil and water quality test
			Corrosion prevention of buried ferrous metal pipelines should be undertaken using coating or cathodic protection techniques. For underground applications, the use of polyethylene pipe which is not subject to corrosion should be considered as an alternative to ferrous metal pipeline material;	Site Inspection	AGPCGPL's HSE-In-Charge		Gas pipelines images

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
		Illness/fatality of nearby community due to gas leakage	Gas utility operators should inform and advise affected communities, schools, businesses / commercial facilities, and residents about the potential hazards presented by gas infrastructure	Site Inspection	AGPCGPL's HSE-In-Charge	Immediate reporting	Illness or Fatality statistics of nearby community
			Gas system operators should implement a telephone notification system to respond to reports of leaks or questions of general safety from the affected community and other interested parties.	Record maintenance of complaint calls received from community	AGPCGPL's HSE-In-Charge		Illness or Fatality statistics of nearby community
16.	Movement of vehicles over gas pipelines	Rupturing of pipelines	Areas of gas infrastructure subject to forces from heavy load traffic or physical land shifts should also be periodically monitored for leaks and ruptures	Site Inspection	AGPCGPL's HSE-In-Charge		Monitoring reports and implementation of action plans
17.	Use of regulators and vaults in CGRS	Fugitive emission from vaults and filters	Regulating stations and vaults, may contain equipment (e.g. safety valves, filters) that may emit fugitive emissions of gas. Pipelines, valves, and other component	Site Inspection	AGPCGPL's HSE-In-Charge	Monthly	Inspection reports and implementation of action items

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			infrastructure should be regularly maintained, and ventilation and gas detection / alarm equipment installed in station buildings or vaults should be regularly checked				
18.	Storage of lubricant oil and hazardous waste such as used oil from DG sets in the CGRS	Oil Spillage causing soil and ground water contamination	Hazardous waste such as used oil from DG sets and other lubricant oils should be stored on concrete/ paved surface to avoid leakage resulting in ground water contamination. Spill kits to be provided at gas receiving stations.	Site Inspection	AGPCGPL's HSE-In-Charge		Soil and water quality test
19.	Water Requirement for domestic and drinking purpose at CGRS	Scarcity of water in dry areas due to use of groundwater	Water consumption logs will be maintained at all times, and conservation measures such as rain water harvesting will be implemented at gas receiving stations. The harvested water would either be used for ground water recharge/reuse depending on the feasibility	Site Inspection	AGPCGPL's HSE-In-Charge	monthly	Site images and water logs

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			Installation of water metres with main supply pipes/ bore well to assess quantity of consumed water at the central gas receiving stations	Site Inspection and Record Maintenance	AGPCGPL's HSE-In-Charge		Water bills
			Permission from CGWA to be obtained before abstracting groundwater from existing bore wells or installation of new bore wells	Record Maintenance	AGPCGPL's HSE-In-Charge		CGWA Permission
20.	Patrolling and repairing of gas pipelines	Leakage from other buried utility infrastructure during repairing work	Identification and location of existing gas and other buried utility infrastructure should be conducted prior to excavation for repair of gas pipelines. Visual marking of gas lines should be done as part of installation, and should be updated as necessary on an ongoing basis.	Site Inspection	AGPCGPL's HSE-In-Charge and Contractor's EHS Manager	Weekly	Site Images
		Suffocation to workers due to gas leakage during repairing work	Removal of sources of ignition shall be undertaken prior to gas venting for maintenance and repair activities.	Site Inspection	AGPCGPL's HSE-In-Charge and Contractor's EHS Manager		Site Image and accident statistics

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			Trainings will be imparted to employees and contractor personnel with respect to safety procedures, together with provision of appropriate tools and equipment and workers will be wear PPEs such as mask, eye protection etc. while undertaking maintenance work	Site Inspection	AGPCGPL's HSE-In-Charge and Contractor's EHS Manager		Training records
			Development of emergency preparedness and response and disaster management plan and training of gas utility workers with respect to emergency shutdown and pressure reduction in the pipeline system.	Site Inspection	AGPCGPL's HSE-In-Charge and Contractor's EHS Manager		Implementation of emergency preparedness and response plan at site
21.	Entry to Confined Space	Suffocation and accident of workers during repairing work	Work Permits should be mandated at all confined space entries.	Site Inspection and record maintenance	AGPCGPL's HSE-In-Charge and Contractor's EHS Manager	Monthly	Accident statistics
			Installation of signage to alert unauthorized personnel to the hazards of confined spaces.	Site Inspection and record maintenance	AGPCGPL's HSE-In-Charge and		Accident statistics and Site Images

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
					Contractor's EHS Manager		
22.	Operation of CNG dispensing systems at OMC outlets	Potential labour compliance issues Occupational safety concerns with regards to the AG&P refueling facilities e.g. dispensers and compressors	Verify E&S management system and compliance aspects on periodic basis to ensure smooth functioning of the outlet and their CNG dispensing equipment Periodic E&S audits undertaken to ensure adequate facilities are provided to staff and workers Ensure that their staff at OMC have access to such systems and adequate information is shared with them regarding GRM. Condition of worker/ staff facilities should be checked periodically by AGPCGPL and any concerns should be raised with the OMC AGPCGPL to ensure that relevant provisions of this ESMPF and AGP's E&S procedures are also	Site Inspection / periodic audit of OMC outlet and record maintenance	AGPCGPL's HSE-In-Charge and OMC site represernative	Monthly – Quarterly (depending upon the nature of the issue)	Audit report and parameters covered in the EHS Audit Checklist (Appendix D2)

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			adequately implemented at the OMC sites Verify adequate implementation of emergency response and fire safety provisions at OMC outlets and raise any corrective actions to be taken by the OMC AGPCGPL to ensure that during oerpations, their staff, engaged in CNG dispensing activities, are provided with adequate PPE gloves, reflective vests, hard hats, safety glasses etc. AG&P has developed a PPE Matrix as per the HSE Manual and the same would be implemented AGPCGPL to maintain records of all EHS trainings imparted to OMC CNG handling staff.				
23.	Health and safety precautions w.r.t COVID 19 – Community Health and Safety	Spread of COVID 19 in community from any infected site staff	Entry shall be denied for anyone who shows flu like symptoms or has temperature above 100F.Thermal scanning shall be done during exit also.	Site inspection Thermal screening of all workforce	AGPCGPL's site HSE In-Charge and Contractor's EHS Manager	Daily	Healthy workers and staff, Attendance records

S.No.	Activity	Potential Negative Impact	Mitigation Measures	Monitoring Activities and surveillance	Responsibility for Monitoring	Frequency of Monitoring	Performance Indicators
			Thermal screening of all workforce Physical check for signs of cough, cold and fever If signs noted, send the worker at dispensary and ask for his treatment, don't allow to work Records of screening to be maintained Keep workforce contact details daily				

6. ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK

6.1 Introduction

Since the exact nature and magnitude of the Project's impacts, to be implemented in the nine geographical areas, are not known at this stage, this Environmental and Social Management Framework is prepared to provide a broad outline of the range of impacts that can occur while implementing the sub-projects. The broad list of impacts have been outlined in the previous chapter. The Framework approach encompasses all possibilities identified during the assessment and a generic mitigation plan to address such risks and impacts.

It has been assessed that the environmental and social impacts will be localized, reversible and temporary in nature, especially during construction stage. However, a comprehensive Environmental and Social Management Plan (ESMP) is required to be implemented in order to manage the construction related impacts. The key environmental impacts will be top soil loss, temporary disturbance to natural drainage channels, loss of vegetation, habitat alteration, dust emissions and fugitive emissions from transportation and methane emissions due to leakage. The project will also have health and safety impacts related to occupational exposure to gas leaks and explosions, community health and safety due to exposure to gas leaks and explosions. The social impacts will be largely positive in terms of boosting the local economy and providing for cheaper and cleaner fuel options to domestic and transport users. As understood, there is no involvement of land acquisition for any of the sub-projects that could lead to physical or economic displacement of the population, and that could require resettlement and restoration of livelihoods. However, a generic Resettlement Planning Framework has been provided that should guide AGPCGPL to undertake land procurement involving physical or economic displacement. It is also understood that none of the districts where the sub-projects are planned are located in Scheduled V areas or areas with significant tribal population.

The ESMPF is based on the outputs of the environmental and social assessment carried out by ERM during preparation. The assessment included review of secondary information from authenticated public sources, review of documents and information provided by AGPCGPL, consultations carried out with the corporate teams of AG&P, and analysis to determine the key social and environmental issues. All the information, analyses and feedback have been suitably incorporated in the ESMPF.

Based on AIIB ESF and IFC PS requirements, the ESMPF prescribes the following:

a) Site selection and RoW screening criteria to be applied at the planning stage to (i) flag sensitive receptors, and (ii) exclude from financing activities with significant environment and social risks and impacts (to trigger CAT A). A Site Selection and Screening Checklist has been also provided;
b) ESIA process to be conducted for each sub-project (i.e. geographical areas);
c) Development of specific ESMP (with the generic ESMP as a guidance) for each sub-project and preparation of RP/ Abbreviated RP, if required;
d) Auditing and Monitoring Protocols
e) Measures for establishment of Grievance Redress Mechanism (GRM)

6.2 Site Screening and RoW Selection

PNGRB has issued grant of authorization to AGPCGPL for nine geographical areas. The authorization outlines the details of network component requirements, extent of geographical area, districts and charge areas covered, and other technical specifications. At this stage, AGPCGPL undertakes detailed feasibility and technical studies to determine the market demand within each charge area, initiates identification and selection of contractors and suppliers, identifies land parcels for purchase or lease, initiates regulatory approval processes. Internal design team undertakes the preliminary designing of components as per PNGRB Technical Standards. Discussions are initiated with oil marketing companies for installation of a compressed natural gas dispensing unit at their location.

As part of the project planning stage, AGPCGPL undertakes identification and selection of right of way (RoW) for pipelines and other network components. For MDPE pipelines, AGPCGPL will lay them within existing RoW of roads. The payment for using the RoW for pipeline will be made to the concerned government department such as Public Works Department, Zilla Parishad, and National Highway Authorities of India etc. and statutory approvals will be obtained from these departments. For other components such as the CRGS, storage tanks and CNG stations, land will be purchased from private parties. Once the locations to set up gas distribution infrastructure are identified, the overall land footprint and right of way for the GA will be determined.

The land identification process will take into consideration the following selection and avoidance criteria:

- Presence of encroachers and squatters;
- Maintain considerable distance from large lakes, rivers and river crossings;
- Avoid CRZ areas;
- Avoid areas of religious, cultural or archaeological significance;
- Avoid sites that will require the relocation of indigenous peoples or scheduled tribes (STs) from lands and natural resources subject to traditional ownership or under customary use or significantly impact their cultural heritage;
- Avoid sites falling within eco-sensitive zones of wildlife sanctuaries, national parks and other protected areas and have the potential to disturb critical habitat;
- Avoid locations that involve diversion of forestland.

Appendix D1 provides the Checklist on site screening to be implemented by AGPCGPL. **Appendix D2** presents the EHS Audit Checklist to be used by AGPCGPL to screen potential EHS and social issues associated with fuel stations/ outlets of OMCs where CNG dispensing component of the network would be installed. The same can be used during E&S audits of OMC outlets during operation phase.

Sub-Projects having potential severe negative impacts in terms of resettlement, biodiversity, indigenous people, resources, cultural heritage, occupational health and safety, that can trigger Category A as per AIIB and IFC project categorisation, will be excluded from financing activities. The triggers are as explained below:

- Large scale land acquisition/access restriction involving physical and/or economic displacement, involving more than 200 project affected persons;
- Foreseeable requirement of applying forced eviction of people to access/use land for a project. In case forced eviction has already happened, only those sub-projects will be financed where rehabilitation of affected persons is possible;
- Located inside protected wildlife areas / areas protection-worthy in accordance with international conventions and standards, resulting in conversion of critical habitat or disturbance / loss of endangered species;
- Relocation of / damage to cultural heritage of significance (not only archaeological monuments but also INTACH-listed[25] and tangible/intangible heritage as defined in international standards); and
- Physical displacement of indigenous peoples from their ancestral lands / or significant access or use restrictions of such land resulting in loss of livelihood or traditional customs.

6.3 Environmental Clearance

CGD projects do not fall under the purview of the EIA Notification, 2006 (as amended) and do not require Environmental Clearance from the Ministry of Environment, Forests and Climate Change

[25] Indian National Trust for Art and Cultural Heritage

(MoEFCC). Therefore, environmental and social impact assessment study is not required to be conducted for the Project as part of the regulatory framework. However, following clearances would be mandatorily required prior to initiation of any construction activity:

- Consent to Establish from State Pollution Control Board for batching plants, DG sets etc. and inititiating construction activities onsite
- Forest Clearance – in case the network components passes through designated protected or reserve forest areas
- Permissions for tree cutting as applicable
- Statutory Approvals/ Clearances for laying of MDPE Pipelines: Approval from industrial areas, from NHAI, from PWD, from urban local bodies, and any other government departments / agencies as applicable.

Subsequently, Consent to Operate and Hazardous waste authorisation from State Pollution Control Board for the operation and maintenance work of gas receiving stations, etc.

6.4 Environment and Social Due Diligence

Subsequent to final site selection, AGPCGPL will initiate third party environment and social due diligence (ESDD) for each geographical area. The Terms of Reference (ToR) for the ESDD will be prepared based on the preliminary E&S risks identified for the GA by AGPCGPL. **Appendix E** includes a sample ESDD ToR that should be customized based on specific requirement for each sub-project.

AGPCGPL will commission third party consultants/ agencies to undertake the ESDD. The selection criteria for such third party agencies will be based on: their credentials and capabilities in advising International Financing Institutions (IFI) on E&S risks following the relevant reference framework followed in this ESMPF.

The consultant will submit a Key Issues Report highlighting the red flag issues, high risk and medium risk issues associated with the GA and will categorise the project based on AIIB and IFC categorisation requirements i.e. Category A, B or C. The ESDD report will cover material E&S risks associated with the project activities along with recommended Environment and Social Action Plan (ESAP) to address a risk/gap that has been identified. The ESAP will prioritise all identified issues and findings based on uniform significance criteria as provided below:

Table 6.1 Prioritizing E&S Issues

Priority of Issue	Definition
Red Flag Issues	Material issue with potential severe consequences and limited opportunities of mitigating, leading to immediate operational shut down, reputational damage/ possibilities of significant reputational risks arising in the future, or; impacts to sensitive environmental and social receptors including fence line community and customers as key stakeholders or; lead to criminal proceedings.
High Risk Issues	Significant non-conformance to Applicable Reference Framework, including regulatory requirements, which may result in operational disruption; a material cost; regulatory notice; and/or include stakeholder opposition that may lead to reputational risks.
Medium Risk Issues	Non-conformance with the Applicable Reference Framework, which may result in non-material rectification cost or fine, and is unlikely to result in the short-term, in business discontinuity in current regulatory enforcement context.
Low Risk Issues	Minor regulatory or safeguard non-compliance, which may result in limited cost or only require management time to address the issue.

The ESAP will clearly indicate timeline within which the recommended actions will require to be implemented. A tentative budgetary estimate to comply with the ESAP action items shall also be provided in the ESAP. Format of the ESAP is included in **Appendix E.** The implementation of ESAP items will be subsequently monitored by AGPCGPL.

6.5 E&S Impact Assessment Study

As per Indian regulations, City Gas Distribution Projects are not required to carry out mandatory environment and social impact assessment (ESIA) studies. However, based on the outcome of the ESDD, if supplementary studies, reports and action plans are required based on issues identified, AGPCGPL will ensure implementation of the same.

Further, the project categorisation determined during the ESDD process will inform the need for conducting additional E&S studies. **As per AIIB ESF and IFC PS, Category A projects will be excluded from financing.** However, Category B projects will be required to undertake E&S Impact Assessment (ESIA) based on risks identified, and management plans. The scope of the ESIA (and similar assessments) will be context and location specific, based on the suggestions of the ESDD report.

AGPCGPL will ensure completion of such supplementary specialised studies and forward looking commitments through external consultant/ agency. The ESIA and supplementary studies will result in the development of an Environmental and Social Management Plan (ESMP) that meets the Applicable Reference Framework requirements setting forth: (a) measures to mitigate adverse impacts; (b) monitoring requirements for ensuring implementation of mitigation measures; (c) organizational and financial resources for mitigation measures; and (d) an implementation schedule for these activities.

E&S assessment would be done based on ESDD and if identification in it of any critical E&S Issues

6.5.1 Guidelines for conducting ESIA

This guidance outlines the considerations while conducting ESIA of each sub-project:

- Impacts and mitigation measures related to site clearance, planning and development
- Impacts and mitigation measures related to transport, vehicles and equipment; such as air, water and soil pollution
- Impacts and mitigation measures related to construction works and related wastes, both solid and liquid
- Direct and indirect Project-related impacts on biodiversity including forests, wetlands and other types of ecologically sensitive habitats, if any
- Impacts and mitigation measures related to labour camps
- Impacts to cultural heritage such as archaeological sites, historical sites, temples and other sacred sites
- Impacts on and women and other vulnerable groups, including indigenous peoples
- Impacts due to interactions between the communities and workers
- Energy conservation measures
- Measures related to changes in climate
- Other mandatory requirements to be followed
- Other clearances and approvals

The **Appendix E** includes Standard Terms of Reference for conducting typical ESIA study.

The various stages of ESIA study are as described below:

a) **Screening:** Determines whether the proposed project, requires an ESIA and if it does, then the level of assessment required.

b) **Scoping:** Identifies the key issues and impacts that should be further investigated. This stage also defines the boundary and time limit of the study.

c) **Impact analysis:** Identifies and predicts the specific environmental and social impacts of the proposed project and evaluates the significance.

d) **Mitigation:** Recommends the actions to reduce and avoid the potential adverse environmental consequences of development activities.

e) **Reporting:** The result of ESIA is presented in the form of a report to the decision-making body and other interested parties.

f) **Review of ESIA:** Examines the adequacy and effectiveness of the ESIA report and provides the information necessary for decision-making.

g) **Decision-making:** Decides whether the project is rejected, approved or needs further change.

h) **Post Implementation Monitoring:** This stage comes into play once the project is commissioned. It checks to ensure that the impacts of the project do not exceed the legal standards and implementation of the mitigation measures are in the manner as described in the ESIA report.

6.5.1.1 Scoping for Assessment Activities

Scoping is a process of detailing the terms of reference of the ESIA. The scoping will be based on the outcome of the ESDD to be conducted by AGPCGPL. Later, the ESIA consultant in consultation with AGPCGPL will scope the coverage of the ESIA. “Scoping” refers to the process of determining the detailed and comprehensive Terms of Reference (TOR) addressing all relevant environmental concerns for the preparation of an ESIA Report.

6.5.1.2 Establishment of Baseline Conditions

After the areas, where the project could have significant impacts are identified, the baseline status of these areas should be monitored and then the likely changes in these on account of the construction and operation activities of the proposed project should be predicted. Baseline data describes the existing environmental status of the identified study area. The site-specific primary data should be monitored for the identified parameters and supplemented by secondary data, if available. The baseline parameters to be monitored are air (changes in ambient air quality), noise (changes in noise levels), water (water quality), land (land alienation and loss of livelihoods, etc.), biological (tree cutting, contamination, water quality, etc.) and socio-economic (demographic, economic, health, etc.).

6.5.1.3 Analysis of Alternatives

Alternative analysis is required to be conducted for every sub-project, through identification of all possible alternatives and environmental attributes and thereafter doing a comparative analysis. All kinds of alternatives in terms of both project location and process technologies, as well as no project options, should be considered. Alternatives with the least environmental footprint or impacts and with optimum economic benefits to the community should be selected. The ESIA report should present different environmental and social scenarios without the project, with the project and with project alternatives.

The following types or categories of alternatives need to be identified for each sub-project, but not limited to the below:

- *Technological and Process alternatives:* The purpose of considering such alternatives is to include the option of achieving the same goal by using a different method or process. All possible alternatives regarding technology being used for each network component, should be analysed, and the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society in the long term as well as in the short term should be considered.

- *Location alternatives:* Location alternatives should be considered for all network components, for e.g. for CRGS. A distinction should also be drawn between alternative locations that are geographically quite separate, and alternative locations or sites that are in close proximity. The alternatives with least environmental and social footprint should be given a higher preference.
- *Site layout / routing / design alternatives:* Site layout alternatives require consideration of different spatial configurations of an activity on a particular site, e.g. layout of the CRGS or routing of the pipeline. This may include particular components of a proposed development or may include the entire activity. Consideration of different designs for aesthetic purposes or different construction materials in an attempt to optimise local benefits and sustainability would constitute design alternatives.

6.5.1.4 E&S Impact Assessment and Evaluation

Impact prediction is a way of mapping the environmental and social consequences of the significant aspects of the project and its alternatives. The following impacts should be assessed for each sub-project, at various stages i.e. pre-construction, construction and operation:

Aspect	Assessment points
Ambient Air	▪ Monitoring the existing status of ambient air quality within the project area of impact i.e. up to 10 km from the boundary of the proposed project site/ network component ▪ Monitoring the site-specific meteorological data, viz. wind speed and direction, humidity, ambient temperature ▪ Estimation of quantities of air emissions including fugitive emissions from the proposed project ▪ Identification, quantification and evaluation of other potential emissions (including those of vehicular traffic) within the impact zone and estimation of cumulative of all the emissions/impacts ▪ Prediction of changes in the ambient air quality due to point, line and areas source emissions through appropriate air quality models ▪ Evaluation of the adequacy of the proposed pollution control devices to meet gaseous emissions and ambient air quality standards ▪ Delineation of mitigation measures at source, pathways and receptor.
Ambient Noise	▪ Monitoring the baseline noise levels within the impact zone, and prediction of future noise levels resulting from the proposed project activities including increase in vehicular movement ▪ Identification of impacts due to any anticipated rise in noise levels on the surrounding environment ▪ Recommendations on mitigation measures for noise pollution
Water quality and resources	▪ Study of existing ground and surface water resources with respect to quantity and quality within the impact zone of the proposed project. ▪ Prediction of impacts on local water resources due to the proposed water use ▪ Quantification and characterisation of waste water resulting from project activities

	▪ Evaluation of the proposed pollution prevention and wastewater treatment system and suggestions on modification, if required ▪ Assessment of the feasibility of water recycling and reuse to the extent possible.
Ecology/ biodiversity	▪ Assessment of flora and fauna present within the project impact zone ▪ Assessment of potential adverse impacts on terrestrial and aquatic flora and fauna (as applicable) due to emissions and discharges from the project, change in land use and other project related activities causing disturbance ▪ Delineation of mitigation measures to prevent and / or reduce the impacts.
Land use	▪ Studies on soil characteristics, existing land use and topography, landscape and drainage patterns within the impact zone ▪ Prediction of impacts of project on land use, landscape, topography, drainage and hydrology ▪ Estimation and characterisation of solid wastes and delineation of management options for minimisation of waste and environmentally compatible disposal
Socio-economic aspects	▪ Collection of demographic and related socio-economic data ▪ Projection of anticipated changes in the socio-economic conditions of the project area due to the project and related activities and delineation of measures to minimise adverse impacts ▪ Assessment of impact on significant historical, cultural and archaeological sites/places in the area ▪ Assessment of economic benefits arising out of the project ▪ Assessment of resettlement and rehabilitation impacts as applicable, with special emphasis on scheduled areas, if any. ▪ Identification of risks to and impacts on vulnerable groups and measures for their mitigation.

While assessing the socio-economic impacts due to the sub-project, the following tasks need to be specifically undertaken:

- Consultations and discussion with all stakeholders relevant for the project to consider their views and concerns on social impacts and risks;
- Identification of all affected families, assets and Common Property Resources
- Census survey of all affected families in all sub-project component areas/villages; recording their assets (land, structures and facilities), incomes, and social category (Scheduled Castes/Scheduled Tribes);
- Baseline socio-economic survey of affected families suffering major impacts in terms of physical or economic displacement, and needing R&R assistance. However, it is to be noted that the nature of sub-projects do not envisage R&R related impacts.
- Record and analyze people's perception of the project, its adverse impacts, and minimum acceptable mitigation measures that will enable them to cope with displacement or loss of livelihoods, if any.

- Analyzing social issues and impacts on affected populations and indigenous population, if any, and design management plans to mitigate adverse impacts and enhance positive impacts.
- Analysis of existing Grievance Redress Mechanism (GRM) for communities and based on the findings, recommended an appropriate GRM for the project.

The significance of potential impacts will thereafter be evaluated to understand how they affect the baseline parameters. The evaluation of the significance of potential environmental and social impacts will take into account:

- The likelihood of occurrence of the impacts in terms of the context and duration;
- The magnitude and intensity of the resulting change from the baseline condition;
- Evaluation will also consider whether the impacts are temporary/permanent, reversible/irreversible; and
- The susceptibility of the receptor and whether the receptor holds any special significance (e.g., culturally important, internationally protected, etc.).

6.5.1.5 Quantitative Risk Assessment

HAZOP, HAZID and QRA (Quantitative and Qualitative) needs to be undertaken for sub-projects comprising domestic and industrial supply networks under each geographical area. As part of the QRA of all components, all traffic and road safety risks to communities, during transportation of both CNG mobile cascades and LNG, as well as loading /unloading activities are to be identified, and control measures to be defined accordingly. The QRA studies will also define the extent of impact, possible zone of fatality and identify definitive mitigation measures. Based on outcome of the QRA study, any modifications suggested will be made to the network component design.

6.5.1.6 Stakeholder Consultation and Disclosure

The ESIA process will identify various stakeholder groups at different levels and map key impacts, issues, concerns and expectations of each stakeholder group.

The ESIA report will disclosed to the project community, likely to be directly or indirectly affected due to proposed project activities. Any one likely to be affected by the proposed project will have access to the executive summary and full report, which can be uploaded on the website of AGPCGPL. The ESIA report will also be shared with AIIB to comply with disclosure requirements. The executive summaries of E&S documents in local language will also need to be disclosed on AG&P's website.

For each sub-project, public consultations will be held with the affected persons and general community to apprise them of the project, potential impacts and proposed mitigation measures, while understanding their concerns and expectations from the project. The stakeholders will include:

- Land sellers
- local residents
- industry associations
- local associations and NGOs active in the area

6.5.1.7 Environment and Social Management Plan

A generic ESMP has been provided in **Section 5.2** of this ESMPF, with mitigation measures for the possible impacts caused by the sub-projects. These measures are listed by project phase, where each of the mitigation measures needs to be considered, and also indicates the implementation responsibility. The generic ESMP can be used by all sub-projects for planning purposes, however, it bidding should be noted that for each sub-project, the specific environmental and social impacts as

assessed after finalizing the sub-project design and locations, and the respective mitigation/ management measures need to be added to the generic ESMP.

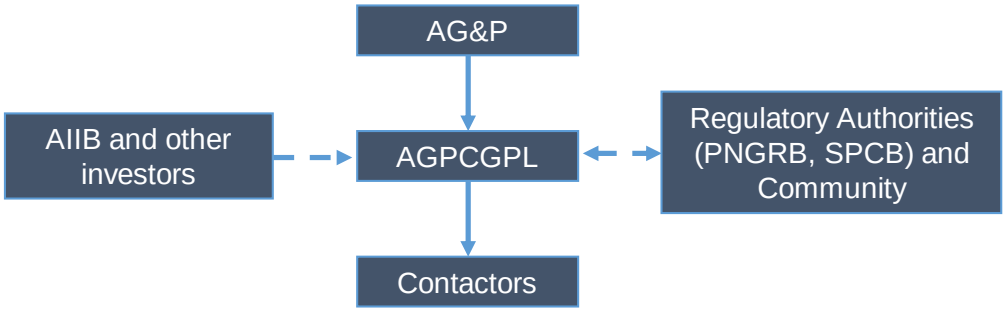
Based on the social impacts assessed for the sub-project, a Resettlement Plan, if required, should be developed. The plans should outline support strategy during various stages of the implementation period and incorporate elements as per guidelines developed as part of the Resettlement Planning Framework (RPF). The plans should be disclosed along with the ESIA reports and suggestions should be documented.

The provisions of the generic ESMP need to be followed by all contractors, in addition to the specific measures identified during design, implementation and operation and maintenance. The generic ESMP shall be attached along with bid documents during contractor selection, and the contractors will be required to indicate costs for implementing ESMP.

The Contractor shall implement all mitigation/ management measures for which responsibility is assigned as stipulated in the ESMP. Penalty clauses for not complying with ESMP requirements shall be incorporated in the bid documents.

6.5.1.8 Development of Institutional Arrangement Framework

The ESIA should consider the roles and responsibilities of various external agencies and departments within AGPCGPL who would be responsible for implementation of the ESMP. Broadly, the institutional framework should be as given below:



The basic responsibilities have been outlined below:

- ***AGPCGPL***: As the project proponent, AGPCGPL will be responsible for project planning, taking decisions with respect to location, technology etc. for various network components, entering into contract/ agreements with contractors. The project proponent will also be responsible for preparation of Detailed Project Report and ESIA, and submission of the project details to lenders and concerned stakeholders for disclosure. The project proponent is also responsible for applying for and obtaining necessary permits and licences for project development and operations.
- ***ESIA Consultant***: A qualified and experienced external agency to be hired for conducting the ESIA for sub-projects. The consultant should guide AGPCGPL through initial screening of the sub-project and establish the scope of ESIA study. The consultant will be responsible for generating all environment and social related data in line with the ESIA scope and lender requirements. The consultant will also be responsible for supporting the ESIA findings with external stakeholders and lenders.
- ***Contractors***: AGPCGPL will enter into contractual arrangements with contractors for various construction and installation activities. The contractors will be responsible for implementing relevant provisions of the ESMP as part of the agreed activities. The ESMP will be included in the contract agreement and compliance will be monitored by AGPCGPL.

6.5.2 ESDD and ESIA Implementation Schedule

It is understood that the construction of all GA sub-components will not be undertaken altogether. Once the land has been identified for particular sub-components under a GA and technical details are finalised, contract packages will be awarded for those sub-components.

An ESDD, as explained in *Section 6.4 of ESMF,* will be undertaken for each major package or sub-components of a GA. A strategic ESIA will however be conducted for each GA (i.e. sub-project), and sub-project specific ESMP will be developed. Any specific E&S issues or sensitivies associated with a particular package or sub-component will be highlighted in the ESDD and specific ESIA will be conducted for that sub-component or package to update the GA specific ESMP.

The typical timelines for each activity under an ESIA is provided in below table:

Table 6.2 Typical Schedule for ESIA

Key Activities	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W 11	W 12	W13
Scoping of Activities													
Site survey and Establishment of Baseline													
Stakeholder Consultations													
Assessment of Impacts													
Risk assessment studies													
E&S Management Plans													
Reporting													

AGPCGPL will timely inform AIIB the subprojects' ESIA/ESMPs preparation plan and assign a GA ES focal for subprojects' preparation and implementation, once AGPCGPL will become aware of the implementation schedule in each GA

6.6 Monitoring and Evaluation

Detailed requirements on supervision, monitoring and evaluation of the project's environment and social impacts have been provided in this ESMPF.

6.6.1 Legal Register and Compliance Monitoring

Each GA team, specifically the HSE In-charge, will be required to ensure that permits and authorizations under all applicable laws are in place, current and valid. The GA level HSE In-Charge will regularly review the regulatory environmental and social licenses applicable to the GA network components. Based on the required licenses, the HSE In-charge will maintain a document on monthly basis and update the license files. A legal register will be prepared by the HSE In-charge that will include details of the existing permits and licenses, their validity and next renewal date, conditions stipulated under the particular permit, and how the GA is complying with the condition. Any non-compliances will be immediately identified and corrective action will be taken accordingly. A monthly report will be submitted to the corporate HSE team on the status of compliances.

6.6.2 Environment and Social Monitoring

Environment and social monitoring of the sub-projects will ensure compliance with environmental and social regulations and safeguards and Environmental and Social Management Plans provisions. Below are indicators for which E&S monitoring will need to be undertaken by AGPCGPL:

Table 6.3 Environment and Social Monitoring Plan for Construction Phase

Parameters	Monitoring indicators	Sampling Frequency	Details
Environment			
Ambient Air Quality	■ PM10 and PM 2.5 ■ Oxides of Nitrogen (NOx) ■ Sulphur dioxide (SO2) ■ Carbon monoxide (CO)	Quarterly (near habitations)	AAQ monitoring will be carried out as per the prevailing meteorology of the Project area.
Ambient noise	24 hourly Equivalent Noise Level (Leq)	Monthly (near habitations)	The noise monitoring will be done on continuous basis for 24 hours once during the monitoring period by installing an integrated sound level meter (provided with data logger for continuous recording of noise levels) at relevant locations selected in and around the proposed project site
Soil quality	Particle size distribution, texture, % moisture, alkalinity, acidity, specific gravity, bulk density, porosity, infiltration capacity, pH, electrical conductivity, nitrogen, phosphorus, potassium, calcium, magnesium, chloride, sulphate, carbonate, boron, sodium, cation exchange capacity, heavy metals (As, Cd, Hg, Ni, Mn, Cr+6, Pb, Fe, Cu, Zn), Sodium Absorption Ratio (SAR), permeability, water holding capacity	Quarterly	Soil samples will be collected from project site and from surrounding areas within study area
Water Quality (surface and ground water)	pH, temperature, turbidity, electrical conductivity, total hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity, total nitrogen, total phosphorus, DO, BOD, COD, phenol, heavy metals (As, Cd, Hg, Ni, Mn, Cr+6, Pb, Fe, Cu, Zn), total coliform and faecal coliform.	Quarterly	Surface and ground water samples will be collected from the project area and surrounding areas.
Social			
Compensation	Payment of compensation and entitlements Displacements if any; category of households displaced, resettled and compensated	Quarterly	--
Grievances	Number of grievances registered and redressed	Quarterly	--

Parameters	Monitoring indicators	Sampling Frequency	Details
Litigations	Number of litigations	Quarterly	--
Trainings	No. of training programs conducted No. of personnel trained	Quarterly	--
Safeguards related non-compliances	Adherence to ESMPF provisions/ guidelines during sub-project preparation and implementation	Quarterly	--
Regulatory non-compliances	Adherence to contract conditions and standards Compliance to regulatory requirements	Quarterly	--

Table 6.4 Environment and Social Monitoring Plan for Operation Phase

Parameters	Monitoring indicators	Sampling Frequency	Details
Environment			
Soil quality	Particle size distribution, texture, % moisture, alkalinity, acidity, specific gravity, bulk density, porosity, infiltration capacity, pH, electrical conductivity, nitrogen, phosphorus, potassium, calcium, magnesium, chloride, sulphate, carbonate, boron, sodium, cation exchange capacity, heavy metals (As, Cd, Hg, Ni, Mn, Cr+6, Pb, Fe, Cu, Zn), Sodium Absorption Ratio (SAR), permeability, water holding capacity	Half yearly	Soil samples will be collected from project site and from surrounding areas within study area
Water Quality (surface and ground water)	pH, temperature, turbidity, electrical conductivity, total hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity, total nitrogen, total phosphorus, DO, BOD, COD, phenol, heavy metals (As, Cd, Hg, Ni, Mn, Cr+6, Pb, Fe, Cu, Zn), total coliform and faecal coliform.	Half yearly	Surface and ground water samples will be collected from the project area and surrounding areas.
Social			
Grievances	Number of grievances registered and redressed	Half yearly	--
Trainings	No. of training programs conducted No. of personnel trained	Half yearly	--
Safeguards related non-compliances	Adherence to ESMPF provisions/ guidelines during	Half yearly	--

Parameters	Monitoring indicators	Sampling Frequency	Details
	sub-project preparation and implementation		
Regulatory non-compliances	Adherence to contract conditions and standards Compliance to regulatory requirements	Half yearly	--

6.6.3 Environmental and Social Supervision

AGPCGPL HSE team representatives will be responsible for supervision of sub-projects at regular intervals to check if all safeguard requirements are be complied with and to identify any issues that need to be addressed. The HSE team will supervise and monitor the ESMPF implementation at the corporate level as well. Internal and external audits will be undertaken to ensure any implementation gaps of the E&S safeguards at corporate and sub-project level.

AGPCGPL corporate HSE Head will submit annual progress reports to AIIB on E&S safeguards implementation. The annual report will summarizes the reports received from all sub-projects and information from E&S audits conducted by AGPCGPL corporate HSE team. The sub-projects will submit half-yearly reports to the corporate HSE Head to report back on E&S performance indicators and other implementation aspects of the ESMP. Further details are provided below in Section 6.8.

6.6.4 External Audits

AGPCGPL will engage a competent third party consultant to undertake external audits during construction (on half-yearly basis) and operational activities (on annual basis, for first two years of operations). The scope of the audit will entail independent verification of environmental, health & safety and social aspects of the sub-project in line with the requirements of the applicable reference framework. The audit will also include review of the implementation of ESMPF requirements and ESMP. Based on the findings of the audit, a Corrective Action Plan (CAP) shall be developed incorporating timelines and recommendations to address gaps / issues identified during the audit, which will be tracked subsequently for progress.

6.7 Reporting

Each GA team will be required to report on E&S performance of respective sub-projects to the corporate team on periodic basis through customized reports. The reports will enable the corporate HSE Head to understand the effectiveness of the ESMPF and management plans/ procedures, status of compliances with legal and/or contractual obligations and regulatory requirements by the GA. The GA level HSE In-charge will fully comply with the reporting requirements in terms of timely report submission with acceptable level of details. Quarterly reports will be submitted during operation phase while monthly report will be submitted during construction phase.

In addition to the above performance reports, an internal reporting schedule will also be adopted by the GA to ensure that E&S management procedures are effectively implemented at the asset level in day to day operations. Reporting will be done in the form of accident/ incident records register, grievance records, water consumption records, employee / staff and worker details, trainings records and other E&S compliance at required intervals. All the internal reports will be submitted to the corporate HSE Head along with quarterly/ monthly E&S Performance report.

6.7.1 Reporting to AIIB

AIIB requires AGPCGPL to implement the Project in compliance with the ESMPF and RPF, and to furnish periodic monitoring reports to AIIB on the E&S performance of the various subprojects. Specific requirements of AIIB are as follows:

- Establish and maintain appropriate procedures to monitor progress on implementation of the E&S measures and procedures;
- Verify the compliance with these specific measures and their progress toward intended outcomes;
- Document and disclose the monitoring results and identify necessary corrective actions in the periodic monitoring reports on bi-annual basis;
- Follow up on these actions to ensure progress toward the intended outcomes;
- Retain suitably qualified and experienced experts to verify monitoring information on a routine basis;
- Furnish AIIB with periodic monitoring reports on environmental and social measures as agreed.

The HSE Head will prepare an E&S Performance Report, on bi-annual basis, covering all sub-projects under AGPCGPL, and will include the following indicative information in line with the E&S Montioring Plan provided above. The report will be submitted to AIIB on bi-annual basis.

- Overall environmental and social performance of the company;
- E&S compliance of each sub-project vis-a-vis ESAP (as applicable);
- Data on HSE Statistics, Grievances, Incidents, Fatal Accidents and Unplanned Events;
- Details on stakeholder engagement, community development and welfare activities undertaken;
- Data on any litigations, show-cause notices and/or regulatory action on any of the sub-projects; and
- E&S capacity building undertaken.

The template / outline of the E&S monitoring report is provided in **Appendix F**.

7. RESETTLEMENT PLANNING FRAMEWORK

The need for resettlement and rehabilitation arises when the land which is being acquired or alienated or transferred results in involuntary displacement and/or loss of livelihood, sources of income and access to common properties/resources on which people depend for economic, social and cultural needs irrespective of their legal status. The squatters and encroachers are not entitled to legal compensation for land that they have occupied. This framework will provide guidelines for compensation of such persons with the aim of improving their standard of living.

7.1 Applicability

The sub-projects of AGPCGPL shall comprise of city gas distribution network, which are understood to have limited land acquisition and related impacts, as pipelines will be set up within the available utility Right of Way (RoW) or corridors within urban areas. In case, the Project anticipates any physical or economic resettlement, there is flexibility of rerouting pipeline and other components and avoiding such issues. Wherever the Project requires private land, it is purchased on willing buyer willing seller agreement, and there is no requirement of government led land acquisition for the Project. Therefore, there is no scope of large-scale resettlement and displacement and negligible possibility of physical and economic resettlement related issues.

Further, as discussed in ***Section 3.1.2***, the additional land is required for storage tanks and CNG stations. The extent of land required for such infrastructure is estimated to be minimal and will range from 0.5 - 1 acres. Thus, the total land required for the Project for all the GAs, is estimated to be not more than 123.5 acres (or 50 hectares). This land will be purchased by AGPCGPL on willing buyer willing seller basis as per their land procurement process as discussed in ***Section 2.7.3.***

This RPF has been developed to provide detailed guidelines to address impacts due the land procurement and establishes the compensation principles for land sellers, and any non-titlemholers with informal rights on the land (as per requirement of AIIB ESP/ IFC PS). As a fundamental rule, under this RPF, during implementation of the Project, the regulatory framework (GoI, GoState or AIIB ESP/ IFC PS 5) that is most beneficial to the land sellers will prevail. An overview of national regulation and AIIB ESP/ IFC PS 5 is provided in next section.

7.2 Gap Analysis of National Regulations and AIIB'S ESS 2 & IFC PS 5

AIIB's ESS2, IFC PS 5 and RFCTLARR, Act 2013, have provisions of preparation of RP, undertaking consultations, improving the standard of living, engaging and including persons without legal title or legal rights, and has in place monitoring mechanism. However, there are some gaps identified within each of the aforementioned requirements. Some of them are because the LARR Act, 2013 exempts few infrastructure projects from undertaking mandatory SIA procedures. Due to this, there is no mechanism, to carry out an early screening of potential risks and impacts, and issues during land acquisition and resettlement process. Therefore, the preparation of a Resettlement Plan, abbreviated RP or RPF is not a mandatory requirement for the infrastructure project, as per the LARR act, 2013. This provision is well defined in AIIB ESS 2. Similarly, provisions such as undertaking public consultations/hearing at SIA and RP stages are mandatory in the LARR Act, 2013. However, there is limited applicability of such provisions for infrastructure projects. Further, there are execution issues in the LARR Act, 2013. The Act is implemented differently in different states. Currently, due to the lack of clear guidelines issued to land acquisition agencies, practical difficulties are encountered in compensating persons without legal titles to the land. A detailed gap analysis of the LARR Act and AIIB ESS 2 / IFC PS 5 is provided in **Appendix C**.

7.3 Broad Principles

The broad principles of the framework that can guide the land procurement process of AGPCGPL are enlisted below:

- All negative impacts including physical and economic displacement shall be avoided or minimized wherever feasible by exploring all feasible alternative project designs/routes;
- Where negative impacts are unavoidable, project affected persons will be duly compensated at replacement value and livelihoods will be restored;
- Support will be extended to non-titleholders for the loss of livelihood and informal rights and replacement value for assets (i.e. the market value of assets plus transaction costs) other than land;
- All information related to compensation shall be disclosed to all relevant stakeholders;
- Before taking physical possession of the land, compensation process shall be completed;
- Appropriate grievance redress mechanism shall be established at sub-project level to ensure speedy resolution of any land related disputes;
- Effort should be made towards the enhancement of the positive impact of the projects

7.4 Land Procurement Procedure

In addition to the AGPCGPL's existing land procurement process as discussed ***in Section 2.7.3,*** the following procedures will be considered and implemented by AGPCGPL during land procurement:

- Physical survey and boundary demarcation of the identified land parcels will be undertaken by AGPCGPL. The survey should identify land parcels which have minimal human dependence on them in terms of homesteads, agriculture and grazing, encroachment, Scheduled tribes presence and determination of impacts on structures and other fixed assets.
- Non-titleholders who are dependent on the land parcel for livelihood generation (e.g. encroachers, squatters, agriculture labour, share coppers) and who will be directly impacted due to the land procurement will be clearly identified by AGPCGPL.
- Consultation with the affected party (land owner, non-titleholder) has to be carried out and documented and all negotiations have to be carried out in a transparent manner;
- A list of land sellers/ persons who have lost or are likely to lose their employment or livelihood or who have been alienated wholly and substantially from their main sources of occupation or vocation consequent to the purchase of land and / or structure for the project, should be recorded as per the following format:

Table 7.1 Format for Land Sellers/ Affected Persons Details

S.N.	Name of land owner/ non titleholder	Caste (General / SC/ ST / Other)	Vulnerable (Women headed/ BPL/ differently abled/ Other)	Land area to be purchased	Total land holding	Current use of land	Livelihood dependence on land (Y/N)	Type of dependence (provide details of economic activity)	Other income sources	Number of dependents

- The finalization of land price/negotiation shall be through AGPs Land Task Force. The compensation/rate for land shall not be less than the market value as mentioned in Section 26 of LARR Act;
- Eligibility and valuation of compensation for losses should have following details:

- The methodology to be used in valuing losses to determine their replacement cost (that is the amount of cash compensation sufficient to replace lost assets and cover transaction costs taxes, registration fees,) and a description of the proposed types and levels of compensation for land, natural resources and other assets under local law and such supplementary measures as are necessary to achieve replacement cost for them;
- Consultation strategy and disclosure plan.

- AGPCGPL will ensure that the cost of any structures and other fixed assets on the land, calculated at replacement costs and not less than the market value, is also part of the negotiation process and is adequately compensated.
- As per good practices and based on good faith negotiation and informed meaningful consultation, non-title holders comprising of residential squatters, commercial squatters, encroachers etc. will be identified and paid one time assistance for relocation by AGPCGPL.
- As part of the external GRM, a notice board will be placed near the identified land (after getting consent from landowner and registration of Agreement to sell and ensuring legality of the same) which clearly mentions the contact details for raising grievances by the impacted person/community. Further, details on GRM are provided in ***Section 10.***

7.5 Entitlement Matrix

The following table provide references that can be considered while determining compensation / entitlement for loss of land, livelihood, structure etc.

Table 7.2 Entitlements for Various Cases of Losses (as applicable to sub-project context)

Application	Definition of Entitled Unit	Reference as per IFC PS, AIIB and regulatory provisions	Remarks
1. Loss of Private Agricultural, Home-stead & Commercial Land			
For storage tanks and CNG stations	Titleholder family	Compensation at a replacement value of the land when the loss of land does not undermine livelihood, and not below market values.	Along with IFC guidelines and AIIB on land procurement and related sensitivities, the Project shall consider state-specific guidelines/rules/acts and has to comply with the requirements under the same.
2. Loss of Private Structures (Residential/Commercial)			
Loss of structure (in case of storage tanks/ stations substantial land procurement for any part of project and required to be compensated separetly)	Title Holder/Owner	a) Cash compensation for the structure will be determined at Market value b) In case of partially affected structures and the remaining structure remain viable, additional 10 percent to restore the structure will be given to the title holder/owner. In case of partially affected structures and remaining structure remain unviable additional 25 percent of compensation amount as severance allowance will be given to the title holder/owner; and c) For Non-residential structure: A lump sum amount for the structure will be derived at full replacement cost considering the nature of construction material and built-up area with reference to rates of the Public Works Department.	--
3. Loss of Trees and Crops (if required)			
Standing Trees and Crops	Owners and beneficiaries (Registered/unregistered tenants, contract cultivators leaseholders and sharecropper)	The compensation for trees and crops has to be made at full replacement cost.	--
5. Loss of Livelihood (Encroacher/Squatters)			
Small Vendors/mobile temporary commercial	Owner of shops	Improve, or at least restore, the livelihoods of all displaced persons through: (i) prompt replacement of assets with access to assets of equal or higher	

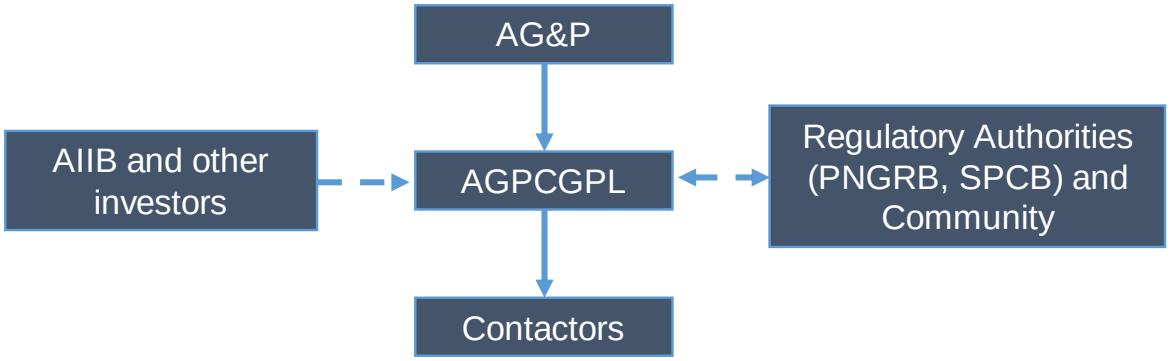
Application	Definition of Entitled Unit	Reference as per IFC PS, AIIB and regulatory provisions	Remarks
structures alongside the road/Local or Informal business/ Commercial Residential cum commercial including transient communities (Coming in the RoW for the pipeline)		value; (ii) prompt compensation at full replacement cost for assets that cannot be restored; and (iii) additional revenues and services through benefit sharing scheme where possible. As per good practices and based on good faith negotiation and informed meaningful consultation, non-title holders will be identified and paid one time assistance for relocation by AGPCGPL.	

8. INSTITUTIONAL ARRANGEMENT AND CAPACITY BUILDING

8.1 Institutional Arrangement at AGPCGPL

The institutional framework for the implementaion of the Project is as indicated below:

Figure 8.1 Institutional Arrangement



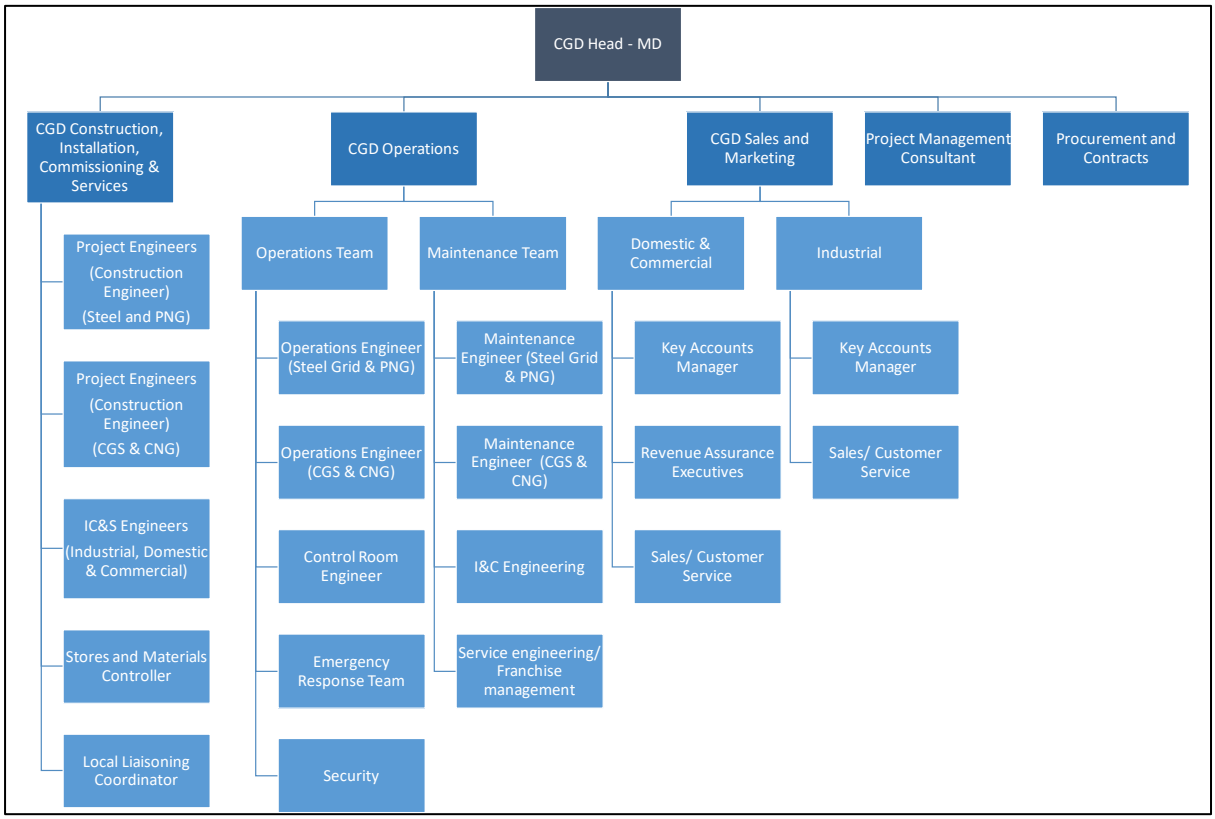
The list of key stakeholders for the Project and their key roles in project implementation are discussed below:

- **PNGRB**: The regulatory board for city gas distribution projects and licensing authority. The technical standards as stipulated by PNGRB is key to project designing, planning and implementation.
- **AIIB**: As an investor to the project, AIIB requirements with respect to E&S safeguards will have to be complied with. The sub-project performance assessment will be undertaken by the AIIB at regular basis.
- **AGPCGPL**: As project proponent, AGPCGPL will be responsible for planning, designing and installation of the network components, and ensuring that E&S safeguards are implemented at all the sub-projects on consistent basis.
- **Contractors**: They will be contractually bound by AGPCGPL to ensure implementation of E&S safeguards and ESMP requirements at the project level.
- **Community**: The public/ general community, including directly affected persons, will be part of the project planning and overall reivew process and their suggestions and feedback will be critical towards developing a robust E&S management system at the sub-project level.

8.2 Organization Structure at AGPCGPL

The proposed organisation structure of AGPCGPL is as follows:

Figure 8.2 AGPCGPL Corporate Organogram



The Project's organisation structure would segregate functional (support) and operational activities. The functional organisation would include project management, procurement, technical, marketing and commercial, operations and maintenance (O&M), finance, IT and human resources, under the guidance of senior management. Every GA will be led by a GA Head.

Two types of operative-level organisations (PNG control room + CNG control room) will be set up in each GA to take care of all O&M functions concerning the PNG network. These operative-level organisations will look after various aspects of the network implementation in accordance with the finalized contracts. O&M personnel will be involved in construction activities during the implementation phase. This will give them first-hand knowledge of the equipment and the network which in turn will enable them to carry out O&M activities effectively.

8.3 E&S Organization Structure

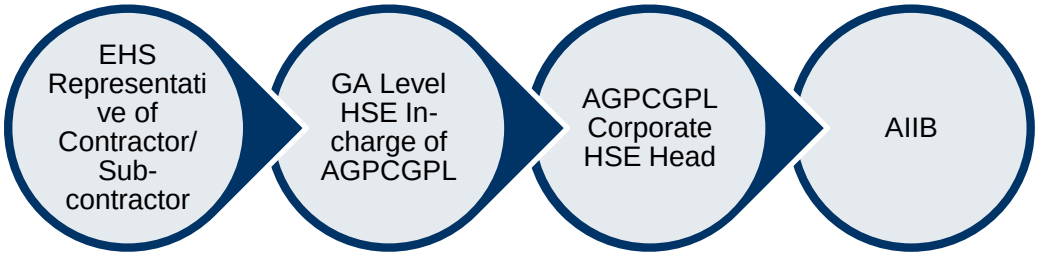
At corporate level, the Operations HSE Head will be responsible for overall HSE performance of AGPCGPL. He will be supported by HSE In-charges at each GA, who will administratively report to the respective GA Head, however functional reporting will be to the HSE Head. An HSE Committee will be formed at corporate and GA level.

During construction, contractors will be required to have an overall Work In-charge supported by Site Supervisor and HSE Supervisor.

8.4 Roles and Responsibilities

This section defines the role of key personnel indicated in the above section and their responsibilities towards implementation of E&S management procedures. These roles will need to be updated and modified per requirement basis.

Broadly, the reporting line to be followed for all sub-projects in terms of EHS and social aspects and parameters as defined in Section 6.6 and Section 6.7, is as depicted below:



8.4.1 Corporate HSE Head

The corporate HSE Head shall have the following responsibilities:

- Ensure compliance with respect to implementation of EHSS measures prescribed in the ESMPF;
- Ensure compliance with respect to documentation and record keeping;
- Ensure implementation of corrective action measures by GA;
- Direct the other E&S team members to conduct inspections of the GA's construction and operational activities (as applicable), and to identify non-compliances with respect to procedural and regulatory requirements outlined in this ESMPF;
- Establish an inspection schedule for GA in line with monitoring requirements as prescribed in this ESMPF. The inspections / audits conducted during the project shall assess the performance of the GA and network components, as well as contractors and subcontractors, as applicable:
- Prepare and submit consolidated reports on the company's E&S performance on periodic basis to Investors.

8.4.2 GA Level HSE In-Charge

Overall implementation and reporting with respect to E&S aspects at the GA shall be carried out by HSE In-Charge, and shall have the following responsibilities:

- Overall in-charge for implementation and communication of the AGPCGPL's E&S policies, commitments, and meeting E&S performance objectives at GA level;
- Ensuring compliance of existing and future operations of the GA with respect to the applicable national laws, rules and regulations, permits pertaining to Environmental, Safety, Health and Social as well as international best practices, including the applicable reference framework across the asset operations and maintenance;
- Develop GA/asset specific E&S management plans based on requirements of the ESMPF and applicable legislations;
- Liaising with the O&M staff, and EHS personnel of contractors at the GA/asset level in order to improve overall E&S performance of the asset;
- Conduct physical inspection of the workplace checklists, identify unspecified hazards, and record all conformities and non-conformities in the inspection report;

- Communicate effectively with employees regarding E&S policy, inspections, accidents and incidents, ensuring that accidents and dangerous occurrences are reviewed and responded;
- Resolve any accidents/incidents and make known and discuss all findings / recommendations with the GA Head;
- Ensure adequate resources for effective implementation, operation and continuous management of ESMPF within the GA;
- Prepare and submit reports on the asset's E&S performance on periodic basis to corporate HSE Head, as per schedule and frequency.

8.4.3 EHS Representative of Contractor/ Sub-contractor

During construction activities, the contractor/ sub-contractor engaged shall deploy at least one representative (EHS officer or safety representative) for overall management and reporting with respect to EHSS aspects. The person deputed shall be competent to predict, identify and control EHSS hazards. Specific E&S responsibilities of the EHS Representative will include:

- To ensure that legal aspects concerning environmental, occupational health and safety (OHS), and labour laws are in compliance with regulatory requirements.
- To ensure that all contractually binding requirements with respect to environmental, H&S aspects, and labour laws etc. as part of contractual agreement / work order are complied with.
- To instruct workers and ensure relevant information and compliance requirements are communicated.
- To assess whether any subcontractor engaged by them effectively complies with all applicable E&S management programme and requirements.
- To extend AGPCGPL's E&S Policy commitments to their subcontractors and provide induction training to representatives / site supervisors of the subcontractor for further dissemination to contract workers.
- To ensure the ongoing project works carried out by the subcontractors are continuously monitored and necessary records are maintained.
- To conduct walk-through inspections at construction areas to identify non-compliances with respect to procedural and regulatory requirements and implement corrective actions as necessary.
- To submit the periodic progress reports and E&S monitoring reports to the HSE In-charge of ACPCGPL.

8.5 Capacity Building and Trainings Programs

Currently, AGPCGPL focuses largely on technical competency trainings, including standard health & safety trainings for their site level O&M staff. The capacity building and training programs are designed based on the technical safety standard requirements of PNGRB and other national safety regulations. AGPCGPL has developed an annual training calendar that primarily covers occupational health and safety trainings such as road safety, elctrcal safety, emergency handling, excavation safety, lifting, rigging etc. However, trainings around stakeholder engagement mechanisms, handling and redressal of external grievances at site and corporate level, awareness trainings on E&S policy commitments of the organisation, reporting, monitoring and disclosure requirements are currently not covered through existing trainings programs.

In order to ensure effective implementation of the ESMPF, AGPCGPL will commit adequate funds and resources to train the HSE team members through external experts/ third party consultants on at least annual basis. Such trainings will be focussed on enhancing the competency of the E&S staff at

corporate and GA level to implement the ESMPF by acquiring new skill sets and update their knowledge on recent changes in E&S regulation and industry best practices.

Apart from that, it will be ensured that job specific E(HS) & S training needs are identified for GA level personnel (including the contractors and sub-contractors) based on specific requirements of the ESMPF. The training requirements shall be evaluated for newly recruited staff and for existing staff at the GA level, and necessary trainings and capacity building sessions, either internally or through external experts.

Induction training and periodic refresher trainings will mandatorily cover E&S aspects, including but not limited to:

- E&S Policy commitments
- ESMPF procedural requirements
- General EHS aspects
- Emergency preparedness and response
- ESIA process and report findings
- Stakeholder Engagement and Grievance Redressal;
- Implementation of ESAP and ESMP, as applicable
- Internal auditing and monitoring protocols
- Internal and external reporting requirements
- Environment and social indicators
- Reporting- format & content

9. STAKEHOLDER ENGAGEMENT AND DISCLOSURE

Stakeholder engagement is fundamental to building trust with the communities. The purpose is to enable the project to identify key stakeholders, ensure women and vulnerable communities are identified early on, understand sensitivities within each stakeholder groups and develop appropriate engagement mechanism to ensure communities are aware of the project and its impacts, are consulted on a regular basis, and establish a two way communication with the communities.

The purpose of the SEP is:

- To identify internal and external stakeholder groups within the project's area of influence (AoI) who will be mapped, consulted and engaged (as applicable) through the project's lifecycle;
- To demonstrate commitments and mechanisms to help align the stakeholder engagement process to the applicable standards; and
- To provide a consistent framework to document stakeholder engagement and inform decision-making and project execution through redressal mechanism.

9.1 Stakeholder Identification and Characterization

A stakeholder is "a person, group, or organisation that has a direct or indirect stake in a project/ organisation because it can affect or be affected by the Project/organisation's actions, objectives, and policies". Stakeholder this vary in terms of degree of interest, influence and control they have over the project. While those stakeholders who have a direct impact on or are directly impacted by the project are known as Primary Stakeholders, those who have an indirect impact or are indirectly impacted are known as Secondary Stakeholders. Keeping in mind the nature of the project and its setting, the stakeholders for the Project have been identified and listed in the table given below.

Table 9.1 Stakeholder Group Categorization

Category	Primary Stakeholder	Secondary Stakeholders
Community	■ Land Owners; ■ Local Community; ■ Vulnerable Groups; ■ Opinion Holders; and ■ Community Leaders/shop keepers unions	
Institutional Stakeholders	■ Local Gram Panchayats and ULBs ■ Project Investors	■ Education, Health, trasnporation departments of government ■ Political Parties
Government Bodies	■ Regulatory Authorities (PNGRB, SPCB) ■ District Administration	■ State Administration
Other Groups	■ Contractors and Sub-Contractors ■ Contractual Workers;	■ Media ■ Local NGOs

	■ Workers/Trade unions	■ Residential welfare associations in urban areas

Any ESIA to be conducted for any of the sub-project should do an analysis by mapping Key Expectations, Impacts, Issues and Concerns as related to each stakeholder and the subgroups thereof. This Stakeholder analysis will be done using the process like Key Stakeholder Identification, Stakeholders Interests Assessment, Stakeholders Influence Assessment and Stakeholders Importance Assessment.

9.2 Stakeholder Engagement Plan

The level and intensity of engagement activities varies across stakeholders based on their profile and level of priority. The levels of engagement range from passive monitoring of stakeholder views and disclosure to active participation and negotiations. The following table provides a plan for the engagement activities to be undertaken in the present stage of the Project, based on the level of priority of the stakeholder groups. The SEP to be developed for the sub-projects should incorporate the future stages of the project lifecycle.

9.3 Disclosure Requirements

As per AIIB's Information Disclosure requirement, relevant information about environmental and social risks and impacts of the Project should be made available in the Project area in a timely and accessible manner and in a form and language understandable to the Project-affected people, other stakeholders and the public.

The approved ESIA reports of projects in English and a non-technical summary in vernacular language, ESMF, other management plans (EMP/RAP/ARAP documents), details of names, locations and activities of the sub-projects shall be displayed on the AGPCGPL's website in line with AIIB requirements. Further, AGPCGPL shall also display the following GA related documents on the website for public reporting:

- Any compliance reports submitted to regulatory authorities;
- Annual E&S Performance report of the company

AGPCGPL will also undertake comprehensive review of the ESMPF during the project period. Based on the review, the ESMPF would be updated if necessary. Any revision of this ESMPF will need the concurrence of the AIIB.

In addition to disclosure by AGPCGPL, AIIB will also disclose the approved ESIA reports, ESMF, RAP and other management plans, as early as possible during the assessment of the Project. *Although, AIIB may defer the disclosure of the above information due the legal or regulatory requirements and other sensitivities. The prerogative to defer disclosure shall be exercised by the Bank's management, and the deferrals so approved by management shall be reported to the Board of Directors*.

9.4 Mechanism for Consultation

The Consultation Framework envisages involvement of all the stakeholders' at each stage of project planning and implementation. Involvement of the community is not limited to interactions with the community but also disclosing relevant information pertaining to the project tasks. Community participation shall be ensured at the following stages:

9.4.1 Identification stage

In the Project planning stage, village information meetings will be conducted for disseminating information pertaining to the subproject, work schedule and the procedures involved; finalization of project components with identification of impacts, entitled persons, mitigation measures; and Grievance Redressal mechanisms to be adopted.

Dissemination of project information to the community and relevant stakeholders is to be carried out by the Project and written records of these meetings shall be maintained, comprising of the following information:

- Date of Meeting;
- Location;
- Number and Names of Participants (Age and gender segregated data);
- Agenda;
- Key Points discussed;
- Key suggestions/ takeaways from the meeting.

The community at large shall be made aware of the project alternatives evaluated and necessary feedback is to be obtained. The outcome of consultations will be incorporated as appropriate in the designs and mitigation plans. As part of such consultations, the draft E&S Management/Action Plans will also be presented and explained to the people along with the content and mode of the implementation of the plans.

Consultations with any Project Affected Persons (PAPs) and their profiling are shall be mandatorily undertaken during the ESIA preparation and for RAPs, if found necessary in the Project context.

In all subprojects involving resettlement, and prior to the preparation of Resettlement Action Plans, the PAPs will be informed of the project objectives, likely impacts and essential provisions of Resettlement Planning Framework through the following activities:

- Awareness campaigns using local Cable TV channel, print media such as posters or information leaflets;
- Holding public information meetings in various project site locations and affected areas;
- Arranging interactive sessions with the PAPs & their representative stakeholders groups;
- Formation of focus groups involving key stakeholders, like local leaders, women, etc.; these could also serve as local community monitoring groups.

In order to discuss and seek opinion / suggestion from the PAPs / their representative shall be formally invited to participate in various meetings regarding resettlement issue as convened by the Sub borrower and the RAP implementation agency. As part of such consultations, draft RAPs will be presented and explained for the context and process and eligible entitlements of the people.

9.4.2 Implementation Stage

Consultations as part of the implementation stage would be direct interactions of the implementation agency with the Project Affected Persons. These would comprise of consultations towards relocation of the PAPs, relocation of cultural properties, and towards addressing the impacts on common property resources (CPRs) such as places of religious importance, community buildings, trees, etc. With the implementation of the R&R provisions in progress, consultations and information dissemination is to be undertaken to let the affected persons be informed of the progress. Implementation stage also involves redressal of grievances in case of R&R aspects as well as relocation of common property resources through the grievance redress mechanisms. These would usually be one to one meeting of PAP or community representatives with the grievance redress

committee established for the project. All consultations on social and environmental issues carried out during implementation of subprojects should be done in an inclusive manner, including vulnerable social groups (such as women, poor household, caste, persons with disabilities, among others).

Table 9.1 Proposed Stakholder Engagement Plan

Stakeholder Group	Stakeholder Level of Engagement	Purpose of Engagement	Method of Engagement	Timeline for Engagement	Proposed Location of Engagement	Responsible Entity/ Team	Documentation Method
Land Owners Impacted	High	Ongoing Land Procurement	▪ One to one surveys/interviews; and ▪ Formal Communication	As and when required	Decided in consultation with land owners	AGPCGPL	▪ Sale Agreement
Local Administration at Village level (Sarpanch) and Revenue Department at tehshil and district level (in case any of the network components are situated within rural areas); ULBs; and regulatory authorities	Medium	Information Disclosure as part of Project development	▪ One on one meetings with key village level departments and government departments	As and when required	Decided in consultation with Sarpanchs At District and Tehsil revenue department	AGPCGPL	▪ Minutes of meetings
		Preparation of ESIA and management Plans	▪ One on One meetings with key government departments	As and when required	At the concerned offices	ESIA Consultants, and AGPCGPL	▪ Minutes of Meetings
		Regulatory Permits and statutory Approvals for Project	▪ One on One meetings with key government departments	As and when required	At the concerned offices	AGPCGPL	▪ Minutes of Meetings
Locals affected along pipeline route/ ROW within urban areas	High	Updates for ROW procurement process, and understanding their concerns	▪ Formal communication	As and when required	Agreed upon location	AGPCGPL	▪ Minutes of Meeting

Stakeholder Group	Stakeholder Level of Engagement	Purpose of Engagement	Method of Engagement	Timeline for Engagement	Proposed Location of Engagement	Responsible Entity/ Team	Documentation Method
Local Media	Medium	Formal Communication for information disclosure	▪ Written content for public notice ▪ Public notices	Ongoing	At the concerned media offices or through email	AGPCGPL	▪ Photographs or copies of the disclosure material
NGOs	Medium	Implementation of local development plans	▪ One on one meetings	Ongoing	At the concerned offices	AGPCGPL	▪ Minutes of Meetings

10. GRIEVANCE REDRESSAL FRAMEWORK

10.1 Objective and Scope of GRM

The main objective of Grievance Redressal Mechanism (GRM) is to guide grievance redress process across various stages of the Project, while meeting the requirements of the applicable reference framework.

The objectives of Grievance Redressal Mechanism (GRM) are as follows:

- To provide formal, systematic and confidential platform for registration and addressal of grievances;
- To understand the problems of the stakeholders i.e. the employee, contractor, contract worker or the community and resolve the issues amicably in order to maintain a culture of sustainable performance;
- To settle grievances in a time-bound manner;
- To provide a mechanism for speedy redressal of grievance and complaints;
- To provide transparency, fairness, and accountability to the stakeholders;
- To develop and maintain positive relations between the Project and its stakeholders.

10.1.1 Scope

The GRM apply to the entire project lifecycle, and is considered to be a live document, which should be updated regularly based on the emerging needs and patterns for engagement with the various stakeholders.

The GRM will applicable to the following Project stages undertaken by the AGPCGPL;

- Planning Phase;
- Construction Phase;
- Installation of network components;
- Operation & Maintenance Phase.

10.2 Internal Grievance Redressal Mechanism

The following types of grievances would be taken into consideration by the project management for consideration under the ambit of this GRM. The employees, workers/labours (including contractual workers) and contractors engaged for the project are the “Internal Stakeholders” for the project. Labor is a critical issue and the availability of the same, both semi-skilled and skilled, is essential for the timely completion of construction related activities. The workers including the local, intrastate and interstate migrant workers are likely to have the grievance, as discussed below.

10.2.1 Types of Internal Grievances

10.2.1.1 Employee/ Workers Grievances

- **Grievance related to working conditions**: Examples include poor physical condition of work place, non–availability of proper tools and machines, unplanned changes in schedules and procedures;
- **Grievance related to Management policies**: Examples include terms of employment, wage rates and payment, overtime and incentive related issues, working conditions, hours of employment, work load, training and settlement of terminal benefits, lack of opportunities for career growth amongst others;
- **Interpersonal grievances at workplace**. Examples include discrimination of any form, poor relationship with supervisor, gender bias, unethical behaviour, harassment or abuse of any form etc.;
- **The Grievance arising out or related to Management's decision** on transfers, promotion, demotion and discharge on disciplinary grounds shall not come under the purview of this Grievance handling procedure.

10.2.1.2 Contractor and Contract Employees'/ Workers' Grievances

- Contractual workers' grievances can include denial of services based on discrimination, dissatisfaction with treatment by management, any dissatisfaction with working practices or conditions, concerns over health and safety, or any form of bullying or harassment;
- Also included are issues or grievances pertaining to contractor's internal management policies, any internal personal conflicts between the contractor and contractual employees and workers, contractors' style of working, etc.

10.2.2 Handling of Internal Grievances (Including Employee, Contractor and Contractual Employees and workers)

The following underlines the process that would be adopted in handling employees and contractors' or contractual workers' grievances:

Step 1: Publicizing the Grievance Procedure

- A Labor Grievance Cell (LGC) would be set up at the corporate level comprising of requisite members from Human Resources department and Health & Safety department of AGPCGPL. The HR head will also head the LGC. Several sub Grievance Cells should be established at GA level and site level. The site level LGC will report to the GA level and GA level to the corporate level. Disclosure of grievance mechanism with contact information of members of LGC has to be made available with site level LGC. The grievance mechanism should be displayed at strategic locations at project office in regional language or Hindi, to enable labors to understand the procedure properly.
- The existence of this LGC and its functions needs to be reminded on a regular basis at the each project sites in the various staff meetings, by project officers and other members of grievance cell;
- To share the purpose and process of such a procedure, encouraging legitimate complaints during the lifecycle of the project, AGPCGPL and its contractors may undertake a workshop session for all workers and explain through different forms like posters and flyers in regional languages or Hindi ;
- Should the contractors have their own GRM, AGPCGPL will ensure that it is functioning effectively and review their grievance records on a periodical basis (monthly).

Step 2: Receiving and Keeping Track of Grievances

This step primarily involves the following stages:

- Collecting grievances from across projects on a periodic basis;
- Registering them in a central place;
- Tracking them throughout the processing cycle to reflect their status and important details;
- Back communication to the project level grievance cell for addressal of the issue

Grievance Receipt and Recording

- Any grievance from any employee (including contractor or contractor employee) is required to be detailed and submitted as per the grievance form provided in ***Table 10.1***;
- Along with the grievance form, necessary supporting documents to substantially explain the grievance may be attached;
- Staff charged with collection of grievances (e.g., assigned grievance officer at the project office location, or field staff authorized to take grievances) writes down complaints at group or individual meetings, during field visits, or at designated locations. The grievances are then sent to the LGC in the pre-decided format (see below) in agreed frequency and communication mode as agreed between the corporate level LGC and the respective grievance cell at the GA and site level (described in step 4 and 5).
- The following information will be recorded in a Grievance Register Format as depicted below.

Table 10.1 Grievance Register Format

S. No	Date	Individual Name/Gender	Department/ Village	Medium of Communication	Details of Issue	Grievance within Scope	Investigation Requirement	Concerned Department	Timeline for Closing Grievance	Present Status (Open, Closed, and Pending)	Remarks

Step 3: Acknowledgment on receipt of Grievance:

- On receipt of a complaint in person, designated person should sign on the grievance form (stating acknowledgement of the grievance received) and hand over a copy to the aggrieved person on the same day, if possible;
- Alternatively, a written acknowledgement shall be sent back to the aggrieved person within three (3) working days from the date of receipt of any grievance;
- The acknowledgement shall mention the unique reference number allotted to the grievance;
- In case of any additional requirements are deemed necessary, the designated person shall communicate the same to the aggrieved person.

Step 4: Reviewing and Investigating Grievances

The central unit or person responsible for grievance handling organizes the process to validate the complaint's legitimacy and arrange for investigation of details. To begin this process, the nature of the grievance is established to determine the measures needed for review and investigation. All

grievances undergo some degree of review and investigation, depending on the type of grievance and clarity of circumstances:

- **Minor, straightforward issues** may only need screening before proceeding to the next step (resolution options and response). Review of minor issues, especially those related to a complainant's request for information, can generally be handled easily by providing information on the spot, or referring the person to community liaison personnel.
- **Less clear, more problematic, or repetitive issues**, or group complaints may need a more detailed review prior to action. Staff involved in handling grievances may need to seek advice internally, and in some cases turn to outside parties to help in the validation process, especially in cases of damage claims.
- **Complex issues with multiple parties** may need investigation can be organized internally, or the company may designate third-party experts to investigate when impartiality is important or when complex technical matters are involved. If an extensive investigation is found to be necessary, it shall be initiated swiftly before circumstances change or the conflict escalates further.

Step 5: Addressal of grievances

Rationale for Grievance Closure

- The requirements/need specified in the form of grievance by the aggrieved have been effectively addressed to the satisfaction of the complainant;
- Grievance considered to be duly addressed and closed by APGCGPL

Process of the Grievance Redressal

- The person having grievance will come on the scheduled time and lodge the complaint in the register with the designated grievance officer;
- The grievance if minor nature will be addressed at the site level LGC itself and the subsequent response of addressal would be communicated back to the aggrieved person within 10 working day;
- A database shall be maintained by the designated Grievance coordinator for all grievances received, their subject and status of closure;
- In case it is adjudged that the grievance addressal requires participation of GA LGC, a meeting of the committee would be convened at appropriate time with or without the participation of the aggrieved person as deemed necessary by the committee. The grievance would be mutually discussed and resolution passed by the committee members in unanimity;
- Once approval from GA level committee is received, the decision would be communicated to the aggrieved accordingly;
- The committee shall resolve the grievance /complaint received before 15th of every month and grievance/complaint received after 15th of every month will be taken up next month;
- The committee shall endeavour to resolve the complaint/grievance within two (2) weeks from the date of receipt of the complaint/grievance. The resolution provided shall be in line with the terms and conditions of the applicable policies;
- In cases where additional time is required to resolve, the same may be noted in the grievance database (providing reason for delay) and practical/implementable timelines should be fixed;

- If there is no action taken after 15 days either by site level committee as well as GA Level LGC, the complainant can escalate the grievance to the corporate level GC.

10.2.3 Monitoring, Reporting, and Evaluating a Grievance Mechanism

Monitoring and reporting can be tools for measuring the effectiveness of the grievance mechanism and the efficient use of resources, and for determining broad trends and recurring problems so they can be resolved proactively before they become points of contention. Monitoring helps identify common or recurrent claims that may require structural solutions or a change in the Labor policy, and it enables the company to capture any lessons learned in addressing grievances.

10.2.3.1 Monitoring Indicators

Grievance records will provide the background information for regular monitoring, both informal and formal. Depending on the nature of job in the project, the volume of grievances and monitoring measures will vary. Some of the monitoring indicators identified for future to monitor the effectiveness of this grievance mechanism are as follows:

- Tracking the number of grievances received and resolved;
- Apart from reviewing each grievance and analyzing effectiveness and efficiency, using complaints to analyze systemic deficiencies.
- Recognize patterns in the grievances the company receives, and how they are being resolved.
- Average time taken for resolution of grievances falling under particular category;
- Effectiveness of different solutions in addressing various category of grievances;
- Whether there are matters significantly affecting company policy or requiring legal review; and
- Whether the existing system meets requirements established by the company as well as the expectations of all stakeholders.

10.2.4 Reporting and Recording

Based on all grievances received, registered, documented and tracked through database regular reports are prepared for reporting to the senior management. This assists in tracking overall trends and patterns in concerns allowing emerging issues to be flagged and understood at an early stage. The statistics on grievance handling and redressal are to be included in action plans and annual reporting. Monitoring and reporting also create a base level of information that can be used by the company to report back to communities.

- The grievances heard shall be weekly updated and shared amongst the LGC members of APGCGPL to take action;
- They shall send the details of action taken and status quo within 15 days of the receipt of grievances.

10.2.5 Manpower and Financial

Chief Grievance Officer

As already indicated above, the corporate level LGC of AGCGPL should be headed by the Head-Human Resource who is the Chief Grievance Officer. At the GA level and site level, the grievance head would be assigned by AGCGPL as per availability of requisite individuals.

Department Representatives

- Day to Day functioning of the cell is done through the representatives from the Departments of HR catering to labor and Interpersonal issues;

- Site in-charges of all the Projects.
- Legal department for labor related legal compliance
- HSE and their site level officers
- CSR-addressing the registered needs of the local community as well as labors;

Formation of Committee

The LGC will be designed at three levels – Levels I to III. The representatives proposed at different levels of the LGC are as below:

Three tier Approach

AGCGPL will ensure a budget allocation to deal with grievance tracking and handling.

10.2.6 Training

Training shall be provided according to the company's policy and practices for Labor grievance mechanisms, relevant to their exposure and responsibilities for managers, all other project liaising employees, contractors and visitors, which shall include as a minimum:

- Expected behaviors and accepted practices when interacting with employees and stakeholders in order to avoid a grievance in the first instance;
- Routes available for Labors to lodge a grievances;
- Roles and responsibilities for handling and resolving grievances (including key internal and external stakeholder contacts), and;
- Recording and tracking procedures.

10.3 External Grievance Redressal Mechanism

10.3.1 Types of External Grievances

10.3.1.1 Community Grievances

The surrounding community of the project is considered as an important stakeholder by the Project and addressing their grievances becomes quintessential for smooth functioning of the Project. Depending on the nature and geographical setting of the project, the range of possible grievances of the community can be vast; however the following common grievances can spur in most of projects:

- Risks to community, health & safety (e.g. storage and transportation of gas, traffic);
- Accidents (e.g. involving community);
- Unethical Behaviour by AGPCGPL personnel or its sub-contractors;
- Noise/dust/air emissions or any other impact on environment caused by project or sub-contractors;
- Demand for development interventions in the community;
- Issues owing to behaviour of the security personnel and general attitude of the local community;
- Issues related to cultural conflicts or opportunity conflict owing to presence of migrant workers in the community or in the nearby areas;
- Any attempts to conceal the above.

Land Related Grievances:

As part of the project planning stage, AGPCGPL undertakes identification and selection of right of way (RoW) for pipelines and other network components. For MDPE pipelines, AGPCGPL will lay them within existing RoW of roads. The payment for using the RoW for pipeline will be made to the concerned government department such as Public Works Department, Zilla Parishad, and National Highway Authorities of India etc. and statutory approvals will be obtained from these departments. For other components such as the CRGS, storage tanks and CNG stations, land will be purchased from private parties. Once the locations to set up gas distribution infrastructure are identified, the overall land footprint and right of way for the GA will be determined.

In case, there is any private land purchase, land and compensation related issues might include:

- Damage to, crops, infrastructure;
- Eligibility issues and payment of compensation;
- Compensation and employment entitlement against losses;
- Delay in the payment of the compensation;
- Livelihood restoration issues and associated benefits;
- Adverse impacts on community, common property resources (CPR).

10.3.2 Handling of Community Grievances

Step 1: Publicizing the Grievance Procedure/ Disclosure of Grievances Management Procedures

For each project, AGPCGPL is required to ensure suitable public disclosure of its grievance handling and redressal process to its community stakeholders. The company will establish a Community Grievance Redressal Mechanism (CGRM) cell at its respective project sites. A corporate level CGRM committee will also be required to be established that would comprise of requisite members drawn

from Project Teams, HSE, HR, Land, CSR as per requirement and availability of the same. Likewise, the grievance redressal committees of each project shall comprise of the AGPCGPL site in-charge, members of land liaising and CSR team representatives. Disclosure of grievance mechanism with contact information of members of corporate grievance committee has to be made available with the project level grievance committees. In addition, the community grievance mechanism should be displayed at strategic locations in at the respective project offices.

At the project level the AGPCGPL liaising team in-charge will be the direct contact point for registering community grievances and will record grievances of community in form of village meetings, personally communicated grievances or complaints etc.

For the grievance mechanism to be in line with the cultural and socio- economic characteristics, based on its understanding of the ground situation in the project area, AGPCGPL will strive to provide the following information to the stakeholders (primarily community and vulnerable groups like women and SC/STs) from time to time, at least some of the following:

- Information on who can raise complaints (affected communities);
- Where, when, and how community members can file complaints;
- Company personnel responsible for receiving and responding to complaints; and
- Type of response complainants can expect from the company, including timing of response (a preliminary response should be made within 48 hours of the date on which grievance was recorded);
- A notice board should be placed near the identified land (after getting consent from landowner and registration of Agreement to sell) which clearly mentions the contact details of Land Task Force for raising grievances by the impacted person/community.

The existence of this redressal mechanism needs to be reminded on a regular basis during project implementation in the various community meetings and different platforms like the community meetings and at the work site. This should be done in tandem with stakeholder engagement activities wherein existence of the CGRM is communicated to affected stakeholders. If there is a change in the CGRM, then the same should be disclosed as soon as possible to all affected stakeholders of the project. Person from AGPCGPL grievance committee such as onsite personnel for handling and managing grievances, CSR officers, or individuals working in analogous positions, shall be responsible for publicizing the procedure through appropriate methods. The disclosure should be verbally and graphically displayed (if possible) with a written explanation in local language.

Step 2: Grievance receipt and recording

- The members of the project CGRM (e.g., community liaison or field staff at the project authorized to take grievances) write down complaints at group or individual meetings, during field visits, or at designated locations. The staff from the corporate grievance cell, charged with collection of grievances from across the projects, should receive the documented grievances from all the projects;
- Subsequently, relevant personnel from the respective department (such as Project Team, HSE, Land, CSR, etc.) will track the resolution status, coordinate it with the division(s) responsible for corrective actions, and maintain a record of progress (e.g. open, pending or closed).
- The concerned department/personnel shall give a response within maximum fifteen (15) working days of the grievance being recorded. If the aggrieved is not satisfied with the resolution measure then process of escalation of grievance to senior committee members or committee head or project head will be followed. The records of all the grievances will be consolidated and maintained for further reference.
- A few key expectations from the project CGRM cell that should be communicated to them are as follows:

- All incoming grievances are to be acknowledged immediately at the time of grievance being recorded. In case of grievance being heard in village/ community meetings, it should be recorded after the meeting and assented by the aggrieved in form of signatures of individuals or representative of a group. The community, in case willing, is also asked to put up their grievances in the community meeting register, which are taken up in the subsequent meetings. However, the option of directly communicating with the liaising in charge is also provided.
- If a more complex investigation is required, the complainant shall receive an update explaining the actions required to resolve the complaint, and the likely timeline which is additional 6 or 12 working days on the 15 days' timeline depending on the level and sensitivity of the grievance.
- AGPCGPL should make every effort to ensure that all grievances are addressed satisfactorily. Again, once the matters are closed they should be signed off by the person who submitted the grievance.
- However, at any point in time, the external party may bring his grievance to the appropriate local court if he/she is not satisfied with the Company's grievance process.

- The grievances would be registered in a format as per table below which shall comprise of the following information at the minimum:

Table 10.2 Template for Grievances Register

Register for Documenting Community Grievances for XXXX Project			**Note:** This sheet has to be used to document all the community issues, grievances received from local people with all the relevant details. Actions taken to resolve the grievance by the site team, contractor team should be mentioned with all the relevant details.				
S.N	**Date when the grievance was noted**	**Community Grievances**	**Name of the Place**	**Date when the grievance was resolved**	**How was the grievance addressed / resolved**	**Total numbr of days required to resolve the grievance**	**What was the impact of the community issue on operations?**

Step 3: Reviewing and Investigating Grievances

The personnel from project team/HSE/CSR/Land teams will be responsible for grievance handling will organize the process to validate the complaint's legitimacy and arrange for investigation of details. To begin this process, the nature of the grievance shall be established to determine the measures needed for review and investigation. All grievances shall undergo some degree of review and investigation, depending on the type of grievance and clarity of circumstances:

- **Minor, straightforward issues** may only need screening before proceeding to the next step (resolution options and response). Review of minor issues, especially those related to a complainant's request for information, can generally be handled easily by providing information on the spot through liaising in-charge.
- **Less clear, more problematic, or repetitive issues**, or group complaints may need a more detailed review prior to action. Staff involved in handling grievances may need to seek advice internally, and in some cases turn to outside parties to help in the validation process, especially in cases of damage claims.

- **Complex issues with multiple parties** may need investigation which can be organized internally, or the company may designate third-party experts to investigate when impartiality. If an extensive investigation is found to be necessary, it shall be initiated swiftly before circumstances change or the conflict escalates further.

Stage 4: Developing Resolution Options and Preparing a Response

Rationale for Grievance Closure

- The requirement/need specified in the form of grievance by the aggrieved has been effectively addressed to the satisfaction of the complainant;
- Grievance should be duly addressed and closed by AGPCGPL and if possible signed off by the complainant. The closure date of the grievance needs to be recorded and communicated to the aggrieved/complainant with acknowledgement received from the complainant. This may be in form of minutes of meeting with an aggrieved group signed off by its designated head or a written signature/thumb-print of an individual/ written email etc.

Process of the Grievance Redressal

- The person having grievance will register his/her/their grievances either by approaching the site/project office during office hours of 9:00 AM to 6:00 PM on working days or raise the grievance during any community meeting or labor meeting to the company representative;
- The grievance will be reported and discussed within the CGRM cell of that project. The same would be processed and closed within the project level CGRM cell;
- In case it is outside the purview of the project level CGRM, the same would be communicated at the corporate level to the corporate level community grievance committee;
- The complainant will be heard by an officer appointed by the corporate level community grievance committee;
- The grievance will be at the corporate level (depending on the severity) and concerned person will be informed through a written communication/Phone in case of urgency within six working days.
- The redressal measures reached for the grievance would be communicated back to the respective project level CGRM and the same would be forwarded to the aggrieved member within the stipulated time of fifteen (15) days;
- In case the aggrieved is not satisfied with the redressal process, the same can take forward the grievance directly to the project manager and the project manager can discuss again with requisite members of the corporate level grievance cell and address the issue.

10.3.3 Handling of Other Grievances

Non Project Related Complaints

It is sometimes difficult to determine which issues are related to the project and which are not. If in doubt, employees designated to receive grievances will accept the complaint and assess its legitimacy.

Commercial Disputes

Commercial matters will be stipulated for in contractual agreements and issues shall be resolved through a variety of commercial dispute resolution mechanisms or civil courts.

10.3.4 Monitoring, Reporting and Reviewing the Procedure

Monitoring and reporting can be tools for measuring the effectiveness of the grievance mechanism and the efficient use of resources, and for determining broad trends and recurring problems so they

can be resolved proactively before they become points of contention. Monitoring helps identify common or recurrent claims that may require structural solutions or a policy change, and it enables the company to capture any lessons learned in addressing grievances.

10.3.4.1 Monitoring Indicators

Grievance records will provide the background information for regular monitoring, both informal and formal. Depending on the extent of project impacts and the volume of grievances, monitoring measures will vary. Some of the monitoring indicators identified that can be a part of the monitoring mechanism may include:

- Tracking the number of community grievances received and resolved by each project;
- In addition to processing grievances, recognize patterns in the grievances and develop solutions, so as to minimize them and share the solutions across projects
- Circulating good practices and effective grievance redressals at the project level across to the respective community groups;
- Identify the Communities' preference to any of the several channels to submit grievances and refine the modes of grievance registering with them;
- Average time taken for resolution of grievances falling under particular category;
- Effectiveness of different solutions in addressing various category of grievances;
- Whether there are matters significantly affecting company policy or requiring legal review;
- Issues of cultural appropriateness and transparency; and
- Whether the existing system meets requirements established by the company as well as the expectations of all stakeholders.

10.3.4.2 Reporting and Recording

Based on all grievances received, registered, documented and tracked through database, regular reports shall be prepared for reporting to the senior management. This shall assist in tracking overall trends and patterns in concerns allowing emerging issues to be flagged and understood at an early stage. The statistics on grievance handling and redressal are to be included in action plans and annual reporting. Monitoring and reporting also create a base level of information that can be used by the communities.

10.3.5 Manpower and Financial

As already mentioned the company will establish a CGRM at its different project sites and a corporate level CGRM committee. The CGRM cell of each project shall comprise of the AGPCGPL site in-charge, HSE officers, members of land liaising and CSR team representatives. The CGRM committee at corporate level should comprise of members drawn from Project Teams, HSE, HR, Land, CSR as per requirement and availability.

AGPCGPL will ensure a budget allocation to ensure effective function of the GRM.

10.3.6 Training and Capacity Building

Training to be provided especially to personnel who are in direct engagement with the communities and related stakeholders and shall include information at a minimum on:

- Expected behaviours and accepted practices when interacting with community stakeholder groups in order to avoid a grievance in the first instance;

- Routes available for community stakeholders to lodge a grievances;
- Roles and responsibilities for handling and resolving grievances (including key internal and external stakeholder contacts), and;
- Recording and tracking procedures

11. BUDGET ESTIMATE FOR IMPLEMENTATION OF ESMPF

The financial resources and budget required to support implementation of this ESMPF is based on indicative estimates summarized below.

Table 11.1 Indicative ESMF Implementation Budget

Sl No.	Cost Head	Budget (INR)	Budget (USD)
1.	Mobilisation and initial training of AGPCGPL team on E&S safeguard requirements	10,00,000	13,520
2.	ESDD preparation for **all** sub-projects	72,00,000	97,300
3.	ESIA Study and ESMP preparation for **all** sub-projects	1,35,00,000	182,430
4.	Implementation of ESMP for **all** sub-projects	7,50,00,000	1,013,520
5.	Environment and social monitoring and external audits on annual basis (considered for 5 years)	1,50,00,000	202,700
6.	E&S training for AGPCGPL team on annual basis (for a 25 year period)	5,00,00,000	675,680
7.	Stakeholder engagement and grievance handling on annual basis (for a 25 year period)	7,50,00,000	1,013,520
	Total Cost for ESMPF Implementation throughout project lifecycle	**23,67,00,000**	**3,198,650**

APPENDIX A EXCLUSION LIST

AIIB Excluded Activity List

The Excluded Activity List defines activities and businesses within AIIB's Environmental and Social Exclusion List which the Bank does not finance directly and indirectly:

1. Forced labour [i] or harmful or exploitative forms of child labour; [ii]
2. The production of, or trade in, any product or activity deemed illegal under national laws or regulations of the country in which the Project is located, or international conventions and agreements, or subject to international phase out or bans, such as:
    a. Production of, or trade in, products containing polychlorinated biphenyl (PCBs).[iii]
    b. Production of, or trade in, pharmaceuticals, pesticides/herbicides and other hazardous substances subject to international phase-outs or bans (Rotterdam Convention, Stockholm Convention).[iv]
    c. Production of, or trade in, ozone depleting substances subject to international phase out (Montreal Protocol).[v]
3. Trade in wildlife or production of, or trade in, wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).[vi]
4. Trans-boundary movements of waste prohibited under international law (Basel Convention).vii
5. Production of, or trade in, weapons and munitions, including paramilitary materials.
6. Production of, or trade in, alcoholic beverages, excluding beer and wine [viii]
7. Production of, or trade in, tobacco.[ix]
8. Gambling, casinos and equivalent enterprises [x]
9. Production of, trade in, or use of unbonded asbestos fibers [xi]
10. Activities prohibited by legislation of the country in which the Project is located or by international conventions relating to the protection of biodiversity resources or cultural resources, such as, Bonn Convention, Ramsar Convention, World Heritage Convention and Convention on Biological Diversity [xii]
11. Commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests
12. Production or trade in wood or other forestry products other than from sustainably managed forests
13. Marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats
14. Shipment of oil or other hazardous substances in tankers that do not comply with IMO requirements (IMO, MARPOL, SOLAS and Paris MOU).[xiii]

Notes and Remarks

i. **Forced labour** means any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty (including any kind of forced or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements, or labour by trafficked persons).
ii. For purposes of this List, **harmful or exploitative forms of child labour** means the employment of children under the age of 18 for work which by its nature or the circumstances in which it is carried out is likely to jeopardize their health, safety or morals; but if the laws or regulations of the country in which the Project is located provide, in conformity with the International Labour Organization's Minimum Age Convention, 1973, that children at least 16 years of age may be employed for such work on condition that their health, safety and morals are fully protected and that they have received adequate specific instruction or vocational training in the relevant branch of activity, then child labour means employment of children for work that does not comply with these laws and regulations;
iii. **PCBs:** Polychlorinated biphenyls are a group of highly toxic chemicals. PCBs are likely to be found in oil-filled electrical transformers, capacitors and switchgear dating from 1950 to 1985.

iv. United Nations Consolidated List of Products whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted or not Approved by Governments; Convention on the Prior Informed Consent Procedures for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention); Stockholm Convention on Persistent Organic Pollutants; World Health Organization Recommended Classification of Pesticides by Hazard. A list of **pharmaceutical products** subject to phase outs or bans is available at http://www.who.int. A list of **pesticides, herbicides and other hazardous substances** subject to phase outs or bans is available at http://www.pic.int.
v. **Ozone Depleting Substances (ODSs):** Chemical compounds which react with and deplete stratospheric ozone, resulting in the widely publicized "ozone holes." The Montreal Protocol on Substances that Deplete the Ozone Layer lists ODSs and their target reduction and phase out dates. A list of the chemical compounds regulated by the Montreal Protocol, which includes aerosols, refrigerants, foam blowing agents, solvents and fire protection agents, together with details of signatory countries and phase out target dates, is available from the United Nations Environment Programme, http://www.unep.org/ozone/montreal.shtml
vi. The **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**. A list of CITES listed species is available from the CITES secretariat, http://www.cites.org.
vii. Basel Convention on the Control of Transboundary Movements of **Hazardous Wastes** and their Disposal, see http://www.basel.int.
viii. This does not apply to Clients ***who are not substantially involved in these activities***. Not substantially involved means that the activity concerned is ancillary to the entity's primary operations.
ix. This does not apply to Clients ***who are not substantially involved in these activities***. Not substantially involved means that the activity concerned is ancillary to the entity's primary operations.
x. This does not apply to Clients ***who are not substantially involved in these activities.*** Not substantially involved means that the activity concerned is ancillary to the entity's primary operations.
xi. This does not apply to the purchase and use of bonded **asbestos** cement sheeting where the asbestos content is less than 20 percent.
xii. Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) - http://www.cms.int/; Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention) - http://www.ramsar.org/; Convention Concerning the Protection of the World Cultural and Natural Heritage - http://whc.unesco.org/en/conventiontext/; Convention on Biological Diversity - https://www.cbd.int/.
xiii. Non-compliance with **International Maritime Organisation (IMO) requirements**: tankers that do not have all required International Convention for the Prevention of Pollution from Ships (MARPOL), International Convention for the Safety of Life at Sea (SOLAS) certificates (including, without limitation, International Safety Management Code compliance), tankers banned by the Paris Memorandum of Understanding on Port State Control (Paris MOU), and tankers due for phase out under MARPOL regulation 13G. No single hull tanker over 25 years old should be used.

Harmonized EDFI Exclusion List

According to The European Development Finance Institution (EDFI) "Principles for Responsible Financing", EDFI members have mutually agreed on the following Harmonized EDFI Exclusion List for co-financed projects:

EDFI Members will not finance any activity, production, use, distribution, business or trade involving:

1. Forced labor[26] or child labor[27]

2. Activities or materials deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international phase-outs or bans, such as:

- ozone depleting substances, PCB's (Polychlorinated Biphenyls) and other specific, hazardous pharmaceuticals, pesticides/herbicides or chemicals;
- wildlife or products regulated under the Convention on International Trade in Endangered Species or Wild Fauna and Flora (CITES); or
- Unsustainable fishing methods (e.g., blast fishing and drift net fishing in the marine environment using nets in excess of 2.5 km in length).

3. Cross-border trade in waste and waste products, unless compliant with the Basel Convention and the underlying regulations.

4. Destruction[28] of High Conservation Value areas[29]

5. Radioactive materials[30] and unbounded asbestos fibers.

6. Pornography and/or prostitution

7. Racist and/or anti-democratic media

8. In the event that any of the following products form a substantial part of a project's primary financed business activities[31]:

a) Alcoholic Beverages (except beer and wine);

b) Tobacco;

c) Weapons and munitions; or

d) Gambling, casinos and equivalent enterprises

[26] Forced labor means all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty as defined by ILO conventions.

[27] Persons may only be employed if they are at least 14 years old, as defined in the ILO Fundamental Human Rights Conventions (Minimum Age Convention C138, Art. 2), unless local legislation specifies compulsory school attendance or the minimum age for working. In such cases the higher age shall apply.

[28] Destruction means the (1) elimination or severe diminution of the integrity of an area caused by a major, long-term change in land or water use or (2) modification of a habitat in such a way that the area's ability to maintain its role is lost.

[29] High Conservation Value (HCV) areas are defined as natural habitats where these values are considered to be of outstanding significance or critical importance (See http://www.hcvnetwork.org).

[30] This does not apply to the purchase of medical equipment, quality control (measurement) equipment or any other equipment where the radioactive source is understood to be trivial and/or adequately shielded.

[31] For companies, "substantial" means more than 10 % of their consolidated balance sheets or earnings. For financial institutions and investment funds, "substantial" means more than 10% of their underlying portfolio volumes.

APPENDIX B APPLICABILITY OF ENVIRONMENT AND SOCIAL REGULATIONS

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
Environmental Protection				
1.	Environmental Protection Act, 1986 Environmental Protection (Third) Amendment Rules, 2002, along with subsequent amendments;	The Act enacted the maximum permissible sound pressure level for new diesel generator sets with rated capacity upto 1000KVA, manufactured on or after 1st January 2005 shall be 75dB(A) at 1m from the enclosure surface. These DG sets should be provided with integral acoustic enclosures. In case the DG sets are manufactured before January 2005, the project proponent shall ensure that the noise from DG sets be controlled by providing acoustic enclosures with insertion loss of minimum 25 dB(A). These limits shall be regulated by the State Pollution Control Boards and State Pollution Control Committee.	The act will be applicable to the sub-projects if they installed or use diesel generators with rated capacity as specified in the act, during the construction and O&M phase of the project.	Ministry of Environment, Forest and Climate Change (MoEFCC)
2.	Air (Prevention and Control of Pollution) Act,1981 as amended 1987; Air (Prevention and Control of Pollution) Rules 1982	Ensure that any industry/operation/process or an extension thereto which is likely to emit any air pollution into the atmosphere will have to obtain Consent to Establish (before taking any step for establishing an industrial unit) in the prescribed form containing the particulars of the industrial plant and such other particulars as may be prescribed to the concerned State Pollution Control Board along with prescribed fee.	The sub-project has to apply to the relevant State Pollution Control Board (SPCB) to **obtain the Consent to Establish and Operate.**	State Pollution Control Board
3.	Noise Pollution (Regulation and control Rules) 2000;	The Act enacted provision to control noise levels and maintain it to the standards prescribed for various areas like	Applicable to the sub-project to take measure for noise abatement during construction time and compliance under the rules to maintain stipulated standards.	CBCB and SPCB

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		residential, commercial or silent zones by the Central Pollution Control Board (CPCB)		
4.	Water (Prevention and Control of Pollution) Act, 1974 (section 25) (herein after referred to as Water Act, 1974)	The Act enacted the provision to control water pollution by controlling discharge of pollutants as per the prescribed norms. Approval for Consent to Operate (CTO) and Consent to Establish (CTE).	The sub-project has to apply to SPCB to **obtain the Consent**.	State Pollution Control Board
5.	Guidelines to regulate and control ground water extraction by Central groundwater Authority (CGWA) dated 24th September, 2020	The act enacted the provision to protect unauthorized abstraction of ground water.	If the project requires to abstract ground water at the time of construction and operation phase, **No Objection Certificate (NOC) for ground water withdrawal will be required.**	Central Ground Water Authority is the concerned authority. There are state specific agencies to provide the license
6.	Hazardous and Other Wastes (Management and Transboundary) Rules 2016	Ensure that the occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes, and these shall be sent or sold to an authorised user or shall be disposed of in an authorised disposal facility. The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give specific information for safe storage and disposal, to the operator of that facility, and take all the steps while managing hazardous and other wastes to contain contaminants, prevent accidents and limit their consequences on human beings and the environment.	Applicable to the project at the time of construction and O&M. At the time of operation phase hazardous waste will be generated in form of used oil and waste oil from DG sets. **Hazardous waste authorisation will be required to be obtained from SPCB.**	State Pollution Control Board

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
7.	Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as Amended 2000 (hereinafter referred to as MSIHCR, 1989)	• Definition and classification of the chemicals as dangerous/hazardous as specified in Schedules 1, 2 & 3. • Activities involving handling, storage and import of hazardous chemicals as specified in Schedule 1. • Indicative criteria of the same as specified in Part 1 of Schedule 1. • Applies to industrial activity involving isolated storage in the quantities mentioned in Schedule 2. • Provision of proper storage and handling of chemicals. • Information on various requirements and clearances to be furnished to the SPCB office.	Applicable for the project, as the project requires quantity of explosives during Construction activities. Explosives are covered under Schedule 1 of the Rules and any industrial operation/ activity entailing storage of explosive substances require taking **license from Chief Controller of Explosives**	Petroleum and Explosives Safety Organization (PESO) & SPCB
8.	E-waste (Management) Rules, 2016;	Consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that e-waste generated by them is channelized through collection centre or dealer of authorised producer or dismantler or recycler or through the designated take back service provider of the producer to authorised dismantler or recycler. Bulk consumers of electrical and electronic equipment listed in Schedule I shall maintain records of e-waste generated by them in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board. Shall ensure that such end-of-life electrical and electronic equipment are not admixed with e-waste containing radioactive material as covered under the provisions of	Applicable for the project while using and repairing, storage of equipment. To **obtain authorization from SPCB**	SPCB

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		the Atomic Energy Act, 1962 (33 of 1962) and rules made there under.		
9.	Battery Management and Handling Rules, 2001;	Ensure that used batteries are not disposed off in any manner other than depositing with the dealer, manufacturer, registered recycler, reconditioner or at designated collection centres. It shall be the responsibility of the bulk consumer to file half-yearly return.	Applicable only when there is batteries installation or any other use in the project.	SPCB
10.	Ozone Depleting Substances (Regulation and Control) Rules, 2000;	The act enacted provisions to control and reduce the use of Ozone depleting substances to protect the Ozone layer	Applicable to the project where air conditioning units are installed	MoEFCC
11.	Regulation of Polychlorinated Biphenyls (PCB) Order, 2016;	The order has put ban on the manufacture and import of the Polychlorinated Biphenyls in India. The import of Polychlorinated Biphenyls containing equipment shall also be banned from the date of final publication of this Order. A dielectric fluid or, mineral oil used in the power equipment (transformer, capacitor, etc.) shall continue to be used till 31st December, 2025 if, it contains Polychlorinated Biphenyls less than 0.005 per cent by weight (i.e. Polychlorinated Biphenyls < 50 mg/kg)	Applicable to sub-project in case of the testing of power equipment to check that the oil used in these equipment, contains PCB less than 0.005 per cent by weight.	MoEFCC
12.	Forest (Conservation) Act, 1980;	To keep a check on the forest land and check on deforestation by restricting conversion of forest area into non-forest areas.	Applicable, if any network component passes through or are located in Forest Areas, then the sub-project will attract the provision of Forest Conversation Act **requiring Forest Clearance**. However, it is understood that AGPCGPL will not install any of the components in	State Forest Department and Regional Office of MoEFCC and Central Government depending upon the extent of forest acquisition.

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
			forest areas. In case any of the project components are located in such areas, the project will trigger Category A. AIIB / OeEB will not support sub-projects that trigger highly eco-sensitive impacts, therefore none of the project components will be located in such areas.	
13.	Wildlife Protection Act , 1972;	The Act provides for the protection of wild animals, birds and plants; and for matters connected there with or ancillary or incidental thereto. It has six schedules which give varying degrees of protection. Schedule I and part II of Schedule II provide absolute protection - offences under these are prescribed the highest penalties. Species listed in Schedule III and Schedule IV are also protected, but the penalties are much lower. Schedule V includes the animals which may be hunted. The plants in Schedule VI are prohibited from cultivation and planting.	If any network component is located inside or is passing through a Wildlife Sanctuary or National Park, Wildlife reserves, then **Wildlife clearance will be sought.** However, it is understood that AGPCGPL will not install any of the components in wildlife areas. In case any of the project components are located in such areas, the project will trigger Category A. AIIB / OeEB will not support sub-projects that trigger highly eco-sensitive impacts, therefore none of the project components will be located in such areas.	National Board of Wildlife or Chief Wildlife Warden
14.	Biological Diversity Act, 2002	An Act to provide for conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.	Applicable if sub-project area are under or passing through bio-reserves or National biodiversity reserves.	MoEFCC, National Biodiversity Authority and State Biodiversity Boards
15.	Coastal Regulation Zone (CRZ) Notification, 2019	The Coastal Regulation Zone Notification, 2019 declares the coastal stretches of the country and the water area up to its territorial water limit, excluding the islands	Applicable to the sub-project in case any of the subproject components fall in CRZ areas, **permission has to be sought from the concerned authority**.	MoEF&CC/State CRZ management authority

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		of Andaman and Nicobar and Lakshadweep and the marine areas surrounding these islands, as Coastal Regulation Zone (CRZ). Such zones are classified as CRZ-I (further divided into CRZ- I A and CRZ-I B), CRZ-II, CRZ-III (sub-divided into CRZ-III A and CRZ-III B) and CRZ-IV (sub-divided into CRZ IV A and CRZ-IV B) for the purpose of conserving and protecting the coastal areas and marine waters.	However, it is understood that AGPCGPL will not install any of the components in coastal regulatory zones. In case any of the project components are located in such areas, the project will trigger Category A. AIIB / OeEB will not support sub-projects that trigger highly eco-sensitive impacts, therefore none of the project components will be located in such areas.	
Health and Safety				
16.	Gas Cylinder Rules, 2016	The rules constitutes the basic statute for technical details for gas cylinders, namely filling, possession, import, transport, valve etc.	Applicable to LCNG/CNG stations	Petroleum and Explosives Safety Organization (PESO)
17.	Static and Mobile Pressure Vessels (Unfired) Rules, 2016	These rules provide an understanding of static and mobile pressure vessels. Defining the restrictions on delivery, repair etc.	Applicable to transportation & Storage of gas	Petroleum and Explosives Safety Organization (PESO)
18.	Public Liability Insurance Act, 1991	Rules have been enacted to provide immediate relief to the persons affected by accidents, occurring while handling any hazardous substance, and for other incidental and connected matters. Article 12 (C) in the Concession Agreement, highlights the General Duties and Obligations of the Target. As per which the Target is to insure its employees, its assets and KMC against any loss, damage or displacement. A Workmen's	Applicable throughout the concession period and is to be sought from an Appropriate Insurance Agency. The Workmen's Compensation Insurance is to be initiated before engaging any contractors and subcontractors	MOEFCC / SPCB

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		Compensation Insurance is also prescribed in the CA.		
19.	Explosives Act, 1884, amended till 1983 and Explosives Rules, 1983 (amended 2008)	If any controlled blasting is proposed in the project for site levelling, these Rules will be applicable. The Project will have to obtain a license for storage and use of explosives from the Chief Controller. The rules with respect to storage requirements, safety, labelling and records/submission of annual returns needs to be followed as indicated in the explosive rules	Applicable on the drilling and blasting for laying of underground pipes and other accessories	Chief Controller of Explosives, Petroleum and Explosives Safety Organisation (PESO)
20.	Motor Vehicles Act, 1988	• Compliance of stipulated standards under Rule; • Display of emergency information panel by vehicles carrying hazardous substances as per Rule 134; • Vehicular pollution control measures; • Other environmental and safety compliance under the Rules.	Applicability on Vehicles used during the entire life cycle of the project	State Specific Transportation Department
21.	State specific Fire Safety Rules	Fire Protection for the multistoried buildings which are above a specified height and low occupancies. Specifications as stated by the specific state rules.	The act is applicable to the Liquefied Natural Gas (LCNG) dispensing facilities or LNG storage with regasification facilities	State Pollution Control Board
22.	Electricity Act 2003	An act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, protecting interest of consumers and supply of electricity to all areas, rationalisation of electricity tariff, ensuring transparent policies regarding subsidies. Promotion of efficient and environmental	The act is applicable to the use of electricity in general	Power Grid

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		policies constitution of central Electricity Authority, Regulatory Commissions and establishment of Appellate tribunal and for matters connected therewith or incidental thereto.		
Land Acquisition and Resettlement				
23.	Right to fair compensation and transparency in land acquisition, rehabilitation and Resettlement Act, 2013	Fair compensation for acquisition of immovable assets; Resettlement of displaced population due to LA and economic rehabilitation of all those who are affected due to land acquisition.	The act is applicable if acquisition of land is happening for the installation of any network component.	Administrator (as per Act), Municipality/ Municipal Corporation/ District Collector/ Sub-Divisional Magistrate & Revenue Office
24.	Land Purchase Policy	Provision of Direct Land Purchase by respective state governments such as from land owners considering need for immediate land for any project	Applicable if any sub-project requiring private land.	Land Purchase committees of respective state government
Labour and Working Conditions				
25.	Factories Act, 1948 and state specific Rules	The Factories Act, Ensures Health and safety considerations of workers	Applicable if the project have employed 10 or more than workers than that on any day of the preceding 12 months, engaged in manufacturing process being carried out with the aid of power or twenty or more than twenty workers are employed in manufacturing process being carried out without the aid of power.	Labour Department
26.	Child and Adolescence Labour (Regulation and Abolition) Act 1986, as amended in 2016;	Prohibits employment of children below 14 years of age	Applicable to each category of workers employed in the project	Labour Department
27.	Bonded Labour (Abolition) Act 1976;	The Act was enacted to abolition of bonded labour in India. No person is to make any advance of bonded labour and no person is	Applicable to each category of workers employed in the project	Labour Department

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		to compel any person to render any bonded labour or other form of forced labour		
28.	The Labour Act, 1988	The Act ensure general labour standards and health and safety of construction workers	Applicable to each category of workers employed at the time of construction phase of the project	Labour Department
29.	Contract labour (Regulation and Abolition) 1970;	Ensure basic welfare measures to be made available to the contract workers by the employer	Applicable to any project in which twenty or more workmen are employed on any day of the accounting year as contract labour	Labour Department
30.	The Building and Other Construction Workers. (Regulation Of Employment And Conditions Of Service) Act, 1996	Ensure safety measures at construction work site and other welfare measures such as canteens, first-aid facilities, ambulance, housing accommodation for Workers near the Workplace etc.	Applicable if the project is employing ten workers at the time of construction	Labour Department
31.	Minimum Wages Act, 1948;	The act ensures minimum wages for each category of workers. As per the act, the employer shall pay to every employee engaged in a scheduled employment under him wages at a rate not less than the minimum rate of wages fixed by the appropriate Government Authority for that class of employees in that employment without any deductions except as may be authorized within such time and subject to such conditions as may be prescribed.	Applicable to each category of workers employed in the project	Labour Department
32.	Payment of Wages Act (amended in 2017), 1936;	The Act Ensures regular payment by laying down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers	Applicable to each category of workers employed in the project	Labour Department

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
33.	Employees' Provident Fund and Miscellaneous Provisions Act, 1952	To provide for a scheme wherein both the employee and the employer make an equal contribution into a national fund which attracts a stipulated interest per annum, and the accumulated amount is paid on retirement to the employee along with the interest that has accrued.	Applicable if the project is employing 20 or more persons	Labour Department
34.	Workmen's Compensation Act, 1923;	The act is the binding document for the employer to pay workmen and/or their dependents some relief in case of accidents arising out of or during employment and causing either death or disablement.	Applicable to the project to ensure fair compensation in case of injury by accidents during the course of employment of any worker	Labour Department
35.	Equal Remuneration Act, 1976;	The act obligates employers to pay bonuses to employees and provide the principle and formula for the calculation of the bonus payable and enforcement of liability for payment of bonus. The act obligates the employer to provide for the payment of equal remuneration to men and women workers and for the prevention of discrimination, on the ground of sex, against women in the matter of employment.	Applicable to each category of men and women workers employed in the sub-project	Labour Department
36.	Maternity Benefits Act, 2017;	As per the Act, every woman shall be entitled to, and her employer shall be liable for, the payment of maternity benefit at the rate of the average daily wage for the period of her actual absence, that is to say, the period immediately preceding the day of her delivery, the actual day of her	Applicable if any women worker is employed in the sub-project	Labour Department

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		delivery and any period immediately following that day. Duration of the maternity leave is 26 weeks. Employer to permit a woman to work from home, if the nature of work permits her to do so and the same can be availed after the completion of her maternity leave for a duration mutually decided. Woman to be informed at the time of appointment, of the maternity benefits available, either in writing or electronically		
37.	Employees State Insurance Act, 1948;	Employees' State Insurance (abbreviated as ESI) is a self-financing social security and health insurance scheme for Indian workers. This fund is managed by the Employees' State Insurance Corporation (ESIC) according to rules and regulations stipulated in the ESI Act 1948. The rate of contribution under the mew amendment (which will be effective from 1st July 2019) for employer's will be reduced from 4.75% to 3.25% and employees' contribution will be reduced from 1.75 percentage to 0.	Applicable if the project is employing 10 or more persons in the sub-project	Ministry of Labour and Employment
38.	Inter-state Migrant Workmen Act 1979;	The project proponents shall ensure that if the contractor is employing equal to or more than 5 migrant workers then proper license regarding particulars of works and remuneration need to be maintained in accordance to the prescribed act.	Applicable if sub-project is employing 5 or more than inter-state migrant workmen.	Labour Department
39.	Grievance Redressal Policy under Industrial Disputes Amendment Act, 2010;	The amendment was enacted to make the provision for establishing of Grievance mechanism for workers in Industry,	Applicable to each category of workers employed in the sub-project	Labour Department

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		formation of Grievance Redressal committee and its duties.		
40.	Intimation of Accidents (Forms and Time of Service of Notice) 2004.	The act enacted the provision of sending the information, not below the rank of a Junior Engineer or equivalent shall send to the Inspector a telegraphic report within 24 hours of the knowledge at the time of an accident occurs in connection with the generation, transmission, supply or use of electricity in or in connection with, any part of the electric lines or other works of any person and the accidents results in or is likely to have resulted in loss of human or animal life or in any injury to a human being or an animal.	Applicable to the project	Central Electricity Authority
41.	Payment of Bonus Act, 1965	Every employee shall be entitled to bonus to be paid by his/her employer in an accounting year, bonus, in accordance with the provisions of this act, provided he/she has worked in the establishment for not less than thirty working days in that year. As per the act the minimum bonus will be 8.33% and the maximum bonus is 20%of the salary during the accounting year.	Applicable to each category of workers employed in the project	Labour Department
Social Safeguards on engagement and inclusion, and Cultural Heritage				
42.	Panchayats (Extension to Scheduled Areas) Act 1996;	This act requires that the Gram Sabha or Panchayats be consulted before acquiring land in the Scheduled areas for development projects and before resettling	The act is applicable if any land for sub-project is to be acquired in Scheduled areas	Ministry of Tribal Affairs

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		or rehabilitating people affected by such project in Schedule areas		
43.	Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or the Forest Rights Act, 2006;	According to the act, in case any forest land is required, then a NoC from the relevant Gram Panchayat or Sabha is required to ensure that no community or individual claims on the forest land will be affected.	Applicable when any sub-project is located in or is passing through the customary forest land including reserved and protected forests; protected areas and also community forest.	Ministry of Tribal Affairs (nodal agency); Department of tribal welfare at district level
44.	Scheduled Castes and Scheduled Tribes (Prevention of Atrocities Act), 1989	An Act to prevent the commission of offences of atrocities against the members of the Scheduled Castes and the Scheduled Tribes, to provide for Special Courts for the trial of such offences and for the relief and rehabilitation of the victims of such offences and for matters connected therewith or incidental thereto.	Applicable if the project is employing any employee from SCs and STs communities	Ministry of Tribal Affairs, Schedules Castes and Scheduled Tribes Protection Cell, Nodal Officer or Specific Officer
45.	Ancient Monuments and Archaeological Sites and Remains Act, 1958 as amended up to 2010	The act enacted the provision cultural resources and there safeguard in India. This Act places restrictions on the destruction, alteration, defacement or removal of monuments and on construction on or near the site of any protected monument. No person, including the owner or occupier of a protected area, shall construct any building within the protected area or carry on any mining, quarrying, excavating, blasting or any operation of a like nature in such area, or utilize such area or any part thereof in any other manner without the permission of the Central Government.	For the sub- project located within 300 m from any protected monuments or protected area under the Act	Archaeological Dept. GOI, Indian Heritage Society and Indian National Trust for Art and Culture Heritage (INTACH).
Technical Standards of Petroleum and Natural Gas Regulatory Board (PNGRB)				

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
46.	PNGRB (Technical Standards and Specifications including Safety Standards for City or Local Natural Gas Distribution Networks) Regulations, 2008, amended up till 2016	These rules provide a framework for the technical standards applicable to City Gas Distribution Networks, CNG Stations and filling stations, where one or more dispensing units are provided for sale of natural gas, in any other form such as Liquefied Natural Gas (LNG), as a fuel for vehicles. ■ It requires entities to have HSE Management System, Hazard Identification process (such as HAZOP), Risk Analysis and Risk Assessment Process, an Environmental Legislative Register (ELR), GIS based asset management system, Emergency Management System, Disaster Management Plan and operating and maintenance procedures	Applicable	Petroleum and Natural Gas Regulatory Board (PNGRB)
47.	PNGRB (Authorizing Entities to Lay, Build, Operate or Expand City or Local Natural Gas Distribution Networks) Regulations, 2008, amended up till 2018	An Act to provide for the standards regarding operating, building city gas distribution networks.	Applicable	Petroleum and Natural Gas Regulatory Board (PNGRB)
48.	PNRGB (Exclusivity for City or Local Natural Gas Distribution Network) Regulations, 2008, amended up till 2015	These exclusivity regulations applies on entity which is or proposes to laying, building, operating or expanding to facilitate the development and planning of integrated network CGD Network with appropriate end use of natural gas by a single entity as per the prescribed technical standards, specifications including safety standards.	Applicable	Petroleum and Natural Gas Regulatory Board (PNGRB)
49.	PNRGB (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP))	As per these regulations, the entity has to develop plans for identification, preparedness, mitigation, and post	Applicable	Petroleum and Natural Gas Regulatory Board (PNGRB)

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
	Regulations, 2010, amended up till 2014	recovery measures for the identified emergencies and disasters.		
State Specific Rules (In addition to the National Administrative Requirements)				
50.	The Karnataka Ground Water (Regulation and Control of Development and Management) Act, 2011	An Act to regulate and control the development and management of ground water and matters connected therewith or incidental thereto. Whereas, it is expedient to provide for Regulation and control of development and management of ground water in the State and for matters connected therewith or incidental thereto The Project is required to obtain No Objection Certificate from KGWA before abstraction of groundwater from borewells for domestic purpose at the plants during Construction/Operation phase	Applicable if Ground water is used during construction and operation phase	Karnataka ground water Authority
51.	Karnataka Preservation of Tree (Amendment), Act 2014	Legislation to restrict and regulate the felling of trees and prescribe growing of a minimum number	Applicable if any tree felling is to be done during the complete cycle of the project	Karnataka State pollution Control Board
52.	The Karnataka Fire Force Act, 1964 & Karnataka Fire Force Rules & Regulations, 1971	Karnataka Fire and Emergency Services have categorized the various industries requiring a Fire NoC into different groupings. Buildings with a minimum height of 15 m are required to obtain a Fire NoC.	Applicable to the Liquefied Natural Gas (LCNG) dispensing facilities or LNG storage with regasification facilities building	Karnataka State pollution Control Board
53.	Kerala Fire Force Act, 1962	The Project is required to obtain Fire and Safety clearance from the Regional Fire Officer of the Fire and Rescue Services for buildings above 15 meters height.	The act is applicable to the Liquefied Natural Gas (LCNG) dispensing facilities or LNG storage with regasification facilities building	Kerala State Pollution Control Board

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		Fire and Safety Clearance from Fire and Rescue Services, Government of Kerala		
54.	Structural Height Approval from Airports Authority of India (AAI)	For Projects being developed within 20 kms from the nearest runway of an airport, an NOC for Structural Height from AAI is required as per provisions of Section 9-A of the Indian Aircraft Act, 1934. Provisions of Govt. of India (Ministry of Civil Aviation) order GSR75l (E) and any notifications issued there under from time to time including the Aircraft (Demolition of Obstruction caused by Buildings and Trees etc.) Rules 1994	Applicable to the Liquefied Natural Gas (LCNG) dispensing facilities or LNG storage with regasification facilities building	Airports Authority of India (AAI)
55.	The Kerala Preservation of Trees Act, 1986	The Project is required to obtain tree cutting permit from Kerala Forest Department for cutting down of trees within the area earmarked for Project development.	Forest Clearance/Tree Cutting Permit from Kerala Forest Department	Kerala Forest Department
56.	Kerala Ground Water(Control & Regulation Act) 2002	Act is for conservation of ground water and for regulation of its control of its extraction and use in Kerala As per the Guidelines/Criteria for evaluation of proposals/requests for groundwater abstraction in Kerala, which came in effect on 15.04.2018. The Project being developed in an area is required to obtain an NOC for groundwater withdrawal subject to adoption of artificial recharge to groundwater	Applicable on the Gas Dispensing and regasification facilities	Kerala State Pollution Control Board

Sl. No.	Legislation	Objective and Requirement	Applicability for Programme and Sub-Projects	Responsible Agency
		Permit from Irrigation department, if the waster is used from the nearby surface water body		

APPENDIX C GAP ANALYSIS OF NATIONAL REGULATIONS AND INTERNATIONAL STANDARDS

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
1.	Associated Facilities	For associated facilities, that the Client has control of, AIIB/ IFC requires the Client to comply with the standards with respect to such facilities.	Associated facilities that do require any E&S clearance/ permit follow a separate process, and in most of the cases, these are completely disassociated with the project approval process.	No specific requirement to assess impacts of associated facilities and/or to prepare specific management plans.	Low equivalence
2.	Project Screening and Categorization	AIIB and IFC screens and assesses each proposed project at the concept stage to determine its risk categorization. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential impacts. While undertaking the process of assessment and categorization, the existing standards applicable in member country, as appropriate, will be taken into account. Projects are assigned A, B or C categories depending on the significance of the project's potential environmental impacts.	Screening and categorization of the projects/ activities are limited to assess the requirement of prior environmental clearance, forest clearance, consent for construction and operation, and coastal regulation zone approval. ■ Schedule of the EIA Notification, 2006 and amendments thereof issued by the Ministry of Environment, Forests and Climate Change (MoEFCC) defines list of projects or activities that require prior environmental clearance for the listed projects or activities. Projects or activities falling within the Schedule are categorized as Category A or B, based on size of the project, spatial extent of potential impacts on human health, and natural and manmade resources. ■ Additionally, the MoEFCC has developed the criteria for categorization of industrial sectors based on the "Pollution Index (PI)", which is a function of the emissions, effluents, hazardous waste generation and consumption of resources. Based on PI, the industrial sectors are categorized as "Red", "Orange", "Green" and "White". Based on the industrial sector category, prior approval is required to start the construction and operation of the project as per the Water (Prevention & Control of Pollution) Act, 1974 and Rules; the Air (Prevention & Control of Pollution) Act, 1981 and Rules; and the Environmental Protection Act, 1986 and Rule. White category industries are exempted from consent management. ■ Coastal Regulation Zone (CRZ) Notification, 2018 classifies CRZ to conserve and protect the unique	Screening and categorization is as per thresholds defined in the applicable rules and regulations, and are not risk based. There is no specific country system requirement for screening and categorization of the project/ activities on the basis of associated social risks.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			environment of coastal stretches and marine areas, besides livelihood security to the fisher communities and other local communities in the coastal areas. CRZ covers land area from High Tide Line (HTL) to 500 m on the landward side along the sea front, intertidal zone and the water and the bed area between the Low Tide Line (LTL) to the territorial water limit (12 nautical miles). For the purpose of conserving and protecting the coastal areas and marine waters, the CRZ area has been classified as CRZ-I, CRZ-II, CRZ-III and CRZ-IV. *Screening of Projects as part of obtaining/granting prior Environmental Clearance/CTE is adequate in the Country system. Statutory permitting requirements are strictly enforced within the country.*		
3.	Environment and Social Assessment and Management Plans based on categorization	For Category A and B projects, AIIB/ IFC requires the Client to conduct environmental and social impact assessment, with scope and depth commensurate with the nature and magnitude the potential impacts. For Category A projects, the client is required to prepare an environmental impact assessment, including an environmental management plan/framework, resettlement plan and assessment of social impacts as required, and tribal people development plan. For Category B projects, the documentation requirement for	Requirement of environmental impact assessment, social impact assessment, environmental management plan, social impact management plan are driven by requirement of prior environmental clearance, consent or CRZ approval. ■ ***The EIA Notification 2006*** - EIA study report and EMP are required for both Category A and Category B projects. Scope of EIA also covers socio-economic baseline studies, assessment of impacts on socio-economic aspects within the project study area and preparation of required management plans. ■ ***The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and Rules*** - Social impact assessment and social impact management plans (resettlement and rehabilitation plan) are required to be prepared when government acquires land: (a) for its own use, hold and control or for public sector undertakings; (b) with the ultimate purpose to transfer it for the use of private companies for stated public	Requirement of environmental and social management plans as per country system are limited to the projects/ activities, which require specific approval from the regulatory authority. There may be inclusion of E&S assessment and management plans as part of project feasibility study or Detailed Project Reports prepared for such projects.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		environment and social assessment will be determined on a case by case basis in consultation with the client keeping in mind the severity of impacts and nature of mitigation and monitoring measures. For Category C projects, there shall be a review of environment and social implication in the project documentation.	purpose (including PPP projects); (c) for immediate and declared use by private companies for public purpose. *In practice, due to the non-availability of technical knowledge among the government department to review the SIA and SIMP prepared by the project, the document and management plan under the mandatory requirement of the Act may have quality and adequacy issues.* ■ The Water (Prevention & Control of Pollution) Act, 1974 and Rules; the Air (Prevention & Control of Pollution) Act, 1981 and Rules; and the Environmental Protection Act, 1986 and Rules- Application for consent/ approval along with specific management plans are required for "Red", "Orange" and "Green" category projects. Furthermore, specific management plans are required to be prepared for hazardous chemicals, wastes, etc. as per the Environmental Protection Act, 1986 and rules thereunder, if applicable. ■ The CRZ Notification 2019- Mapping of CRZ area with respect to the project footprint, assessment of environmental and social impacts, and management plan are required to be prepared. ■ The Forest Conservation Act, 1980; and the Wildlife Protection Act, 1972 - For permission related to development in ecologically protected areas and diversion of forestland for non-forestry purposes, biodiversity management plan/ wildlife conservation plan and compensatory afforestation plan are required to be prepared. Additional management plans may be required for projects envisaged to have significant adverse impacts as identified during the EIA study. Legislations also require preparation of R&R plans in case of land acquisition by the government.		

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			Statutory Permitting requirements are strictly enforced in the country, however assessment of environment and social impacts and preparation of management plans may have gaps with respect to International Standards.		
4.	E&S Impact assessment	Conduct an environmental and social assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.	Schedule of the EIA Notification, 2006 and amendments defines list of projects or activities that require prior environmental clearance for the listed projects or activities. Projects or activities falling within the Schedule are categorized as Category A or B, based on size of the project, spatial extent of potential impacts on human health, and natural and manmade resources. Environmental Impact Assessment shall be conducted for Category A and B1 projects as per EIA Notification 2006. The scoping stage and standard TOR for projects define the scope of the EIA study, and an EIA report typically covers project description, benefits, details of sensitive areas, baseline conditions of the project area (10 km radius) in terms of climatology, meteorology, environmental parameters, social demographics, assessment of direct and indirect impacts on environmental receptors (such as air, noise, water, soil) and social receptors (workforce and public) and related management plans. However the requirements typically do not cover cumulative impact assessment, impacts on vulnerable groups, cultural heritage, and transboundary and global impacts, including climate change. Coastal Regulation Zone (CRZ) Notification, 2018 classifies CRZ to conserve and protect the unique environment of coastal stretches and marine areas, besides livelihood security to the fisher communities and other local communities in the coastal areas. CRZ covers land area from High Tide Line (HTL) to 500 m on the landward side	AIIB / IFC requires all Cat A & B projects to conduct E&S impact assessment, however the same requirements do not exist in India, and EIA/SIA is subject to projects that fall under the purview of related regulations. National requirements typically do not cover cumulative impact assessment, impacts on vulnerable groups, cultural heritage, and transboundary and global impacts, including climate change. While AIIB ESF & IFC PS requirement includes global impacts including climate change due to the project amongst others.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			along the sea front, intertidal zone and the water and the bed area between the Low Tide Line (LTL) to the territorial water limit (12 nautical miles). For the purpose of conserving and protecting the coastal areas and marine waters, the CRZ area has been classified as CRZ-I, CRZ-II, CRZ-III and CRZ-IV. The RFCTLARR Act has provisions for Social Impact Assessment (SIA) however, the same is exempted for infrastructure projects and SIA is not mandatory. However, other provisions, especially payment of compensation and R&R assistance will be done as per the provisions of the Act. *There have been issues with respect to the quality of the impact assessment reports, amongst international lenders and investors, as for a large number of projects; the EIA reports may not cover all aspects of international standards.*		
5.	Biodiversity consideration and impacts	Consider direct and indirect project-related impacts on biodiversity, for example habitat loss, degradation and fragmentation, invasive alien species, over exploitation, hydrological changes, nutrient loading, pollution and incidental take, as well as projected climate change impacts. Also take into account the differing values attached to biodiversity by affected communities and other stakeholders. Avoid adverse impacts on biodiversity. When avoidance of adverse impacts is not possible,	Environmental (Protection) Act, 1986 and Environment (Protection) Rules 1986 prohibits and restricts on location of industries and carrying on processes and operations in different areas including proximity to ecologically protected areas. The environmental impact assessment report prepared for category A and category B1 projects shall include environmental impacts on biodiversity due to project location, possible accidents, project design, project construction, regular operations, final decommissioning or rehabilitation of a completed project. Projects sited within protected areas, or Eco Sensitive Zone (ESZ) up to 10 kms (in case of ESZ boundaries are not defined) around any protected area will require recommendations from the Standing Committee of National Board for Wildlife (NBWL).	AIIB & IFC requires taking into account nutrient loading and projected climate change impact on biodiversity during the biodiversity assessment. They also requires taking into account “the differing values attached to biodiversity by affected communities and other stakeholders. However, these are not considered in Indian regulatory requirement.	Partial Equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		implement measures to minimize adverse impacts and restore biodiversity. Ensure that competent biodiversity expertise is used to conduct the environmental and social assessment, to assist in the development of a mitigation hierarchy, and to verify the implementation of mitigation measures. Where appropriate, develop a biodiversity action plan.	*Biodiversity assessment are mandatory requirements under the law for projects situated in protected areas or ESZ, otherwise execution of projects and construction activities cannot be initiated in such areas. The implementation of such practices is observed to be adequate in the county.* In case Project require diversion of forest land or felling trees within forest area, proposal in Form A for approval from State Government and prior forest clearance from Central Government is required. The proposal shall include location map of the proposed site, Index map in Survey of India topo sheets, Joint site Inspection report, Lay out plan, undertaking by project proponent to pay cost of compensatory afforestation, Undertaking to pay royalty of timber and / or operational cost for extraction of timber from the project site, as the case may be and EIA report. Coastal Regulation Zone Notification, 2019 does not allow projects to be developed in coastal zones without prior approval for regulatory authorities to ensure marine biodiversity protection. Project proponent is required to submit EIA report focussing on marine and terrestrial components with mitigation measures to be adopted to reduce the adverse impact. *It is observed that above regulations are strictly enforced in the country in the context of permitting requirements, however there could be gaps in the impact assessment documents. Recommendations are forwarded from State authorities to central level, and there could be varying degrees of inconsistencies within state authorities (e.g. due to lack of man-power and resources) that may limit the review and adequacy of such documents.*		

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
6.	Critical habitats, Natural habitats and Protected areas	Do not implement project activities in areas of critical habitats, unless: (a) there are no measurable adverse impacts on the critical habitat that could impair its ability to function; (b) there is no reduction in the population of any recognized endangered or critically endangered species; and (c) any lesser impacts are mitigated. If the project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, ensure there is no significant conversion or degradation, unless: (a) alternatives are not available; (b) the overall benefits from the project substantially outweigh the environmental costs; and (c) any conversion or degradation is appropriately mitigated. Where the project occurs within or has the potential to adversely affect protected areas, i.e. an area that is legally protected or internationally recognized or designated for protection, identify and assess potential project-	The Project proponent are prohibited to implement project in proximity to natural habitat or protected areas in line with Biological Diversity act, 2002, The Biological Diversity Act, 2002, The Wildlife (Protection) Act, 1972 and amendments, Forest Conservation Act, 1980 and amendments, Environmental (Protection) Act, 1986 and Environment (Protection) Rules 1986 and Coastal Regulation Zone Notification, 2011 and amendment and ensure conservation of ecosystem and natural habitats and recovery of viable population of species in their natural surroundings and protection of marine waters and coastal areas. *Scope of biodiversity impact assessment are typically decided during the EIA scoping stage, however assessment of critical habitats, key biodiversity areas, Important Bird Areas and other areas protected under International Conventions are usually not covered in such impact assessment studies. There is also no fixed requirement specified under any regulation on seasonal assessments, focus on migratory avifauna depending on the nature of projects. For e.g. Wind power projects do not require Environmental clearance, however they have significant adverse impacts on avifauna. In case any wind project located in areas that may not be located in a regulatory ESZ, but situated within critical habitat for certain species, there is no regulation to mandate a biodiversity impact assessment.*	Definition of “critical habitat” in India is different from the international standards.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		related adverse impacts and apply the mitigation hierarchy so as to prevent or mitigate adverse impacts from projects that could compromise the integrity, conservation objectives or biodiversity importance of such an area.			
7.	Pollution Prevention	Apply pollution prevention and control technologies and practices consistent with International good practices (e.g. World Bank Group's Environment, Health and Safety guidelines as references, particularly in case of absence of national standards and guidelines). Adopt clean production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, waste generation, and release of hazardous materials from production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.	According to Indian Legislations, the Project Proponent is required to adhere to the emission standards as set out by concerned authority to prevent environmental pollution and are required to follow the procedures laid down for handling hazardous substances on environmental grounds as per Environmental (Protection) Act, 1986 and Environment (Protection) Rules 1986, The Air (Prevention and Control of Pollution) Act, 1981 and The Water (Prevention and Control of Pollution) Act, 1974. The Project Proponent is also required to adhere with terms and conditions as are necessary to reduce noise pollution as per The Noise Pollution (Regulation and Control), Rules, 2000 and Amendments 2017. In addition to this, the Project proponent is required to obtain hazardous waste authorization from CPCB under The Hazardous and other waste (Management and Transboundary Movement) Rules, 2016 for handling of hazardous waste within the facility. The Indian legislations mandate projects to seek permits/ approvals/ authorizations to emit or discharge pollutants under The Air Act and the Water Act, and handling, processing and disposal of wastes under various categories of waste acts. The Indian regulation also mandates submission of environmental audit reports annually by	Though the regulations, policies and guidelines are in place, however, implementation of these measures is often observed to be inadequate.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			project proponent to concerned authority for carrying out project operations. *It is observed that above regulations are strictly enforced in the country in the context of permitting requirements. Emissions and discharge standards are largely enforced but stricter monitoring of compliances is in place for larger and hazardous industries and infrastructure projects, and there could be gaps in monitoring compliances for smaller industries. Variations also exist amongst State authorities. Particularly with respect to hazardous waste, the Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016 does not quantify generation, storage and handling of hazardous waste for projects requiring authorization. Therefore small scale projects often do not obtain hazardous waste authorization from concerned authority or manage hazardous wastes as per the Rules.*		
8.	Resource Efficiency	Implement technically and financially feasible measures for improving efficiency in consumption of energy and water, as well as other resources and material inputs. Integrate the principles of cleaner production into product design and production processes with the objective of conserving raw materials, energy and water.	The Indian legislations does not take into account regulations on climate change impacts. However, the Energy Conservation Act, 2001 and The Electricity Act, 2003 promotes use of energy efficient processes, equipment devices and systems and also promotes innovative financing of energy efficiency projects. The Energy Conservation (Amendment) Act, 2010 authorizes central government to issue energy savings certificate to designate consumer whose energy consumption is less than the prescribed norms and standards. *The above acts does not legally bind/ mandate use of energy efficient processes and equipment. Also, environmental impact assessment study may not include assessment of climate change impacts.*	Though the regulations, policies and guidelines are in place, however, implementation of these measures is still weak, considering easy accessibility of the resources and associated costs.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			The Water Act, the Environmental Protection Act, and the industry specific standards issued by the CPCB stipulates requirements of energy and water conservation. In addition to that waste management guidelines under the Environmental Protection Act and Rules, provides specific requirements for waste reduction, reuse and recycle. *Considering that the resources are depleting, both the regulators as well as project developers are taking specific actions in project design and production processes. However consistent implementation of these practices across the country is observed to be weak.*		
9.	Climate change and greenhouse gases	Assess both the potential impacts of the project on climate change as well as the implications of climate change on the project and develop both mitigation or adaptation measures as appropriate. Identify opportunities for no- or low-carbon use, where applicable, and for reducing emissions from the project. Consider alternatives and implement technically and financially feasible and cost-effective options, as appropriate, to reduce project-related greenhouse gas emissions during design and operation. For projects with significant greenhouse implication, where technically and financially feasible, quantify direct and indirect emissions in line with national protocols.	The Indian legislations do not take into account regulations on climate change impacts. However, the Energy Conservation Act, 2001 and The Electricity Act, 2003 promotes use of energy efficient processes, equipment devices and systems and promotes innovative financing of energy efficiency projects. The Energy Conservation (Amendment) Act, 2010 authorizes central government to issue energy savings certificate to designate consumer whose energy consumption is less than the prescribed norms and standards. *The above acts does not legally bind/ mandate use of energy efficient processes and equipment. In addition, environmental impact assessment study may not include assessment of climate change impacts.*	The Indian regulatory requirement does not specifically talk about GHG emissions and its implications as required in AIIB ESF and IFC PS.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
10.	Social risks and impacts	Undertake a broad assessment of potential social and economic risks and impacts, both positive and negative, associated with the project. This should include direct and indirect impacts at the community and individual level. Provide in the assessment an overview of the full range of potential social impacts and risks and identify measures for their avoidance or mitigation.	Requirement of social impact assessment, and social impact management plan are driven by requirement of prior environmental clearance approval or land acquisition process. **The EIA Notification 2006** - EIA study report and EMP are required for both Category A and Category B projects. Scope of EIA also covers socio-economic baseline studies, assessment of impacts on socio-economic aspects within the project study area and preparation of required management plans. *However, EIA reports usually lack coverage of community health and safety issues due to project development and operations, cumulative impacts due to land acquisition, impacts on specific vulnerable groups and cultural heritage.* **The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and Rules** - Social impact assessment and social impact management plans (resettlement and rehabilitation plan) are required to be prepared when government acquires land: (a) for its own use, hold and control or for public sector undertakings; (b) with the ultimate purpose to transfer it for the use of private companies for stated public purpose (including PPP projects); (c) for immediate and declared use by private companies for public purpose. Requirement of social management plans as per country system are limited to the projects/ activities, which require specific approval from the regulatory authority. There is no requirement of E&S documentation for low impact projects (Category C) and FI projects. The RFCTLARR Act has provisions for Social Impact Assessment (SIA); however, the	Projects which are exempted from the EIA/ SIA process are not mandatorily required to develop management plans. However, there may be inclusion of E&S assessment and management plans as part of project feasibility study or Detailed Project Reports prepared for such projects.	Partial Equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			same is exempted for infrastructure projects and SIA is not mandatory. *In general practice, due to the non-availability of technical knowledge among the government department to review the SIA and SIMP prepared by the project, the document and management plan under the mandatory requirement of the Act may have quality and adequacy issues. Statutory permitting requirements are strictly enforced in the country, however assessment of environment and social impacts and preparation of management plans may have gaps with respect to International Standards.*		
11.	Land and natural resource access	Assess economic and social impacts relating to the involuntary taking of land or restriction on access to natural resources; risks or impacts associated with land and natural resource tenure and use, including (as relevant) potential project impacts on local land use patterns and tenure arrangements, land access and availability, food security and land values, and any corresponding risks related to conflict or contestation over land and natural resources.	The Indian rules and regulations has the provisions of giving the access to the natural resources if the physical displacement of Indigenous people takes place under **RFCTLARR act 2013**, and the **ST and other traditional Forest dwellers (recognition of Forest Rights) Act, 2006** or **the Forest Rights Act, 2006** and amendments.	No specific gaps	Full equivalence
12.	Cultural Resources	Conserve cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts for the assessment process. Provide for the use of “chance find” procedures that include a pre-approved management and	Ancient Monuments and Archaeological Sites and Remains Act 1958 enacted the provision cultural resources and their safeguards in India. ■ This Act places restrictions on the destruction, alteration, defacement or removal of monuments and on construction on or near the site of any protected monument.	There are no regulatory gaps, however impacts on cultural heritage may not adequately captured in the screening and impact assessment stage of projects.	Full equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		conservation approach for materials that may be discovered during project implementation.	■ No person, including the owner or occupier of a protected area, shall construct any building within the protected area or carry on any mining, quarrying, excavating, blasting or any operation of a like nature in such area, or utilize such area or any part thereof in any other manner without the permission of the Central Government.		
13.	Meaningful Consultations for Projects	AIIB / IFC requires the Client to conduct a meaningful consultation process, that is compliant with national laws and regulations and this Policy, and (i) engages with communities, groups, or people affected by proposed projects; (ii) begins early and is carried out on an ongoing basis; (iii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible, is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, tailored to the needs of vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making.	***The EIA Notification, 2006*** - Public consultation is required to be undertaken by project proponents to identify concerns of local affected persons and others stakeholders during project design and planning stage. Public consultation is required to be undertaken for all the Category A and B1 projects or activities, except (a) all projects or activities located within industrial estates or parks approved by the concerned authorities, and which are not disallowed in such approvals; (b) expansion of roads and highways which do not involve any further acquisition of land; (c) all building /construction projects/area development projects and townships; and (d) all Category 'B2' projects and activities. The public consultation has two components comprising of: (a) A public hearing at the site or in its close proximity- district wise, to be carried out in the prescribed manner for ascertaining concerns of local affected persons; and (b) Obtain responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity. *Public consultation is mandatory for the specified projects; however, requirement under public consultation such as obtaining responses in writing from concerned persons, conducting public hearing in a manner enabling the views of concerned person to be freely expressed is inconsistent, and varies from project to project.*	Requirement of public consultation as per country system is limited to the projects/ activities, which require specific E&S approval from the regulatory authority. "Gender inclusive and responsive, tailored to the needs of vulnerable groups" are not taken into specific consideration in public consultation.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			The RFCTLARR Act, 2013 - The provision of meaningful consultation is enacted in RFCTLARR, which stated that the appropriate government shall ensure that a public hearing is held at the affected area, after giving adequate publicity about the date, time and venue for the public hearing, to ascertain the views of the affected families to be recorded and included in the Social Impact Assessment Report. And under the provision of RFCTLARR act, the draft Rehabilitation and Resettlement scheme referred shall be made known locally by wide publicity in the affected area and discussed in the concerned Gram Sabhas or Municipalities. In practice, the appropriate Government intends to acquire land for a public purpose, it shall consult the concerned Panchayat , Municipality or Municipal Corporation , as the case may be, at village level or ward level, in the affected area and carry out a Social Impact Assessment study in consultation with them, in such manner and from such date as may be specified by such Government by notification. In the schedule areas as declared by President of India by order, the consultation with the Gram Sabha is mandatory for acquiring any land in the area under the RFCTLARR act and the approval of the plans, programs and projects for social and economic development before such projects are taken up for implementation. The consultation shall be made available in the local language. Stakeholder consultations are also required, if the project requires forest clearance and CRZ clearance. However, there is no specific requirement of public consultation under the Water Act, the Air Act or the Environmental Protection Act.		

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			As per the act, it is mandatory to do public consultation and submit the record of same to the Administrator appointed asper act requirement. However, sometimes, the project proponent does not adequately record the grievances or issues raised by the community during the consultation and the adequate measures to redress the problems are not taken by the project. Adequate monitoring by regulatory authorities is not undertaken to ensure the same.		
14.	Information Disclosure	AIIB/ IFC require the client to ensure that social and environmental assessment documents are made available in a timely manner, in an accessible place, and in a form and language(s) understandable to affected people and to other stakeholders, including the general public, so they can provide meaningful inputs into project design and implementation	The EIA Notification 2006, the RFTCLARR Act 2013, the Forest Conservation Act, 1980, and the CRZ Notification 2018 mandates the information disclosure of E&S (including EIA and SIA) reports to the community. The documents related to environmental clearance, forest clearance, CRZ clearance documents are made available on the public portal of the MoEFCC as part of the appraisal process. Inputs and comments received during consultation process are also documented and used during finalization of the EIA/SIA or other reports. Disclosure of operational environmental reports are typically subject to environmental permit requirements of approved projects. For projects exempted from the EIA/SIA process, disclosure is not mandatory. However, the disclosure of E&S impacts and mitigation measures under the Water Act, the Air Act, and the Environmental Protection Act are in general not disclosed by the respective pollution control boards. *It is observed that in the country, projects usually do not start the early stakeholder engagement with the affected community at the planning phase. In addition, project proponents do not keep affected communities regularly informed and updated of the project process, which is a requirement under regulations.*	There are no specific regulatory requirements related to information disclosure of environmental details of projects during project operation and disclosure of operational environmental reports are typically subject to environmental permit requirements of approved projects.	Partial equivalence
15.	Resettlement plan, Abbreviated	Prepare a resettlement plan elaborating on displaced persons'	The RFCTLARR Act has provisions for Social Impact Assessment (SIA), for early screening to identify the	In case of SIA exemption, there is no defined	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
	Resettlement Plan, RAP and Resettlement Planning Framework	entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule. Where impacts on the entire displaced population are minor, or fewer than 200 people are displaced, the Client may, with the prior approval of the Bank, prepare an abbreviated resettlement plan, covering such elements as the Bank may specify. Impacts are considered "minor" if the affected people are not physically displaced and less than 10 percent of their productive assets are lost. If (i) the Project is likely to involve Involuntary Resettlement but consists of a program or series of activities whose details are not yet identified at the time the Project is approved by the Bank, or (ii) in exceptional circumstances, duly justified by the Client, the Bank determines that the environmental and social assessment of identified Project activities involving Involuntary Resettlement	potential risks and impacts arising out of involuntary resettlement. However, SIA is not mandatory in case of infrastructure projects and state government can give exemption from SIA. *Adequacy of SIA documents if usually noted to be an issue, but may vary depending upon the scale of projects and their location.* RFCTLARR Act has provisions for Resettlement plan; however, infrastructure projects are exempted from the same, therefore the RP is not mandatorily required to be prepared. However the payment of compensation should be made as per the provisions of the Act. *In general practice, the resettlement plan prepared by the projects is to fulfil the requirement of the provision of Act. However, the plan developed by the projects usually lack on the technical disclosure on Livelihood Restoration plan, minimize the livelihood impacts and the mitigation measures to reduce the impact of resettlement on the affected families.*	mechanism to carry out early screening of potential risks and impacts, and issues during land acquisition and resettlement are addressed by the district administration. Preparation of Resettlement plan, abbreviated RP or RPF is not a mandatory requirement for infrastructure projects.	

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		Prepare the resettlement plan or abbreviated resettlement plan, as early as possible during development of the activities, in conformity with the RPF approved by the Bank.			
16.	Livelihood Restoration	Improve, or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based where possible or cash compensation at replacement value for land when the loss of land does not undermine livelihoods, (ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit sharing schemes where possible.	The RFCTLARR Act, 2013 have the provision of livelihood restoration of the affected population whose land shall be acquired and the act is also having provision for livelihood restoration of the landless affected persons whose primary livelihood is dependent on the land acquired. Example of livelihood restoration measures, e.g. preferential employment opportunities, training & skill development, at least one member per affected family in the project or arrange a job in such other project, etc. *In general practice, the resettlement policy prepared by project proponents are not specific to the tribal and rural communities and other vulnerable groups affected by land acquisition, who have limited resources, limited education and inadequate skills, and require special assistance to become economically self-reliant.*	Livelihood restoration plans are often generic and do not specifically address impacts on Ips, vulnerable groups etc.	Partial equivalence
17.	Persons without title or legal rights/ informal rights	Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets.	In India, a family which does not own any land but a member or members of such family may be agricultural labourers, tenants including any form of tenancy or holding of usufruct right, share-croppers or artisans or who may be working in the affected area for three years prior to the acquisition of the land, whose primary source of livelihood stand affected by the acquisition of land are the affected families under the act and are eligible for resettlement assistance and compensation, will get the resettlement assistance under the RFCTLARR Act.	The Act is implemented differently in different states. Currently due to lack of clear guidelines issued to land acquisition agencies, practical difficulties are encountered in compensating persons without legal titles to the land. In Indian legislation, there is no provision of giving	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			In general practice, variations in implementation is seen across States. Also the compensation given to the person without legal title or rights varies from case to case or is followed only if there is requirement of the funding agency to provide the compensation to these people.	compensation for encroachment and/or to the illegal structure on the land proposed for acquisition.	
18.	Compensation and entitlement	Pay compensation and provide other resettlement entitlements before physical or economic displacement.	The payment of compensation is done as per the provision of RFCTLARR Act. Where compensation of acquired land is given at market rates with a multiplier of 1 for urban areas and 2 for rural area. Additional 100% solatium and 12% interest will be added on total amount from the date of preliminary notification to the date of award. *Implementation of the regulation is enforced throughout the country, however procedural delays in payment to affected parties are often observed.*	No specific gaps	Full equivalence
19.	Resettlement assistance	Provide physically and economically displaced persons with needed assistance, including the following: (i) if there is relocation, secured tenure to relocation land, better housing at resettlement sites with comparable access to employment and production opportunities, integration of resettled persons economically and socially into their host communities, and extension of project benefits to host communities; (ii) transitional support and development assistance, such as land development, credit facilities,	Indian laws stipulates the resettlement and rehabilitation of physically and economically displaced persons. The RFCTLARR Act provides the details of the provisions of resettlement facilities provided to the affected families in the place where they are resettled. *Resettlement assistance is given by projects to fulfil the mandatory requirements enacted by the rules and regulations. However, sometimes it is noted that such assistances may not comply with national quality requirements or are not adequate to improve or at least restore the livelihood of the affected families to pre-project levels. Also, delay in the entire process of providing such assistance is often seen in projects.*	AIIB ESF have an upper side on the integration of resettled persons economically and socially into their host communities.	Full equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		training, or employment opportunities; and (iii) civic infrastructure and community services, as required.			
20.	Negotiated settlement	Develop procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement to ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status.	Under Indian legislation, there is no clause of negotiated settlement procedure with respect to land procurement. *The private land purchase is usually undertaken between a company and land seller(s) based on the negotiated land price. In general, practise the land price is base on the prevailing market rate or above the market rate.*	AIIB & IFC PS 5 requires developing procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement. However, there are non-formal procedures in India that meet such requirement.	Partial equivalence
21.	External Grievance Redressal Mechanism	AIIB/ IFC requires that the client establish and maintain a fair and effective grievance redress mechanism to receive and facilitate timely resolution of affected peoples' concerns and grievances about the client's environmental and social performance at project level. Existing national mechanisms for grievance redressal may be used for the purpose of this Framework, if such national mechanisms are deemed appropriate and in compliance with the objectives of this Framework.	In India, there are established grievance redress channel through government agencies. As per the country system, in case of grievances related to land, it can be routed to concerned land acquisition officer and civil courts, issues related to labour can be routed to state labour departments and labour courts while environmental issues can be routed to State Pollution Control Board and National Green Tribunal. *In practice, the project proponent as per mandatory requirement by the rules and regulations may establish an external grievance redressal. However, the community do not seem aware of these grievance redressal mechanisms.*	No regulatory requirement for a project specific grievance redress mechanism.	Low equivalence
22.	Early Screening and assessment for Indigenous Peoples	Screen early on to determine (i) whether indigenous peoples are present in, or have collective attachment to the project area; and (ii) whether project impacts	In India, there is no requirement for early screening and social impact assessment on affected indigenous peoples. In practice, the design and implementation of projects do not regard indigenous peoples as a separate group.	No requirement in India	Low equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		on indigenous peoples are likely. Undertake a culturally appropriate and gender-sensitive social impact assessment or use similar methods to assess potential project impacts, both positive and adverse, on indigenous people's communities.			
23.	Indigenous peoples plan and Indigenous Peoples Planning Framework	When adverse risks and impacts to indigenous peoples are identified through social impact assessment, develop indigenous peoples plan based on the social impact assessment with the assistance of qualified and experienced experts and would draw on indigenous people knowledge and participation by the affected Indigenous people's communities. The plan would include: (a) a framework for continued consultation with the affected indigenous peoples communities during project implementation, (b) measures to ensure that indigenous peoples receives culturally appropriate benefits, (c) measures to avoid, minimize, mitigate, or compensate for any adverse project impacts, and (d) culturally appropriate grievance procedures, monitoring and evaluation arrangements, and a budget and time-bound actions	The Govt. of India already has various welfare schemes for tribal development in Scheduled V areas, which covers health, education, livelihood etc. In case any project passes through Scheduled V and VI areas, and has potential acquisition of tribal land, then as per the provisions of PESA, the R&R plans need to be discussed and approved by the Gram Sabha. The R&R plan should also include specific welfare and development provisions for the impacted tribal population. *In general practice, projects include the Indigenous Peoples Development Plan into the Resettlement Assistance Plan, and do not prepare a specific IPP/ IPDP*	The specific regulatory provisions are only limited to impacted tribal population in Scheduled V and VI areas. In non-Scheduled V or VI areas, there are no specific provisions for this.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		for implementing the planned measures. Prepare an IPP/ IPPF if a Project is likely to involve Indigenous Peoples and (i) consists of a program or series of activities whose details are not yet identified at the time the Project is approved by the Bank,			
24.	Free, Prior and Informed Consultation (FPIC/ FPICon)	Since Indigenous Peoples may be particularly vulnerable to the loss of, alienation from, or exploitation of their land and access to natural and cultural resources, engage in FPIC and obtain the broad support of the affected Indigenous Peoples if activities under the Project would: (i) have impacts on land and natural resources subject to traditional ownership or under customary occupation or use; (ii) cause relocation of Indigenous Peoples from land and limitations on access to natural resources subject to traditional ownership or under customary occupation or use; or (iii) have significant impacts on Indigenous Peoples' cultural heritage. In these circumstances, engage suitably qualified and experienced independent experts to assist in the identification of the Project's	As part of the RFCTLARR Act, conducting public consultations at SIA and RP stages is mandatory. However, there is limited applicability of the Act for infrastructure projects. Further, under land acquisition process, the land & revenue department will carry out consultations with affected person for hearing of objections and claims if any. In addition, if proposed project is passing through Schedules V areas, and if land belonging to Scheduled Tribes (ST) are potentially impacted, then Panchayati Raj Extension in Schedule Areas Act (PESA) gets triggered. As per the Act, the village council needs to be consulted and will need to approve the land acquisition and resettlement and rehabilitation proposals. *It is observed that in the country, projects usually do not start the early stakeholder engagement with the affected community at the planning phase. Also project proponents do not keep affected communities regularly informed and updated of the project process, which is a requirement under regulations. It is also noted that sometimes the grievances or issue raised by the community during the consultation are not adequately recorded by the project proponent and the adequate measures to redress the problems are not taken by the project. Adequate monitoring by regulatory authorities is not undertaken to ensure the same.*	There are no regulatory provisions aimed specifically at culturally appropriate and gender inclusive capacity development under the project, as required by AIIB and IFC.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		risks to and impacts on Indigenous Peoples.			
25.	Grievance Mechanism for IP	Establish a culturally appropriate and gender-inclusive grievance mechanism to receive and facilitate timely resolution of the affected indigenous peoples concerns and grievances regarding the project's environmental and social performance; and scale the grievance mechanism to the risks and impacts of the project on the indigenous peoples.	The Indian Judicial system comprises of different courts at district, state and national level that takes care of the grievances of the citizens of the country including STs. Further, India has special laws and courts for protecting the rights of the vulnerable communities and STs including: ■ Protection of Civil Rights Act, 1955 ■ SCs and STs (Prevention of Atrocities) Act, 1989 ■ ST and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 ■ Provisions of Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA). In case of any grievance, persons can approach the district administration, police, district and state court. Every district also has a tribal welfare department to look after the interests of ST. *In practice, the project proponent as per mandatory requirement by the rules and regulations may establish an external grievance redressal. However, the community does not seem aware of these grievance redressal mechanisms.*	In India, there is no legislation to establish a project specific cultural appropriate grievance mechanism. However the objection and disputes at the initial phase of land acquisition related to suitability of land proposed to be acquired, justification offered for the public purpose of the project and the finding of SIA report, are resolved by the government authorities at the district level.	Partial equivalence
26.	Community Health and Safety	Assess safety and health risks and impacts on local communities, and put in place preventive and emergency preparedness and response measures to avoid, or where avoidance is not possible, to minimize, adverse risks to, and impacts of the project to the	Project related safety and health risks for the local communities are included as part of disaster management planning documents prepared at EIA stage. Public Liability Insurance Act, 1991 and Protection of Human Rights Act, 1993 also have provisions for community safety. *In general, however, it is observed that projects do not conduct Hazard Identification and Risk analysis, particularly taking into the consideration community Health and Safety*	Assessment of community health and safety risks is not a mandatory requirement during early screening stage of impact assessment.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
		safety and health of local communities.	*risks. Such issues are often overlooked by project proponents.*		
27.	Labor Protection (including occupational health and safety)	Assess labor and working conditions of project workers, as well as health and safety risks to local communities in the area of the project. Implement measures designed to ensure project workers have safe and healthy working conditions and put in place measures to prevent accidents, death, injuries, and disease caused by the project. Apply the relevant occupational health and safety provisions and, as appropriate, industry-specific, to the project. Meet labor protection requirements of national laws and regulations and relevant International Labor Organization conventions as applicable to the country.	India is regulated in the employment and the labour protection. These regulations cover an array of issues, with the main purpose and/or objective with to provide for the health, safety, welfare, working hours, leaves of workers, regulate the payment of wages, terms of service, overtime, regulate the engagement of contractual labour and contractor by the principal employer, provide a mechanism for settlement of industrial disputes, stipulates the minimum rates of wages and the social security benefits to the workers. Principle laws in India in terms of labour protection include: ■ The Industrial Disputes Act, 1947 ■ The Industrial Disputes (Amendment) Act, 2010 ■ Contract Labour (Regulation & Abolition) Act, 1946 ■ Child Labour (Prohibition and Regulation) Act, 1986 and the Child Labour (prohibition and Regulation) Rules, 1988 ■ Bonded Labour System (Abolition) Act, 1976 ■ Trade Unions Act, 1926 ■ Shops and Establishment Act, 2017 ■ Minimum Wages Act, 1948 ■ Payment of Bonus Act, 1965 ■ Equal Remuneration Act, 1976 ■ Workmen's Compensation Act, 1923 ■ Employees Provident Fund and Miscellaneous Provision Act, 1952 ■ Inter-state Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979 ■ The Employees' State Insurance Act, 1948 ■ The Maternity Benefit (Amendment) Act, 2017	Implementation of labour laws in India is weak especially for contractual workforce during construction phase of projects.	Partial equivalence

S. N.	Aspect/ Theme	International Standards requirements (AIIB ESS & IFC PS)	National regulatory requirements and prevailing enforcement / implementation practices	Gaps/Observations with respect to International Standards	Equivalence assessment (Full equivalence / Partial equivalence / Low equivalence) and gaps identified
			■ The Building and other Constructions Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and state specific Rules ■ The Factories Act, 1948 *In general practice it is often observed that projects do not obtain the mandatory licences or registration certificates related to labour protection and welfare, especially during construction phase and mostly with respect to the contractual workforce. Therefore, it is advisable to undertake due-diligence of the labour compliances of projects at an early stage and thereafter on continuous basis.*		

APPENDIX D SITE SCREENING CHECKLIST

Appendix D1: Site Screening Checklist

A. General Information	
Name of the geographical area	
Name of the network component	
District	
Taluk/Block	
No of villages/ULBs covered	
Geographical coordinates of each network component	
Source of gas	
Quantity to be supplied	
Name of GA Head	
Contact number	
E-mail id	

B. Environmental Screening				
Sl. NO.	**Question**	**Yes**	**No**	**Details**
a)	**Is the location of the Network component adjacent to or within any of the following environmentally sensitive areas?**			
1	Type of Terrain (Plain/Hilly/ Mountainous etc.)			
2	Coastal Area			If yes, mention name and distance
3	National Park			If yes, mention name and distance
4	Wildlife/Bird Sanctuary			If yes, mention name and distance
5	Tiger Reserve/Elephant Reserve			If yes, mention name and distance
6	Wetland			If yes, mention name and distance
7	Natural Lake			If yes, mention name and distance
8	World Heritage Sites			If yes, mention name and distance
9	Archaeological monuments/sites (under ASI's central/state list)			If yes, mention name and distance
10	Reservoirs/Dams			If yes, mention name and distance
b)	**Does the network or pipelines pass through any of the following areas or located along the site?**			
1	Passes through or along inhabited areas			
2	Passes through or along the agriculture land			
3	Passes through or along the Grazing land			
4	Passes through or along the barren land			
5	Passes through Reserved/ Protected Forest or located along the forest			
6	Are there any areas with landslide or erosion issues along the network pipeline?			

B. Environmental Screening				
Sl. NO.	**Question**	**Yes**	**No**	**Details**
7	Are there any lakes/ swamps/ nallas/ streams/ rivers etc. along/crossing any network component?			
8	Are there problems of water stagnation and other drainage issues on or near any of the network components?			
9	Is the area along the project prone to flooding?			
10	Is the area adjacent or within 100 m of any area with threatened/rare/ endangered fauna (outside protected areas)			
11	Is the area adjacent or within 100 m of any Habitat of migratory birds/ animal (outside protected areas)			
12	Is the area adjacent or within 100 m of any Historic Places (not listed under ASI – central or state list)			
13	Within 100 meter of the Network component is there any Regionally Important Religious Places?			
14	Is there is need to cut trees for any of the Network component alignment /construction?			
c)	**Will the construction, operation or decommissioning of the sub project network components cause changes to or have impact on the following?**			
1	Will this construction cause any disfiguration of landscape embankment, cuts, fills and quarries?			If yes, please give details
2	Will there be any landslide/soil erosion at construction site?			If yes, please give details
3	Will the construction and maintenance cause any sedimentation in nearby river or stream?			If yes, please give details
4	Will there be any impact on Air – dust during construction?			If yes, please give details
5	Will there be any Solid waste/sanitary waste disposal at construction camp and work sites?			If yes, please give details
6	Noise/ vibration/ light/heat energy/ electromagnetic radiation during construction			If yes, please give details
7	Will there be any accident due to increased traffic during construction and operation?			If yes, please give details

B. Environmental Screening				
Sl. NO.	**Question**	**Yes**	**No**	**Details**
8	Will there be any health issues like communicable diseases, respiratory problems and stress near project area?			If yes, please give details

C. Social Screening				
Sl. NO.	**Question**	**Yes**	**No**	**If yes, provide details**
a)	**Land Requirements**			
1	Total land requirement for the sub-project, with break up of all network components			
2	Will the project require government land? If yes, quantify.			
3	Will the project require additional private land? If yes, give details on quantity, category, present use and user. Give the details of titleholders			
4	Will the project require Forest Land?			
5	Are there any Non-titleholders (Encroacher) on the identified land parcels?			
6	Are there any Non-titleholders (Squatter) on the identified land parcels?			
7	Are there people losing livelihoods/ access due to loss of Govt. Lands to Project?			
8	Is Agriculture Land affected due to the sub project? Give details.			1. Total no. affected 2. No of Title Holders 3. No. of Non-titleholders (Encroachers and Squatters) 4. No. of BPL Families losing Agriculture Land
9	Are there dwellings (residential) affected due to sub-project? Give details.			1. Total no. affected 2. No of Title Holders 3. No. of Non-titleholders (Encroachers and Squatters) 4. No. of BPL Families losing dwellings
10	Are there Commercial properties affected due to sub-project? Give details.			1. Total no. affected 2. No of Title Holders 3. No. of Non-titleholders (Encroachers and Squatters) 4. No. of BPL Families losing commercial properties
11	Are there Common Property Resources affected? Give details.			

Part D: Result/Outcome of E&S Screening Exercise				
S.N.	**Question**	**Yes**	**No**	**If yes, give details**
1	Is an environmental impact assessment required to be conducted for the sub-project?			
2	Is a separate detailed social assessment required to be conducted for the sub-project?			
3	What are the statutory approvals/ regulatory clearances required?			Forest: Wildlife: CRZ: Others (specify)

Appendix D2: EHS Audit Checklist

In addition to Appendix D1, this checklist will be particularly used by AGP site team to screen potential issues associated with the setting up of CNG cascade, compressor and dispenser within premises of retail fuel outlets of OMCs.

A. General Information	
Name of the geographical area	
Name of the network component	CNG dispensing system
District	
Taluka / Block	
Village / ULB	
Geographical coordinates of OMC fuel outlet	
Name of the OMC	
Source of gas	
Number of cascades and capacity of gas storage	
Details of other associated equipment	
Name of GA Head	
Contact number	
E-mail id	

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Permits/ Regulatory compliances	**Status**	**Remarks/ Non Compliances**
1.	Has License from Petroleum & Explosives Safety Organization (PESO) under The Petroleum Rules, 2002 been obtained for the OMC station? Provide details.	Yes ☐ No ☐ NA ☐	
2.	No Objection Certificate from District Magistrate for setting up the fuel station	Yes ☐ No ☐ NA ☐	
3.	Does the facility have borewell? Has the OMC obtained Permission/approval for groundwater abstraction from CGWB?	Yes ☐ No ☐ NA ☐	
4.	Has Contract Labour Licenses under Contract Labour (Regulation and Abolition) Act 1970 been obtained?	Yes ☐ No ☐ NA ☐	

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Labour Compliances	**Status**	**Remarks/ Non Compliances**
5.	Minimum wages paid to various worker categories (are wages as per the latest notification) - check for males and females and workers categories- unskilled, semi-skilled, skilled, highly skilled. (review of wage register)	Yes ☐ No ☐ NA ☐	
6.	Working hours in accordance with Indian Labour Law (review of attendance records)	Yes ☐ No ☐ NA ☐	
7.	Overtime wages paid (review of wage register)	Yes ☐ No ☐ NA ☐	
8.	Any child labour observed at the OMC station (review of age proof documents)	Yes ☐ No ☐ NA ☐	
9.	Are workers being provided Provident Fund and ESIC safeguards?	Yes ☐ No ☐ NA ☐	
10.	Is grievance redressal system implemented and well documented	Yes ☐ No ☐ NA ☐	
11.	Number of grievances reported by workers & staff	Yes ☐ No ☐ NA ☐	
	General	**Status**	**Remarks/ Non Compliances**
12.	Does the OMC have EHS Policy and procedures?	Yes ☐ No ☐ NA ☐	
13.	Is EHS Policy conspicuously displayed at the fuel station?	Yes ☐ No ☐ NA ☐	
14.	Is drinking water available for workers and staff?	Yes ☐ No ☐ NA ☐	

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
15.	Are proper sanitation facilities available, kept clean, and adequately supplied?	Yes ☐ No ☐ NA ☐	
16.	Are smoking areas designated and away from fuel storage and handling areas?	Yes ☐ No ☐ NA ☐	
17.	Are confined spaces labelled?	Yes ☐ No ☐ NA ☐	
18.	Are safety signages adequately displayed at various locations?	Yes ☐ No ☐ NA ☐	
19.	Are storm water drains provided and are in good condition?	Yes ☐ No ☐ NA ☐	
20.	Is the housekeeping adequate and are waste bins provided?	Yes ☐ No ☐ NA ☐	
21.	Are daily wage rates displayed at office?	Yes ☐ No ☐ NA ☐	
22.	Are the toilets connected to septic tank/ soak pit or any other arrangement made?	Yes ☐ No ☐ NA ☐	
	Emergency Preparedness	**Status**	**Remarks/ Non Compliances**
23.	Are emergency contact numbers displayed at conspicuous locations?	Yes ☐ No ☐ NA ☐	
24.	Are fire extinguishers readily available, and identified?	Yes ☐ No ☐ NA ☐	
25.	Are fire extinguishers periodically inspected, maintained and tagged at all locations?	Yes ☐ No ☐ NA ☐	
26.	Is fire hydrant system available (in line with PESO requirement) and regularly maintained? Provide details	Yes ☐ No ☐ NA ☐	
27.	Are first aid kit(s) available and inspected weekly?	Yes ☐ No ☐ NA ☐	

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Personnel Protective Equipment	**Status**	**Remarks/ Non Compliances**
28.	Are safety glasses and masks worn by maintenance and cleaning staff?	Yes ☐ No ☐ NA ☐	
29.	Are safety shoes worn by all employees and workers?	Yes ☐ No ☐ NA ☐	
30.	Are the fuel handling staff provided with reflective vests and gloves?	Yes ☐ No ☐ NA ☐	
31.	Is hearing protection available and used when needed?	Yes ☐ No ☐ NA ☐	
32.	Are other PPE (such as hard hats, Goggles or face shields, fall protection equipment, etc.) provided and used when needed?	Yes ☐ No ☐ NA ☐	
	Chemical, Oil and Waste Storage and Handling	**Status**	**Remarks/ Non Compliances**
33.	All loose oily rags and waste removed from fuel area and stored in proper covered containers?	Yes ☐ No ☐ NA ☐	
34.	All trash and combustible material removed from office premises as necessary?	Yes ☐ No ☐ NA ☐	
35.	Waste containers labelled and covered?	Yes ☐ No ☐ NA ☐	
36.	Are chemicals and other maintenance items stored away from fuel areas?	Yes ☐ No ☐ NA ☐	
	Electrical Hazards	**Status**	**Remarks/ Non Compliances**
37.	Covers installed on all outlets, switches, junction boxes, pull boxes, panel boards, etc., that are in service at the office and fuel handling areas?	Yes ☐ No ☐ NA ☐	

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
38.	All circuits identified at panel boards?	Yes ☐ No ☐ NA ☐	
39.	Extension cords in good condition (not frayed, broken) with current inspection markings?	Yes ☐ No ☐ NA ☐	
40.	Extension Cords and other temporary wiring protected from damage and arranged so as not to create tripping hazards?	Yes ☐ No ☐ NA ☐	

APPENDIX E SAMPLE TERMS OF REFERENCE FOR ESIA/ ESDD

Terms of Reference for ESIA Study

[This template can be used as a guide for developing a Terms of Reference (ToR) for an external third party Consultant to conduct an Environmental and Social Impact Assessment (ESIA) study for sub-projects.]

Project Description

[To be filled in by HSE Head and will include basic description of the sub-project for which ESIA study is required to be undertaken (location, land area, type of land involved, stage of project development).]

Objective of ESIA

The objectives of the Environmental and Social Impact Assessment study will be:

- To analyze, quantify the impacts, and design project activities keeping in view environmental and social issues and integrate the such issues in the project planning and design
- To establish the environmental baseline in the study area and to identify any significant environmental issues;
- To prepare an inventory of biodiversity (Flora and Fauna) affected due to project activity.
- To analyze specific risks associated with the Project and its impact considering the Project foot print (including associated facilities)
- To mitigate adverse impacts by provision of the requisite avoidance and compensation measures of proposed project activities
- To identify and prepare a profile of stakeholders involved in the project, including community, through suitable survey using internationally acceptable tool/s, as applicable
- To conduct socio economic survey using tools such as Focused Group Discussion to identify expectations and concerns of project affected community
- To establish the socio-economic status of the project affected community based on data collated through secondary as well as primary information
- To formulate and suggest suitable CSR and community development activities (if applicable) for the specific project
- To develop Environment and Social Management and Monitoring Plan (ESMMP) for implementation & monitoring of the mitigation measures along with indicative Budget.
- To categorize the Project as per AIIB/IFC Categorization, based on outcome of the ESIA study.

Scope of ESIA

The approach for the ESIA study shall comply with the specific guideline of IFC Performance Standards 2012 and other applicable statutory requirements of India.

The broad scope of work will be undertaken by the consultant for ESIA study includes the following aspects of proposed project but not limited to.

- Literature survey, data collection, examination of available environmental, social reports/data, understanding the proposed project through project report and discussions etc.
- Baseline environmental studies shall be carried out as below, but not limited to:
    - Physical environment
        - Temperature, Wind speed, Wind direction, Wind rose patterns, relative humidity, Rainfall, Visibility, Cloud cover, Solar Radiation.
        - Ambient air quality (PM10, PM2.5, SO2, NOx, CO) to be monitored as per be monitored as per CPCB guidelines
        - Noise levels of the study area shall be monitored and measured as per CPCB guidelines and IFC PS requirements

        - Ground water quality (drinking purpose) shall be monitored against IS specifications.
        - Surface water quality shall be monitored and measured as per CPCB norms
        - Soil quality of study area will be monitored and analyzed for parameters as per ICAR specification/guidelines
        - Geological & hydro geological data/information will be compiled from secondary sources or as per study requirement
        - Land use information/status will based on the district census handbooks as well as with the help of satellite imagery.
    - Ecological environment
        - This shall include assessments/information of terrestrial and aquatic communities (as applicable), presence of rare, threatened & endangered species etc. if any.
        - The survey also includes identification & presence of national parks, sanctuaries, Biodiversity park, endangered/threatened/ rare species & assessment of the species diversity, density, abundance etc. and formulation of ecological indexes.
    - Socioeconomic environment
        - Demographical information/status will be based on census document and other state level / district level databases
        - socio-economic information and profile outlining data from census and socio-economic surveys, with information on livelihood profile, infrastructure, vulnerability, gender, indigenous peoples (ethnic minorities, scheduled tribes), and labour;
        - Identification of historical/ archaeological sites/ monuments in the study area (if any) based on Archaeological Survey of India (ASI)/revenue records.
        - Identification of common property resources within project site and mitigation measures, if any
        - Traffic survey for the present daily traffic, peak hour traffic and traffic composition & any change in traffic composition and volumes due to project development
- Assessment of E&S Impacts
    - The potential E&S impacts will be assessed on the basis of baseline data generated from studies. It should be analysed and compared with applicable standards for each environmental attribute. The short term and long-term impacts particularly on sensitive targets such as endangered species, plants and historically important monuments should also be identified.
    - A qualitative and quantitative assessment of sources of pollution from proposed project (dust, waste water, noise pollution, solid waste, etc.) should be done to identify the adequacy of the proposed control measures as well as the likely impact on existing critical areas.
    - Discuss the land procurement / acquisition process, considering Indian laws, rules and regulations aligned with IFC PS 5 guidelines. Rates of compensation paid in accordance with market rates, consultation before land procurement shall be reflected with relevant evidences in the Study.
    - Discuss impacts on indigenous peoples or scheduled tribes
    - Impacts will be assessed for both Construction & Operation phases.
- Environmental, Social & Biodiversity management & monitoring plan
    - For each potential negative impact identified, recommendations will be presented for avoidance, minimization or mitigation of impacts along with costs associated with potential mitigation. The ESMP will address the following:
        - Identify and summarize all anticipated significant adverse E&S impacts along with mitigation measures
        - Define a set of policies and objectives for environmental performance and continual enhancement of performance
        - Monitoring programme for the proposed project (for construction & operation phase) will be worked out covering all E&S attributes as per the best practices in the World Bank/IFC General and sector specific EHS guidelines

- Recommend monitoring and reporting procedures including the parameters to monitored, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions.
- Develop management plan for addressing specific issues such as waste management, disasters, emergencies, external grievances, construction safety, labour management, stakeholder engagement, indigenous peoples etc.
- Recommend an organizational structure for effective implementation of the ESMP.

Table 11.2 Outline of ESIA Report

S. N.	Aspects/ Sections	Details
1	Executive Summary	Provide concise description of the critical facts, significant findings, and recommended measures.
2	Description of the project	A complete description of project and major components; geographic, ecological, social, and temporal context; including any associated facility required by and for the project (e.g., toll facilities, labour camps, water supply, storage areas); project's area of influence; maps indicating any protected areas in proximity (at least 10 km buffer from such areas); land requirements; consultation processes followed including an assessment of the adequacy of information disclosed to the landowners and the bargaining power of landowners to negotiate for fair compensation; mechanisms adopted for calculating the replacement costs of land and other assets impacted; resource requirements; project implementation schedule; project cost.
3	Policies, Legislation and Regulations relevant to the project	Discuss the national and local legal and institutional framework within which the ESIA is carried out. It also identifies project-relevant international agreements to which the country is a party.
4	Description of the Baseline	Describe relevant physical, biological, and socioeconomic conditions within the study area; current and proposed development activities within the project's area of influence; water quality, availability and adequacy; current land use; results of ecology and biodiversity survey; physical or cultural heritage; flooding and seismic risks; socio-economic information and profile outlining data from census and socio-economic surveys, with information on vulnerability (including scheduled castes), gender, indigenous peoples (ethnic minorities, scheduled tribes), and labour
5	Anticipated Environmental and Social Impacts and Mitigation Measures	Predict and assess the project's likely positive and negative direct and indirect impacts, as well as cumulative, to physical, biological, socioeconomic; analysis of potential noise; and mitigation measures to address impacts: ▪ Landscape impacts of excavation and construction ▪ Biodiversity/ecosystem functions including Habitat loss and/or fragmentation ▪ Pollution of potable, surface or ground water ▪ Air pollution ▪ Change in drainage patterns ▪ Socio-economic and cultural impacts, ▪ Impacts on indigenous peoples ▪ Impacts on cultural heritage ▪ Risk assessment with respect to accident, incidents

S. N.	Aspects/ Sections	Details
		▪ Noise and vibration ▪ Solid waste disposal ▪ Change in land use ▪ Visual impacts – aesthetics ▪ Traffic diversions related issues during construction phase
6	Analysis of Alternatives	Alternatives to the project that could be considered at that site or at any other location including no action alternative, with rationale for preferring the chosen alternative.
7	Information Disclosure, Consultation, and Participation	▪ describe stakeholders mapping and engagement process, including information disclosure and consultation with affected people and other stakeholders; ▪ summarize comments and concerns received from affected people and other stakeholders ▪ describe the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) for the stakeholder engagement process during project implementation. ▪ Grievance Redress Mechanism
8	E&S Management and Monitoring Plan	Details of Project level SEMS, construction/ operation phase Allocation of roles and responsibilities Management Plans • Construction Labour • Stakeholder Engagement • Public Disclosure • Traffic Management • Environment Management • Resettlement and Relocation (if required) • Debris Management • Risk and Emergency Response Monitoring Plan • Air • Noise • Waste disposal • OHS • Biodiversity • Structural Safety
9	Conclusions	Provide the conclusions drawn from the assessment and provides recommendations.

Resettlement Plan (RP), Livelihood Restoration Plan (LRP) or Livelihood Enhancement Plan (LEP)

In case of certain sub-projects, where requirements of ESS 2 / PS 5 are triggered, and/or applicable and where the ESDD has indicated major gaps and/or non-conformances, a specific study or assessment may be required to address the gap. This will be in form of a Resettlement Plan (RP) and/or a Livelihood Restoration Plan (LRP) or Livelihood Enhancement Plan (LEP), as applicable, for projects that trigger ESS 2/ PS 5 requirements and where the land acquisition has resulted in adverse impacts that have not been mitigated in line with the Applicable Reference Framework.

Terms of Reference for ESDD

The following subsections provide a sample Terms of Reference (ToR) for a third party for carrying out due diligence. External ESDD consultant will be provided following information provided by the AGPCGPL:

- Overview of the asset;
- Outcomes of the preliminary E&S screening undertaken by AGPCGPL;
- Outcomes of specialized studies undertaken prior to ESDD; and
- Scope of ESDD.

Asset Overview

To be included here

Objectives of the ESDD

To be included here

Reference Framework

The consultant shall undertake the ESDD in accordance with the following reference framework:

- Applicable Indian regulatory framework (national, state and local) on E&S issues;
- Environmental and Social Framework of the AIIB, Amended 2019;
- International Finance Corporation (IFC) Performance Standards, 2012;
- World Bank Group's (WBG) General EHS Guidelines, 2007;
- WBG Sectoral EHS Guidelines, 2007;

Consultant Qualifications

Focused Assessment Parameters

The ESDD will comprise the following steps:

- **Information Review**: This should include a review of all relevant social, labour, health and safety and environmental related documents and information (i.e., environmental permits / licenses and associated applications, health and safety plan, stakeholder engagement plans, human rights and indigenous peoples policies and procedures, land acquisition and R & R plans, emergency response plan, consultation plans and documentation of consultations done till date, concession and construction contracts, any other additional environmental, health and safety studies, etc., and, subsequent to the site reconnaissance, review of any additional information obtained or collected.
- **Site Reconnaissance:** A site investigation of the entire sub-project will be performed consisting of visual observation of relevant areas directly and indirectly affected by the sub-project, meetings with relevant individuals / entities associated with the sub-project to discuss the social, environmental issues, health and safety and labour issues, consultations with fence line communities and/or affected communities and obtaining any additional information required.
- **Discussions:** These will be held at site level.

- **Report Preparation:** Two documents will be required associated with the due diligence:

  1) Key Issues Report (or Principal Findings Report), and

  2) Detailed E&S Due Diligence Report.

Schedule

- The Consultant shall submit the Key Issues Report within [x] working days from completion of site reconnaissance visit. The draft [Due Diligence] Report will be submitted by [insert date]. The final Report shall be submitted within 1 week after receiving comments from AGPCGPL on the draft report.
- All reports should be written and prepared in English and delivered in electronic format.

Sample Structure of ESDD Report

A typical ESDD report will need to cover the following at minimum.

1. **Introduction:** This section shall primarily detail:
   - Background to the Due Diligence
   - Primary Objective and Scope of the Assessment
   - Methodology adopted for the Assessment, and
   - Limitations to the Assessment

2. **Project Overview:** This section primarily entails the complete project, its various components, as well as the current status of the sub-project.
   (i) Status of regulatory compliances against concession agreement, E&S permit conditions and applicable legislations
   (ii) Provide overview existing E&S management systems
   (iii) Provide details on land footprint, procurement details, status of R&R implementation
   (iv) Include details on project utilities
   (v) Provide details on ecological aspects, including presence of natural and critical habitat, status of compensatory afforestation, etc.
   (vi) Other details to include – workforce, status of ongoing/ pending litigations, accident/ incident statistics
   (vii) Include review of information available on the public domain regarding the project
   (viii) Provide details of stakeholder engagement activities

3. **Key Findings Section:** This section incorporates the key findings and gaps that were observed and assessed from the documentation review and site assessment. The findings are based on the assessment of the project as per the applicable reference framework and guidelines pertaining to the same. A sample structure of a key findings table is provided below for reference.

ESDD Findings Table

S.N.	Requirements as per the Applicable Reference Framework	Observations	Key Findings & Gaps	Recommendations

4. **Confirmation on Project Categorisation:** This section will discuss the parameters for categorization of the project (Category A, B or C) in keeping with the reference framework.

5. **Environmental and Social Action Plan**: This section outlines the key mitigation measures and corrective actions as prescribed to the assessed gaps highlighted in the findings table. The ESAP will primarily incorporate:

   - Key Issues and Concerns Identified
   - Mitigation or Corrective Actions
   - Measurable outcome/ documentation
   - Responsibility of Holding Company and resources required
   - Timeline for completion and implementation of the corrective actions
   - Budget or cost for corrective actions

A sample template for ESAP is provided below for reference:

Key Issues & Gaps	Corrective Actions	Responsibility and Resources	Measurable Outcome	Timeline	Cost

APPENDIX F TEMPLATE FOR E&S MONITORING REPORT

Environmental and Social Monitoring Report

{Red text serves as guide for report preparation, please delete when report is finalized.}

TITLE PAGE

TABLE OF CONTENTS

LIST OF ABBREVIATIONS {All abbreviations in the report test should be listed here}

EXECUTIVE SUMMARY

{a summary of the project's status and environmental and social (ES) compliance during the reporting period}

1. Introduction

1.1 Brief Project Description {Include maps showing site location and vicinity if needed}

1.2 Land Acquisition Progress

Name of the Place	Govt Land Required	Govt Land Obtained	Private Land Required	Private Land Acquired
Total				

{A brief description of the status of land acquired, procedure of land acquisition and any major bottleneck}

1.3 Summary of Resettlement & Compensation

Total Land Required	Total Land Acquired	Balance land to be acquired	Total number of PAPs Land sellers	Physically displaced	Commercially displaced

{A brief description of the status of land acquired, number of PAPs involved, number of PAPs already compensated. If a RP has been prepared for the project, please provide progress on the implementation of the RP in section 6}

1.4 Project Progress Status and Implementation Schedule

{Describe the project milestones during the reporting period and highlight any change from original scope, alignment, methodology, and/or schedule.}

{The project Gantt chart may be included}

{Include a simplified table like the sample below}

Project Component • Stage	Commencement Date	Target Date {and Revised	Progress Status	Percent Completed	Remarks

		Target Date if delayed}	{not yet started; ongoing; completed}		
Elevated Component	*Example for reporting period Jan-June 2020*				
• Contract Award		31 Jan 2019	Completed	100%	Contract Awarded to XYZ Contractor
• Construction (e.g. civil works, installation of equipment, …)	1 Apr 2019	31 Mar 2022 (original target completion was 31 Dec 2021)	On-going	15%	There was a delay in the delivery of equipment…
•					
•					

2. Compliance with Applicable Regulations/Standards

{Include the applicable ES Regulations/Standards following the sample table below}

Regulations/Standards	Compliance Requirements under the Regulation e.g. clearance/permit/consents etc.	Compliance Status {complied; not complied; n/a at current stage of the project}	Remarks {provide details to show how compliance was achieved; or explain the corrective action done if there was non-compliance}

3. Compliance with Environmental and Social Covenants from the AIIB Loan Agreement

{Include Loan Agreement covenants on environment and social following the sample table below}

Schedule #, Para. #	Covenant	Compliance Status {complied; not complied; n/a at current stage of the project}	Remarks {provide details to show how compliance was achieved; or explain the corrective action done if there was non-compliance}

4. Compliance with the Civil Work Contracts

{Include EHS and Labor Clauses following the sample table below}

Schedule #, Para. #	EHS and Labor Clauses	Compliance Status {complied; not complied; n/a at current stage of the project}	Remarks {provide details to show how compliance was achieved; or explain the corrective action done if there was non-compliance}
	GCC Sub-Clause Health and Safety		

5. Compliance with Environmental and Social Management Plan

{With reference to the ESMP and its cost, include a table with the compliance status during the reporting period, with remarks to show how compliance was achieved or not}

6. Compliance with Resettlement Plan

{With reference to the RP and its budget, include a table with the compliance status during the reporting period, with remarks to show how compliance was achieved or not}

7. Compliance with Gender Action Plan

{With reference to the GAP and its budget, include a table with the compliance status during the reporting period, with remarks to show how compliance was achieved or not}

8. Compliance with Indigenous People[32]'s Plan (If Any)

{With reference to the IPP, include a table with the compliance status during the reporting period, with remarks to show how compliance was achieved or not}

9. Summary of Monitoring Results

9.1 Environmental and Social Monitoring

{With reference to the Environmental and Social Monitoring Plan (ESMoP) (if any) of the project, include a table to summarize the results of the monitoring done during the reporting period, covering all monitoring elements in the ESMoP. Please summarize the inspections of implementation status, the analysis results, to suggest corrective actions in section 12. Please indicate the environmental elements monitoring locations, date, time (or duration as applicable), parameters measured, the standards, tests and limits used, and provide the corrective action plan in section 12 if there was any exceedance to the standards}

9.2 Capacity Building Monitoring

{With reference to the ES instruments of the project, include the trainings/drills conducted during the reporting period following the table below. Include as appendices the training/drill agenda, attendance sheets, and photos}

Trainings/Drills/ Inspections	Number and Position of Participant/s	Location/s and Date/s	Remarks

[32] In case of India, it should be Scheduled Tribe;

Example: Fire Drill	50 Laborers	15 Aug 2020	Participants safely evacuated the site…

9.3 Health and Safety Monitoring

{If there was any accident, near-miss, illness, or other incidents during the reporting period (or previously reported accident with ongoing rectification), provide the corrective action done following the table below. Include as appendices the work safety checklists, incident reports, and other relevant supporting documents}

Health and Safety	Number and Position of Person/s Involved	Location/s and Date/s of Incident	Description of Incident	Root Cause Analysis	Corrective Action
Fatality					
Non-fatal Injury					
Near-miss					
Illness					
Other Incidents					

9.4 Highlighted Actions

Items	Description
Vulnerable Groups	
Differently Abled	
Climate	
Others	

10. Stakeholder Engagement

{Summarize the stakeholder engagement activities and the results of the consultations conducted during the reporting period; assess if they conform to the Stakeholder Engagement Plan (SEP, if any); update the SEP for next stages if needed}

11. Implementation of Grievance Redress Mechanism and Complaints Received

{Include a description of the GRM, provide a flowchart and list of grievance redress committee members}

{If there was any grievance or complaint during the reporting period (or previously reported complaint with ongoing rectification), provide remarks following the table below}

Complainant/s (Worker or PAP)	Location/s and Date/s of Complaint	Description of Grievance/Complaint	Timeline*	Remarks (Resolution Status)

*As specified in the GRM arrangement of ES instruments

12. Corrective Action Plan

{Based on all the analysis above, prepare a time-bound corrective action plan if there was non-compliance or unanticipated ES impacts, and check the implementation status in the subsequent phase monitoring}

13. Conclusion and Recommendations

{Limit the conclusion to ES highlights or issues resolution during the reporting period, and the recommendations or actions to be done in the next period}

APPENDICES

Photographs {Include photographs of the project site taken during the reporting period. For each photo, provide a caption with description, location and date}

Supporting Documents {Laboratory results, meeting agenda and attendance, minutes, checklists, etc.}

APPENDIX G COVID 19 SOP OF AG&P

CGD Start Up after Lock down Process

OFFICE SANITIZATION

Responsibility:
Permissions: HR & Admin
Safety Supervision: HSE
Sanitization Supervision: Admin

Hand Sanitizers to be placed at entry gate of Toilets/Wash Rooms, Reception, at Conference Hall and Pantry

Hand sanitizers or Soap to be kept at wash basins of Toilets/wash rooms and pantry

ENTRY & EXIT OF EMPLOYEES

Wearing of MASK MANDATORY

SHOES to be removed Out side Office

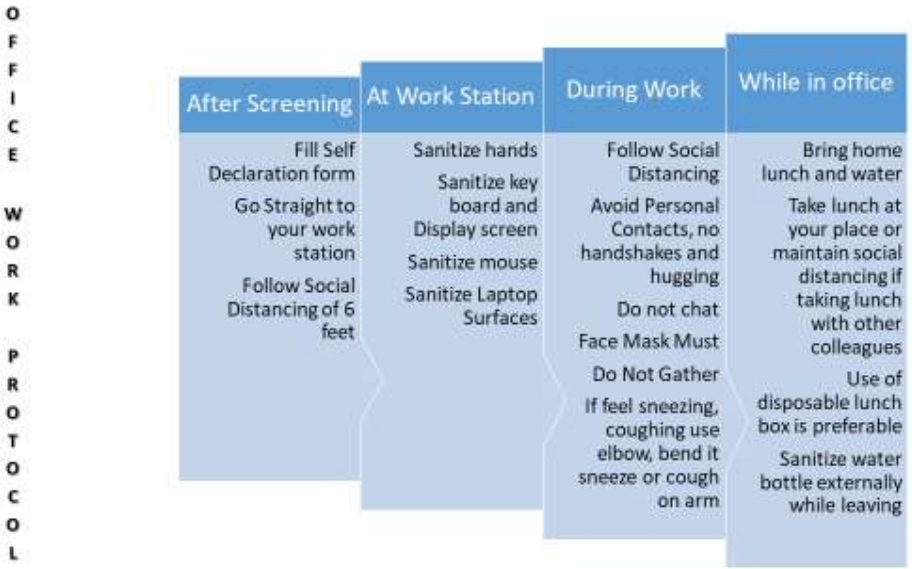
Doors of Entry Gate to be kept Open

Doors to be opened by foot not Hand if to be opened

Wearing of MASK MANDATORY

Entry shall be denied for anyone who shows flu like symptoms or has temperature above 100F.Thermal scanning shall be done during exit also.


Office Entry
Employees must maintain Social distance at the gate
1
During work if you develop cough, cold or fever go home
2
Work only at your work station
3
Don`t touch anybody else`s belongings
Work Place Behavior expected
Work stations arrangement
Ensure social distancing in seating arrangement
Wash your hands with soap frequently
4
Sanitize work station every two hours
5
Avoid gathering more than 5 persons, maintain distance
6


OFFICE WORK PROTOCOL
After Screening
Fill Self Declaration form
Go Straight to your work station
Follow Social Distancing of 6 feet
At Work Station
Sanitize hands
Sanitize key board and Display screen
Sanitize mouse
Sanitize Laptop Surfaces
During Work
Follow Social Distancing
Avoid Personal Contacts, no handshakes and hugging
Do not chat
Face Mask Must
Do Not Gather
If feel sneezing, coughing use elbow, bend it sneeze or cough on arm
While in office
Bring home lunch and water
Take lunch at your place or maintain social distancing if taking lunch with other colleagues
Use of disposable lunch box is preferable
Sanitize water bottle externally while leaving

SITE WORKING

- Thermal screening of all workforce
- Physical check for signs of cough, cold and fever
- If signs noted, send the worker at dispensary and ask for his treatment, don't allow to work
- Keep record of screening preserved
- Keep workforce contact details daily

Entry shall be denied for anyone who shows flu like symptoms or has temperature above 100F.Thermal scanning shall be done during exit also.

GENERAL RULES

Use of Air conditioning at Work Place Guidelines

The government has issued guidelines addressing concerns associated with air conditioning (AC) and ventilation to control the spread of coronavirus in residences, work spaces and healthcare facilities.
According to the guidelines compiled by the Indian Society of Heating Refrigerating and Air Conditioner Engineers (ISHRAE), a temperature between 24-30 degree centigrade should be maintained while operating ACs at home or offices. While, a relative humidity level of 40 per cent to 70 per cent is considered to be the most suitable as it decreases problems from pathogens.

Air conditioners:

- Set room temperature between 24°C and 30°C and maintain relative humidity between 40 per cent and 70 per cent.
- HVAC use to be carefully evaluated to ensure contaminated air from other building floors do not affect your air quality for infection of COVID-19

- Recirculation of cool air by room air conditioners, must be accompanied by outdoor air intake through slightly
- open windows and exhaust by natural exfiltration.

- Fresh Air intake through a fan filter unit will prevent outdoor dust entry and exhaust through kitchen and toilet exhaust fans kept operational.

- In dry climates, do not allow relative humidity to fall below 40%

Sr.No.	Action	Time lines	Responsibility
1	Permissions by local authorities to resume office, work sites	After concessions in lock down by Govt is announced	HR/Admin,GA Head
2	Inspection of premises, sites and Sanitization	On First Day of Resumption, a formal meeting at Office to plan for it is recommended (Well in advance of first day)	Admin and HSE
3	Awareness to Sanitization Staff	One Day earlier to sanitization job	HR/Admin and HSE
4	Setting up facilities for sanitization, screening at entrance, work station arrangements for social distancing	One Day earlier	HR and Admin, GA Head ,HSE (for guidance and supervision)
5	Installation of Arogya Setu APP by all Employees for COVID-19 info and Monitoring	Immediate	Circular by HR
6	Arrangements of passes for vehicles, employees etc	As per Govt Notifications	HR and Admin, GA Head
7	Monitoring of self declarations, day to day observations and actions	Daily	HSE, GA Heads, Admin
8	Changes in Planning, actions, new actions, new guidelines	Daily	HSE, Admin, GA Heads
9	Work planning, shift planning, employee attendance planning	Before start of activities and on daily basis afterwards	HR & Admin, GA Heads
10	Setting up protocol if there is any outbreak, symptoms	First Day to set protocol as per Govt Guidance	HR & Admin and HSE

COVID-19: Guidelines on disinfection of common public places including offices

Indoor areas including office spaces

Office spaces, including conference rooms should be cleaned every evening after office hours or early in the morning before the rooms are occupied. If contact surface is visibly dirty, it should be cleaned with soap and water prior to disinfection. Prior to cleaning, the worker should wear disposable rubber boots, gloves (heavy duty), and a triple layer mask.

- Start cleaning from cleaner areas and proceed towards dirtier areas.
- All indoor areas such as entrance lobbies, corridors and staircases, escalators, elevators, security guard booths, office rooms, meeting rooms, cafeteria should be mopped with a disinfectant with 1% sodium hypochlorite or phenolic disinfectants.
- High contact surfaces such elevator buttons, handrails / handles and call buttons, escalator handrails, public counters, intercom systems, equipment like telephone, printers/scanners, and other office machines should be cleaned twice daily by mopping with a linen/absorbable cloth soaked in 1% sodium hypochlorite. Frequently touched areas like table tops, chair handles, pens, diary files, keyboards, mouse, mouse pad, tea/coffee dispensing machines etc. should specially be cleaned.
- For metallic surfaces like door handles, security locks, keys etc. 70% alcohol can be used to wipe down surfaces where the use of bleach is not suitable.
- In a meeting/conference/office room, if someone is coughing, without following respiratory etiquettes or mask, the areas around his/her seat should be vacated and cleaned with 1% sodium hypochlorite.
- Carefully clean the equipment used in cleaning at the end of the cleaning process.
- Remove PPE, discard in a disposable PPE in yellow disposable bag and wash hands with soap and water.

Guidelines for House keeping staff for cleaning of wash rooms, toilets etc

Areas	Agents / Toilet cleaner	Procedure
Toilet pot/ commode	Sodium hypochlorite 1%/ detergent Soap powder / long handle angular brush	• Inside of toilet pot/commode: • Scrub with the recommended agents and the long handle angular brush. • Outside: clean with recommended agents; use a scrubber.
Lid/ commode	Nylon scrubber and soap powder/detergent 1% Sodium Hypochlorite	• Wet and scrub with soap powder and the nylon scrubber inside and outside. • Wipe with 1% Sodium Hypochlorite
Toilet floor	Soap powder /detergent and scrubbing brush/ nylon broom 1% Sodium Hypochlorite	• Scrub floor with soap powder and the scrubbing brush • Wash with water • Use sodium hypochlorite1% dilution
Sink	Soap powder / detergent and nylon scrubber 1% Sodium Hypochlorite	• Scrub with the nylon scrubber. • Wipe with 1% sodium hypochlorite
Showers area / Taps and fittings	Warm water Detergent powder Nylon Scrubber 1% Sodium Hypochlorite/ 70% alcohol	• Thoroughly scrub the floors/tiles with warm water and detergent • Wipe over taps and fittings with a damp cloth and detergent. • Care should be taken to clean the underside of taps and fittings. • Wipe with 1% sodium hypochlorite/ 70% alcohol
Soap dispensers	Detergent and water	• Should be cleaned daily with detergent and water and dried.

Important points for cleaning and housekeeping protocols

- All employees should consider cleaning the work area in front of them with a disinfecting wipe prior to use and sit one seat further away from others, if possible
- 70% Alcohol can be used to wipe down surfaces where the use of bleach is not suitable, e.g. metal. (Chloroxylenol (4.5-5.5%)/ Benzalkonium Chloride or any other disinfectants found to be effective against coronavirus may be used as per manufacturer's instructions)
- Always use freshly prepared 1% sodium hypochlorite
- Disinfect all cleaning equipment after use and before using in other area
- Disinfect buckets by soaking in bleach solution or rinse in hot water

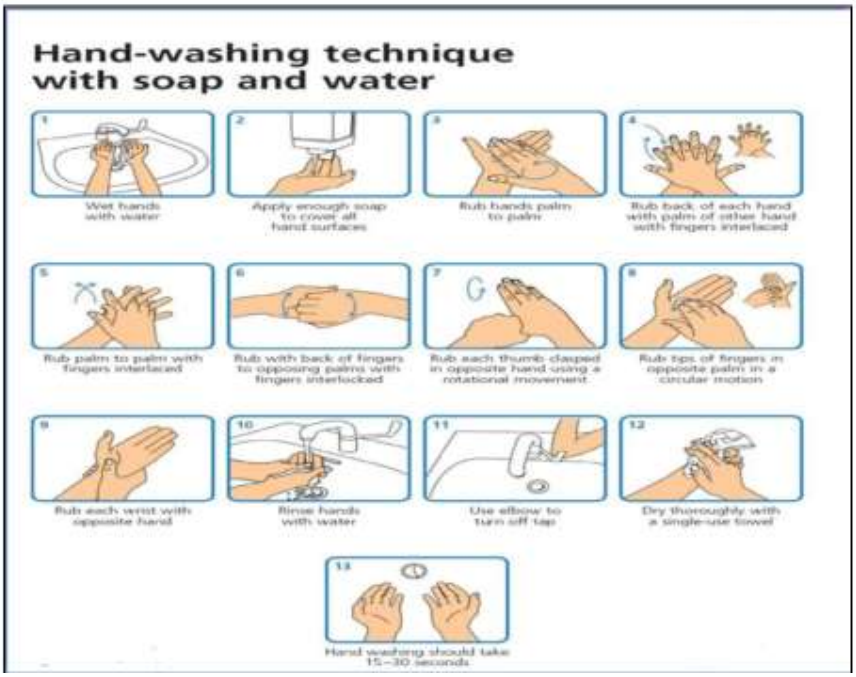
Personal Protective Equipment (PPE): Wear appropriate PPE which would include the following while carrying out cleaning and disinfection work.

- Wear disposable rubber boots, gloves (heavy duty), and a triple layer mask
- Gloves should be removed and discarded damaged, and a new pair worn.
- All disposable PPE should be removed and discarded after cleaning activities are completed.
- Hands should be washed with soap and water immediately after each piece of PPE is removed, following completion of cleaning
- Masks are effective if worn according to instructions and properly fitted. Masks should be discarded and changed if they become physically damaged or soaked.

Guidelines for Preparation of 1% sodium hypochlorite solution

Product	Available chlorine	1percent
Sodium hypochlorite – liquid bleach	3.5%	1 part bleach to 2.5 parts water
Sodium hypochlorite – liquid	5%	1 part bleach to 4 parts water
NaDCC (sodium dichloro-isocyanurate) powder	60%	17 grams to 1 litre water
NaDCC (1.5 g/ tablet) – tablets	60%	11 tablets to 1 litre water
Chloramine – powder	25%	80 g to 1 litre water
Bleaching powder	70%	7g g to 1 litre water
Any other	As per manufacturer's Instructions	

Steps of Hand Hygiene



Mask Guidelines:

Guidelines for use of mask

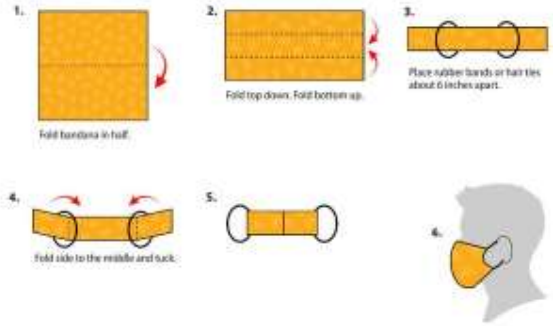
The correct procedure of wearing triple layer surgical mask

1. Perform hand hygiene
2. Unfold the pleats; make sure that they are facing down.
3. Place over nose, mouth and chin.
4. Fit flexible nose piece over nose bridge.
5. Secure with tie strings (upper string to be tied on top of head above the ears –lower string at the back of the neck.)
6. Ensure there are no gaps on either side of the mask, adjust to fit.
7. Do not let the mask hanging from the neck.
8. Change the mask after six hours or as soon as they become wet.
9. Disposable masks are never to be reused and should be disposed off.
10. While removing the mask great care must be taken not to touch the potentially infected outer surface of the mask
11. To remove mask first untie the string below and then the string above and handle the mask using the upper strings.
12. Disposal of used masks: Used mask should be considered as potentially infected medical waste. Discard the mask in a closed bin immediately after use.

Scarf or handkerchief method for home made mask

What you'll need:

- **A handkerchief, scarf or towel (approximately 20"x20")**
- **Two rubber bands, or hair ties**
- **Paper towel**



1. Fold the handkerchief in half to form a rectangle.
2. Then fold the top edge down, and the bottom edge up, to form a thinner rectangle.
3. Place rubber bands or hair ties about six inches apart.
4. Fold the right side to the middle, lifting one layer of fabric. Then fold the left side over the right side, but tucking under that lifted layer. Pat down.
5. Use the hair ties or elastic bands to secure around your ears.

Let Us Defeat Corona Spread Together with Full Safety.....

APPENDIX H MINUTES OF MEETING DURNG SITE ASSESSMENT

Minutes of Meetings conducted during site assessment Minutes of Meeting for Allapuzha Kollam and Thiruvananthapuram (AKT) GA

Kick off Meeting with AG & P Project team

A kick off meeting was organised between AG &P AKT Project team and ERM team members comprising of a social expert and one environmental expert on 8th October 2020. The objective of the meeting was to understand the status of the Project.

Table 1: List of Participants

S. No.	ERM Team working on the Project	Representation form AG &P
1.	Ms Karishma Sharma,	Mr. Arun Nayak
2.	Ms Juhi Purwar	Mr. Rajesh Nair
3.		Mr. KS Lepthaghosh
4.		Mr. Rajeev Pradhan

The following points were discussed during the meeting:

- A brief presentation about AKT GA by AGP team, which covered the route of the proposed steel pipeline, details regarding route survey, status of land purchase for the LCNG station;
- Discussions were also held to understand any environmental/ecological or social sensitivities such as any archaeological site, forest/wildlife sanctuary, any identified location where resettlement is envisaged etc. along the pipeline route;
- Status and purchase process for the identified land for the LCNG station;
- Discussion regarding monitoring of labour and EHS aspects of the contractors by AG &P team during construction and operation phase;
- Status of permits such as PESO, NOC from respective DMs were also held;
- Discussion regarding current practice of engaging with external stakeholders and grievance mechanism in place.

Consultation with Chairman, Municipal Corporation, Alappuzha

Discussion were held with Chairman and Standing Committee Chairman of the Municipal Corporation, Alappuzha on 8th October 2020.

The key points discussed during the consultations are summarised below:

- Status of in principle approval and timelines for the approval from Municipal Corporation. AG &P had submitted the application in September. The corporation will initiate technical survey along the pipeline and provide the approval accordingly;
- Discussions were also held to understand the status of route survey by Municipal Corporation and if any resettlement is envisaged or presence of tribal population along the pipeline route. The corporation has not initiated the survey due to the ongoing pandemic COVID-19. However, it was ensured that the area has no tribal population;

- Overall feedback on the upcoming pipeline and any anticipated issues that might come up by the community along the pipeline. However, both the Chairman and Standing Committee Chairman had a positive feedback and were not anticipating any issues.

Minutes of Meeting for MYSORE MANDYA CHAMARAJANAGAR (MMC) GA

Kick off Meeting with AG & P Project team

A kick off meeting was organised between AG &P AKT Project team and ERM team members comprising of a social expert and one environmental expert on 9th October 2020. The objective of the meeting was to understand the status of the Project.

Table 2: List of Participants

S. No.	ERM Team working on the Project	Representation form AG &P
5.	Ms Karishma Sharma,	Mr. Chiradeep Datta
6.	Ms Juhi Purwar	Mr. Charana
7.		Mr. Gautam Ananad
8.		

The following were discussed during the meeting

- A brief presentation about AKT GA by AGP team, which covered the route of the proposed steel pipeline, details regarding route survey, status of land purchase for the LCNG station;
- Discussions were also held to understand any environmental/ecological or social sensitivities such as any archaeological site, forest/wildlife sanctuary, any identified location where resettlement is envisaged etc. along the pipeline route;
- Status and purchase process for the identified land for the LCNG station;
- Discussion regarding monitoring of labour and EHS aspects of the contractors by AG &P team during construction and operation phase;
- Status of permits such as PESO, NOC from respective DMs were also held;
- Discussion regarding public awareness program by AG & P regarding the upcoming pipeline for the local community, government departments etc.
- Discussion regarding EHS & S roles & responsibilities and Project level organisation structure.

APPENDIX I REFERENCE OF ECOLOGICALLY PROTECTED AREAS

Details of Protected Areas in Remaining Geographical Areas

1. GA - Anantpur & Cuddapah Districts

No eco-sensitive areas are present in Anantpur district.

The Cuddhapah district consists of three (3) Eco-sensitive areas, which have been discussed below:

a. **Rajiv Gandhi National Park***

It is one of India's premier Tiger Reserves along with the adjoining Bandipur Tiger Reserve and Wayanad Wildlife Sanctuary. It is part of the Nilgiri Biosphere Reserve. The Western Ghats Nilgiri Sub-Cluster of 6,000 km2 (2,300 sq mi), including all of Nagarhole National Park, is under consideration by the UNESCO World Heritage Committee for selection as a World Heritage Site.

The main trees found here are the commercially important rosewood, teak, sandalwood and silver oak. Species of trees of the dry deciduous forest include crocodile bark, Lagerstroemia lanceolata (crepe myrtle), Indian kino tree, Grewia tilaefolia, rosewood and axlewood.

The important predators and carnivores in Nagarhole National Park are the Bengal tiger, Indian leopard, dhole (Cuon alpinus), sloth bear and the striped hyena (Hyaena hyaena). The herbivores are chital, sambar deer, barking deer, four-horned antelope (Tetracercus quadricornis), gaur (Bos gaurus), wild boar (Sus scrofa) and Indian elephant. Nagarhole National Park provides an opportunity to see some of the southern population of gaur (jungle bison).

Figure 1 Map of Rajiv Gandhi National Park

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

b. Sri Lankamalleshwaram WLS

It is the only habitat in the world, which provides home for the Jerdon's courser, a highly endangered bird species.

Also, the Sanctuary provides a home to nearly 1400 plant species and nearly 176 families of vegetation and living organisms. It has dry deciduous mixed thorn forests with deep gorges and steep slopes. The rare and endangered plants like Red sanders and Sandalwood are important species found in this area. The riparian vegetation is very in rich in floristic value, consisting of Terminalia spp, Syzygium spp, (Jamun), Wild mangoes, Anogeissus latifolia, Phoenix spp, Bamboo, Hardwickia binata, etc. Its fauna includes the panther, sloth bear, cheetal, sambar, chowsingha, chinkara, nilgai, wild boar, fox and the Jerdon's courser.

c. Sri Venkateshwara WLS

Sri Venkateswara Wildlife Sanctuary covers an area of 353 Sq. kms, over Kadapa and Chittoor districts of Andhra Pradesh. The wide range of fauna found here includes Tiger, Civet, Jackal, Black Buck, Panther, Spotted Deer, Ibex, Sloth Bear, Bonnet Monkey, Wild Dogs, Bison, Jackal, Fox, Rare Golden Gecko, Jungle Fowl, Indian Giant Squirrel, Tree Shrew, Flying Lizards, Nilgai, Wildboar, Occasional Leopard and Hyena. Fauna comprises of more than 100 species of birds, including Crested Serpant Eagle, Ashy Crowned Finch Lark, Indian Roller, Kingfishers, White bellied Woodpecker, etc.

2. GA - Nellore District

The district has two (2) eco-sensitive areas, namely, Sri Penusila Narsimha Wildlife Sanctuary and Nellapattu Wildlife Sanctuary that have been discussed below:

a. Sri Penusila Narsimha Wildlife Sanctuary

Sri Penusila Narasimha Wildlife Sanctuary, earlier known as the Veliconda Wildlife Sanctuary, spreads over the districts of Cuddapah and Nellore, Andhra Pradesh. This area encompasses Turupukonda hills, part of the Velikonda Hill range, Somasila Dam and Kandaleru Reservoir.

It is an important Bird Area (IBA) site and contains Moist Deciduous forest, and Dry Thorn forest on the foothills of Velikonda Hill ranges, apart from Euphorbia scrub forests and monoculture plantation, especially of Eucalyptus and Terminalia arjuna. It is further characterized by hilly slopes, rolling forested hills and low valleys. In Flora, Dry evergreen forest type with species like Accacias, Cassias, Pongamia, Carissa are found in the sanctuary. For fauna, Panther, Cheetal, Nilgai, Chowsingha, Sloth Bear, Jackal, Wild Boar, and large numbers of reptile and bird species are found in the wildlife sanctuary.

b. Nellapattu Wildlife Sanctuary

Nelapattu Bird Sanctuary is a bird sanctuary in Nellore district, Andhra Pradesh. It has an area of 458.92 hectares. It is an important breeding site for spot-billed pelicans (Pelecanus philippensis).

About 189 bird species are found at Nelapattu Bird Sanctuary, 50 of which are migratory. In addition to the spot-billed pelican, it is an important breeding site for black-headed ibis, Asian openbill, black-crowned night heron, and little cormorant. Other migratory water birds that visit the sanctuary include northern pintail, common teal, little grebe, northern shoveler, Eurasian coot, Indian spot-billed duck, grey heron, Oriental darter, black-winged stilt, garganey and gadwall.

3. GA - Chittoor, Kolar & Vellore Districts

The GA has two (2) eco-sensitive areas, located in Chittor and Vellore districts of Andhra Pradesh and Tamil Nadu, respectively. No sensitive areas are located in Kolar district of Karnataka.

The eco-sensitive area Sri Venkateshwara National Park and Wildlife Sanctuary, is spread across Cuddapah and Chittoor districts in Karnataka and Andhra and is already discussed above.

a. Kaundinya Wildlife Sanctuary

Kaundinya Wildlife Sanctuary is a wildlife sanctuary and an elephant reserve situated in Andhra Pradesh, India. It is the only sanctuary in Andhra Pradesh with a population of Asian elephants, which migrated after 200 years from neighbouring regions.

The sanctuary is covered by southern tropical dry deciduous and thorn forests. Some of the important flora consists of Albizia amara, Acacia, Lagerstroemia, Ficus, bamboo, and a species which is a regeneration of Santalum album. The sanctuary is primarily an elephant reserve and is home to about 78 Indian elephants. The vulnearble yellow-throated bulbul is present in the sanctuary. Apart from Indian elephant], some of the animals found in the sanctuary are: sloth bear, panther, cheetal, chowsingha, sambar, porcupine, wild boar, jungle cat, jackal, jungle fowl, starred tortoise and slender loris.

4. GA - Bagalkot, Koppal & Raichur Districts

The GA has only one (1) eco-sensitive area, Yadahalli Chinkara Wildlife Sanctuary located in Bagalkot district, Karnataka. No eco-sensitive areas are located in Koppal and Raichur districts.

a. Yadahalli Chinkara Wildlife Sanctuary

The Yadahalli Chinkara Wildlife Sanctuary, which lies between Bilagi and Mudhol taluks of Bagalkot district, is spread over 96 sqkm area. It is the only known habitat for the endangered Indian Gazelle in South India. Besides, the area interspersed with dry scrub forests also boasts the presence of critically endangered wolves, jackals, wild cats, striped hyenas and civet cats.

5. GA - Chikmagalur, Hassan and Kodagu Districts

This GA has seven (7) eco-sensitive areas located across the districts. The Kudremukh National Park and Bhadra Wildlife Sanctuary are located in Chikmagalur districts, whereas, the Thimlapura Wildlife Sanctuary is located in Hassan district. In Kodagu district, 4 eco-sensitive areas, namely, Nagerhole National Park, Bhamagiri Wildlife Sanctuary, Pushpagiri Wildlife Sanctuary and Talakaveri Wildlife Sanctuary, are located. Nagerhole National Park is spread across booth Cuddapah and Kodagu district of Karnataka and is already discussed above.

a. Chikmagalur district

i. Kudremukh National Park

Kudremukh National Park is spread partly over the thick hilly forests near the coastal plains on the western portion and the shola vegetation on the Western Ghats uplands, covering parts of three districts, viz., Chickmagalur, Udupi and Dakshina Kannada. It has suitable and extensive rainforest habitat for the lion-tailed macaque and harbored the largest contiguous population of lion-tailed macaques in the Western Ghats, outside the Malabar region. Three important rivers, the Tunga, the Bhadra, and the Nethravathi are said to have their origin here. There are highly dense forests rich in varieties of wild life like as tiger, leopard, wild dog, Malabar giant squirrel, common langur, sloth bear, gaur, sambar, spotted deer, barking deer and the sloth bear.

Figure.2 Map of Kudremukh National Park

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

ii. Bhadra Wildlife Sanctuary

Bhadra Wildlife Sanctuary is the protected area and the tiger reserve as part of the Project Tiger, situated in Chikkamagaluru district. It is a biodiversity hotspot. Most of the area consists the wet deciduous forest, moist deciduous forest and green forests.

It is the habitat of valuable teak and rosewood. Other commercial timber in the sanctuary includes, mathi, honne, Nandi, tadasalu and kindal. There is also bamboo and several types of medicinal plants. Other animals in the sanctuary include elephant, gaur, sloth bear, wild boar, black leopard, jungle cat, jackal, wild dog, sambar, spotted deer, barking deer, mouse deer, common langur, bonnet macaque, slender loris, small Indian civet, common palm civet, pangolin, porcupine, flying squirrel and the Malabar giant squirrel.

b. Hassan district

i. Thimlapura Wildlife Sanctuary

Thimlapura Wildlife Sanctuary" with an area of 50.86 Sq.Km, situated in Madhugiri and Koratagere Taluk of Tumakuru District, comprising Maddagiri and Chikkamaddagiri R.F. These forests areas constitute an ideal habitat for Sloth Bears, Leopards, Hyena, Porcupine, Wild Boars, Jackal, Indian Fox. This Sanctuary is surrounded by the "Thimlapura Conservation Reserve" with an area of 17.38 Sq Km.

c. Kodagu district

The forest complex in three below mentioned sanctuaries is continuous and therefore considered together.

i. Bhramagiri Wildlife Sanctuary

The sanctuary derives its name from the highest point, the Brahmagiri peak, which is 1607m in height. It covers an area of about 181 km. It is rich in diversity of animals and plants in undulating landscape and altitude varying from 65 mts MSL to 1600 mts MSL. It is the solitary corridor to Northern part of Western ghats from Southern part of Western ghats for the movement of animals especially connecting Rajiv Gandhi National Park, and Wayanad Sanctuary to the Pushpagiri Wildlife Sanctuary and there on.

It consists of amazing rich flora like, Rose wood, Nandi, Mathi, Honne, Sura Honne, White Cedar, Red Cedar, Saldhupa, Kaidhupa, Cinnamomum, Gulmavu, Neralu, Mavu, and so on. It is the home town of Lion tailed macaque and Nilagiri Martin which are rare and an endangered species. Tiger, Elephants, Leopard, and Indian Gaur are the big mammals commonly found here.

Figure.3 Map of Bhramagiri Wildlife Sanctuary

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

ii. Pushpagiri Wildlife Sanctuary

Established in 1987, the wildlife sanctuary has been proposed as one of the World Heritage Sites. Most part of the sanctuary is covered by forest area. There are semi-evergreen vegetation and dense evergreen trees that have become the highlight of the place. The sanctuary is highly recognized as one of the most prominent areas for birds, the reason being a rich diversity of flora and fauna. Species like Indian Hare, Spotted Deer, Giant Flying Squirrel, Otter Species, Indian Wild Dog, Travancore Flying, Brown Palm Civet, Wild Pig, Indian Giant Squirrel, Stripe-necked mongoose, Sambar, Asian Elephant, Gaur, Indian Muntjac, and mouse deer, are found in great numbers here. In Primates species, common langur, lion-tailed macaque, and bonnet macaque are mostly found in the sanctuary.

Figure.4 Map of Pushpagiri Wildlife Sanctuary

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

iii. Talakaveri Wildlife Sanctuary

The Sanctuary is named after the birthplace of river Cauvery that originates from the Brahmagiri peak located inside the Sanctuary.

It is covered with well preserved tracts of tropical evergreen forests, tropical semi evergreen forests and grasslands representative of Shola climax vegetation. The sanctuary is extremely rich in both floristic and faunal biodiversity harbouring endangered and endemic species. The sanctuary is a natural habitat for many larger mammals including endangered species such as Asian Elephant, Tiger, Leopard, Lion tailed Macaque, Indian wild dog, Indian giant squirrel, Nilgiri marten, Gaur, Bonnet Macaque and Common Langur. It has been identified as one of the Important Bird Areas having 13 of the 16 restricted range species found in the Western Ghats including the near threatened species such as Grey-breasted laughing thrush, black and orange flycatcher & Nilgiri flycatcher. The sanctuary is part of the catchment area of the river Cauvery.

Figure. 5 Map of Talakaveri Wildlife Sanctuary

Source: Karnataka Forest Department (https://www.aranya.gov.in/mobile/ecosensitivezone.aspx)

6. GA - Kalaburagi & Vijayapur Districts

No eco-sensitive areas are located in the GA.

7. GA - Uttar Kannada, Haveri and Shivmogga Districts

The GA has nine (8) eco-sensitive areas spread out across its range. In Uttar Kannada, Dandeli National Park and Wildlife Sanctuary and Attiveri Bird Sanctuary. In Haveri district, two wildlife sanctuaries namely, Ranebennur Blackbuck Sanctuary and Bankapura Peacock Sanctuary are located. In shivmogga district, 4 wildlife sanctuaries, namely, Sharavathi valley Wildlife Sanctuary, Shettihalli Wildlife Sanctuary, Gudavi bird sanctuary, Mandagadde bird sanctuary are located.

a. Uttar Kannada

i. Dandeli (Anshi) National Park and Wildlife Sanctuary

Dandeli Wildlife Sanctuary is located in Uttara Kannada District of Karnataka state in India. The sanctuary covers an area of 866.41 km2 (334.52 sq mi). Along with neighboring Anshi National Park (339.87 square kilometres (83,980 acres)), the sanctuary was declared part of the Anshi Dandeli Tiger Reserve in 2006.

It houses nearly 200 species of birds and is the only known tiger reserve in India to report frequent sightings of the elusive black panther. It is also known to house the Indian sloth bear, the Indian pangolin, the giant Malabar squirrel, dhole, the Indian jackal and the muntjac (barking deer). The king cobra and the mugger crocodile (Indian crocodile) are the prime reptilians in Dandeli Wildlife Sanctuary.

ii. Attiveri Bird Sanctuary

Spread over an area of about 2.23 km2, the sanctuary is located in and around the Attiveri reservoir. The part of the sanctuary surrounding the reservoir has riverine and deciduous forests. More than 1200 pairs of birds breed in this man made habitat. White Ibis, Herons, little Cormorants, Spoonbills, Painted storks are some of the SPP, which breed here. Birds like Lapwings, Water hen Stilt, Darter, Indian shag etc are found throughout the year. Pintails, Gargany, Shoveller, Plovers etc migrate here for breeding between Novembers to February. Many small and big tanks in the adjacent areas of Mundagod, Haliyal and Yellapur taluks also help the birds to nest, feed and breed, thus making up this sanctuary an ideal aquatic habitat.

b. ***Haveri district***

i. Ranebennur Blackbuck Sanctuary

Ranebennur Blackbuck Sanctuary was declared as a sanctuary mainly to protect blackbucks. It comprises two unconnected portions, an eastern and a western bit. The vegetation here comprises mainly of scrub forests and extensive eucalyptus plantations. Fauna: The Sanctuary is famous for its Black buck and also Wolf populations. Other animals that share this space are the Wild Pig, Fox, Jackal, Langur, Porcpupine, Common Mangoose, Hare and Pangolin. Also found around the AiraniGudda are of the Sanctuary are Hyenas.

ii. Bankapura Peacock Sanctuary

Understanding the great presence of peacocks in the region, the Government of India declared Bankapura as a peacock sanctuary on June 9, 2006. This sanctuary is situated on 139 acres of land which has the remains of the historic Bankapura Fort. The high mound and deep trenches of the land have provided a perfect home for these birds. According to a rough estimate, there are more than 1,000 peacocks and peahen in the sanctuary. Also, minimal human intervention has helped in the breeding of these birds. Other birds found in the area are, great-horned owl, babbler, magpie, robin, green bee eater, nightjar, spotted myna, paradise flycatcher, Indian robin, spotted dove, parakeets, kingfisher, grey hornbill, blue tailed bee eater, blacked winged kite, tailor bird etc.

c. ***Shivmogga district***

i. Sharavathi valley Wildlife Sanctuary

It is spread over in the Sharavathi River Valley of Sagar Taluk in Shivamogga District. The area of the Sanctuary is 431.23 Sq. Kms out of which an area of 123.63 Sq. Kms is under the water spread of Sharavathi Reservoir. The Sanctuary lies in the Western Ghats, mainly covered with evergreen and semi-evergreen forests in the valleys and grassy patches on hilltops, and is immensely rich in flora and fauna both in variety and diversity. The evergreen and semi-evergreen forests in the valleys are immensely rich in species like Dhoopa, Gulmavu, Surahonne, Mavu, Nandi etc. They harbour wildlife like Bison, Spotted deer, Tiger, Panther etcThe area serves as living place for many vertebrates and invertebrates. The sanctuary has got innumerable herbs, shrubs, ferns and grasses many of which are yet to be surveyed and listed.

ii. Shettihalli Wildlife Sanctuary

Shettihalli Wildlife Sanctuary is a valuable forest track in the sahyadri hiils of Western Ghats. The Sanctuary is immensely rich in flora and fauna. It has valuable tree species including Teak, Sandalwood, Rosewood, Honne and Nandi. It is home for megafauna like Elephant, Bison, Spotted deer, Tiger, Panther, Wild dog etc.

iii. Gudavi bird sanctuary

Notified on 10th July 1989, the primary objective of constitution of the bird Sanctuary is to protect migratory, seasonal birds and their habitat. The total notified geographical area of Gudavi Bird Sanctuary is 73.68 ha, of which the water spread area is 33 ha. The flagship species of this Sanctuary is the Black-headed Ibis and more than 60 of total birds coming to this Sanctuary are comprised of Black-headed Ibis. The Sanctuary also has several varieties of Fishes, reptiles and mammal such as hares, deer, wild boar, fox etc.

iv. Mandagadde bird sanctuary

Mandagadde Bird Sanctuary is an island spread over an area of 1.14 acres and it is surrounded by forest and a river named Tunga. This sanctuary is important for bird nesting with over 5,000 birds here during the peak season. The quaint little island is also graced by the presence of various other varieties, such as the Maiden Egret, Pied Kingfisher, Wooly Neck Stalk, Night Herons, Open-billed storks etc. During season, three types of migratory birds flock to the lush green environs of the sanctuary and stay till December which are, Median egret, Darter (or snake bird) and Little cormorant.

APPENDIX J AUDIT CHECKLISTS FOR OMC SITES VISITED BY ERM

Appendix D2: EHS Audit Checklist

In addition to Appendix D1, this checklist will be particularly used by AGP site team to screen potential issues associated with the setting up of CNG cascade, compressor and dispenser within premises of retail fuel outlets of OMCs.

A. General Information	
Name of the geographical area	Alappuzha, Kollam & Thiruvananthapuram
Name of the network component	CNG dispensing system
District	Alappuzha
Taluka / Block	Cherthala
Village / ULB	Aroor
Geographical coordinates of OMC fuel outlet	9.881676, 76.302508
Name of the OMC	BPCL ST Augustine, Aroor
Source of gas	IOAGPL Kochi / Cherthala LCNG(After May 21)
Number of cascades and capacity of gas storage	1 number of cascade 3000 Litres Water Capacity.
Details of other associated equipment	1 Dispenser 1 Booster Compressor
Name of GA Head	Mr. Arun Nayak
Contact number	9324814111
E-mail id	arun.nayak@agpglobal.com

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Permits/ Regulatory compliances	**Status**	**Remarks/ Non Compliances**
1.	Has License from Petroleum & Explosives Safety Organization (PESO) under The Petroleum Rules, 2002 been obtained for the OMC station? Provide details.	Yes ☒ No ☐ NA ☐	PESO license number (A/G/SC/KL/07/76 (G70769))
2.	No Objection Certificate from District Magistrate for setting up the fuel station	Yes ☒ No ☐ NA ☐	BPCL ST Augustine fuel station is operational after obtaining NOC from District Magistrate. Additional NOC for setting up CNG facility are not required.
3.	Does the facility have borewell? Has the OMC obtained Permission/approval	Yes ☐ No ☐ NA ☒	Borewell is not available. Water is made available through Government

	for groundwater abstraction from CGWB?		water supply department.
4.	Has Contract Labour Licenses under Contract Labour (Regulation and Abolition) Act 1970 been obtained?	Yes ☒ No ☐ NA ☐	Available with OMC, however copies not available for review
5. A	Is the land leased or owned by the OMC? Provide lease duration.	Yes ☒ No ☐ NA ☐	Land is Leased by OMC for the period of 30 years.
	Labour Compliances	**Status**	**Remarks/ Non Compliances**
6.	Minimum wages paid to various worker categories (are wages as per the latest notification) - check for males and females and workers categories- unskilled, semi-skilled, skilled, highly skilled. (review of wage register)	Yes ☒ No ☐ NA ☐	BPCL is a Govt organisation under the Ministry of Petroleum and Natural Gas. BPCL is the principal employer of all workers in the facility. It is the responsibility of BPCL to ensure minimum wages payment to all workers. Under MSA, BPCL has agreed to compile with all statutory norms. Wage register was not available for review.
7.	Working hours in accordance with Indian Labour Law (review of attendance records)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
8.	Overtime wages paid (review of wage register)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
9.	Any child labour observed at the OMC station (review of age proof documents)	Yes ☐ No ☒ NA ☐	Age proof documents are available at RO and AG&P verified the same.
10.	Are workers being provided Provident Fund and ESIC safeguards?	Yes ☒ No ☐ NA ☐	All workers come under PF and ESIC.
11.	Is grievance redressal system implemented and well documented	Yes ☒ No ☐ NA ☐	Grievance redressal system are in place

			and document verified by AG&P.
12.	Are grievances reported by workers & staff	Yes ☒ No ☐ NA ☐	Reported grievance are addressed by RO/OMC
	General	**Status**	**Remarks/ Non Compliances**
13.	Does the OMC have EHS Policy and procedures?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer.
14.	Is EHS Policy conspicuously displayed at the fuel station?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer
15.	Is drinking water available for workers and staff?	Yes ☒ No ☐ NA ☐	Available to all workers/staff / customers.
16.	Are proper sanitation facilities available, kept clean, and adequately supplied?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
17.	Are smoking areas designated and away from fuel storage and handling areas?	Yes ☒ No ☐ NA ☐	As a policy matter, smoking inside the premises are not allowed. Smoker has to go away from the fuel station for smoking.
18.	Are confined spaces labelled?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
19.	Are safety signages adequately displayed at various locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
20.	Are storm water drains provided and are in good condition?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
21.	Is the housekeeping adequate and are waste bins provided?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
22.	Are daily wage rates displayed at office?	Yes ☐ No ☒ NA ☐	Daily wage rates were not displayed at the OMC sites as observed during ERM site visit.

23.	Are the toilets connected to septic tank/ soak pit or any other arrangement made?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Emergency Preparedness	**Status**	**Remarks/ Non Compliances**
24.	Are emergency contact numbers displayed at conspicuous locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
25.	Are fire extinguishers readily available, and identified?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
26.	Are fire extinguishers periodically inspected, maintained and tagged at all locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
27.	Is fire hydrant system available (in line with PESO requirement) and regularly maintained? Provide details	Yes ☐ No ☐ NA ☒	As per PESO guideline CO2/ DCP are available at site. Fire hydrant system are not required**.**
28.	Are first aid kit(s) available and inspected weekly?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Personnel Protective Equipment	**Status**	**Remarks/ Non Compliances**
29.	Are safety glasses and masks worn by maintenance and cleaning staff?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
30.	Are safety shoes worn by all employees and workers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
31.	Are the fuel handling staff provided with reflective vests and gloves?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
32.	Is hearing protection available and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
33.	Are other PPE (such as hard hats, Goggles or face shields, fall protection equipment, etc.) provided and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Chemical, Oil and Waste Storage and Handling	**Status**	**Remarks/ Non Compliances**

34.	All loose oily rags and waste removed from fuel area and stored in proper covered containers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
35.	All trash and combustible material removed from office premises as necessary?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
36.	Waste containers labelled and covered?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
37.	Are chemicals and other maintenance items stored away from fuel areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Electrical Hazards	**Status**	**Remarks/ Non Compliances**
38.	Covers installed on all outlets, switches, junction boxes, pull boxes, panel boards, etc., that are in service at the office and fuel handling areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
39.	All circuits identified at panel boards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
40.	Extension cords in good condition (not frayed, broken) with current inspection markings?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
41.	Extension Cords and other temporary wiring protected from damage and arranged so as not to create tripping hazards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer

Appendix D2: EHS Audit Checklist

In addition to Appendix D1, this checklist will be particularly used by AGP site team to screen potential issues associated with the setting up of CNG cascade, compressor and dispenser within premises of retail fuel outlets of OMCs.

A. General Information	
Name of the geographical area	Alappuzha, Kollam & Thiruvananthapuram
Name of the network component	CNG dispensing system
District	Alappuzha
Taluka / Block	Cherthala
Village / ULB	Aroor
Geographical coordinates of OMC fuel outlet	9.881676, 76.302508
Name of the OMC	BPCL ST Augustine, Aroor
Source of gas	IOAGPL Kochi / Cherthala LCNG(After May 21)
Number of cascades and capacity of gas storage	1 number of cascade 3000 Litres Water Capacity.
Details of other associated equipment	1 Dispenser 1 Booster Compressor
Name of GA Head	Mr. Arun Nayak
Contact number	9324814111
E-mail id	arun.nayak@agpglobal.com

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Permits/ Regulatory compliances	**Status**	**Remarks/ Non Compliances**
1.	Has License from Petroleum & Explosives Safety Organization (PESO) under The Petroleum Rules, 2002 been obtained for the OMC station? Provide details.	Yes ☒ No ☐ NA ☐	PESO license number (A/G/SC/KL/07/76 (G70769))
2.	No Objection Certificate from District Magistrate for setting up the fuel station	Yes ☒ No ☐ NA ☐	BPCL ST Augustine fuel station is operational after obtaining NOC from District Magistrate. Additional NOC for setting up CNG facility are not required.
3.	Does the facility have borewell? Has the OMC obtained Permission/approval	Yes ☐ No ☐ NA ☒	Borewell is not available. Water is made available through Government

	for groundwater abstraction from CGWB?		water supply department.
4.	Has Contract Labour Licenses under Contract Labour (Regulation and Abolition) Act 1970 been obtained?	Yes ☒ No ☐ NA ☐	Available with OMC, however copies not available for review
5. A	Is the land leased or owned by the OMC? Provide lease duration.	Yes ☒ No ☐ NA ☐	Land is Leased by OMC for the period of 30 years.
	Labour Compliances	**Status**	**Remarks/ Non Compliances**
6.	Minimum wages paid to various worker categories (are wages as per the latest notification) - check for males and females and workers categories- unskilled, semi-skilled, skilled, highly skilled. (review of wage register)	Yes ☒ No ☐ NA ☐	BPCL is a Govt organisation under the Ministry of Petroleum and Natural Gas. BPCL is the principal employer of all workers in the facility. It is the responsibility of BPCL to ensure minimum wages payment to all workers. Under MSA, BPCL has agreed to compile with all statutory norms. Wage register was not available for review.
7.	Working hours in accordance with Indian Labour Law (review of attendance records)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
8.	Overtime wages paid (review of wage register)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
9.	Any child labour observed at the OMC station (review of age proof documents)	Yes ☐ No ☒ NA ☐	Age proof documents are available at RO and AG&P verified the same.
10.	Are workers being provided Provident Fund and ESIC safeguards?	Yes ☒ No ☐ NA ☐	All workers come under PF and ESIC.
11.	Is grievance redressal system implemented and well documented	Yes ☒ No ☐ NA ☐	Grievance redressal system are in place

			and document verified by AG&P.
12.	Are grievances reported by workers & staff	Yes ☒ No ☐ NA ☐	Reported grievance are addressed by RO/OMC
	General	**Status**	**Remarks/ Non Compliances**
13.	Does the OMC have EHS Policy and procedures?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer.
14.	Is EHS Policy conspicuously displayed at the fuel station?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer
15.	Is drinking water available for workers and staff?	Yes ☒ No ☐ NA ☐	Available to all workers/staff / customers.
16.	Are proper sanitation facilities available, kept clean, and adequately supplied?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
17.	Are smoking areas designated and away from fuel storage and handling areas?	Yes ☒ No ☐ NA ☐	As a policy matter, smoking inside the premises are not allowed. Smoker has to go away from the fuel station for smoking.
18.	Are confined spaces labelled?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
19.	Are safety signages adequately displayed at various locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
20.	Are storm water drains provided and are in good condition?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
21.	Is the housekeeping adequate and are waste bins provided?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
22.	Are daily wage rates displayed at office?	Yes ☐ No ☒ NA ☐	Daily wage rates were not displayed at the OMC sites as observed during ERM site visit.

23.	Are the toilets connected to septic tank/ soak pit or any other arrangement made?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Emergency Preparedness	**Status**	**Remarks/ Non Compliances**
24.	Are emergency contact numbers displayed at conspicuous locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
25.	Are fire extinguishers readily available, and identified?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
26.	Are fire extinguishers periodically inspected, maintained and tagged at all locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
27.	Is fire hydrant system available (in line with PESO requirement) and regularly maintained? Provide details	Yes ☐ No ☐ NA ☒	As per PESO guideline CO2/ DCP are available at site. Fire hydrant system are not required**.**
28.	Are first aid kit(s) available and inspected weekly?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Personnel Protective Equipment	**Status**	**Remarks/ Non Compliances**
29.	Are safety glasses and masks worn by maintenance and cleaning staff?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
30.	Are safety shoes worn by all employees and workers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
31.	Are the fuel handling staff provided with reflective vests and gloves?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
32.	Is hearing protection available and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
33.	Are other PPE (such as hard hats, Goggles or face shields, fall protection equipment, etc.) provided and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Chemical, Oil and Waste Storage and Handling	**Status**	**Remarks/ Non Compliances**

34.	All loose oily rags and waste removed from fuel area and stored in proper covered containers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
35.	All trash and combustible material removed from office premises as necessary?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
36.	Waste containers labelled and covered?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
37.	Are chemicals and other maintenance items stored away from fuel areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Electrical Hazards	**Status**	**Remarks/ Non Compliances**
38.	Covers installed on all outlets, switches, junction boxes, pull boxes, panel boards, etc., that are in service at the office and fuel handling areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
39.	All circuits identified at panel boards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
40.	Extension cords in good condition (not frayed, broken) with current inspection markings?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
41.	Extension Cords and other temporary wiring protected from damage and arranged so as not to create tripping hazards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer

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In addition to Appendix D1, this checklist will be particularly used by AGP site team to screen potential issues associated with the setting up of CNG cascade, compressor and dispenser within premises of retail fuel outlets of OMCs.

A. General Information	
Name of the geographical area	Alappuzha, Kollam & Thiruvananthapuram
Name of the network component	CNG dispensing system
District	Thiruvanthapuram
Taluka / Block	Thiruvanthapuram
Village / ULB	Pettha
Geographical coordinates of OMC fuel outlet	8.483667, 76.930167
Name of the OMC	IOCL Arvind fuels, Enchakkal
Source of gas	IOAGPL Kochi / Cherthala LCNG(After May 21)
Number of cascades and capacity of gas storage	1 number of cascade 3000 Litres Water Capacity.
Details of other associated equipment	1 Dispenser 1 Booster Compressor
Name of GA Head	Mr. Arun Nayak
Contact number	9324814111
E-mail id	arun.nayak@agpglobal.com

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Permits/ Regulatory compliances	**Status**	**Remarks/ Non Compliances**
1.	Has License from Petroleum & Explosives Safety Organization (PESO) under The Petroleum Rules, 2002 been obtained for the OMC station? Provide details.	Yes ☒ No ☐ NA ☐	PESO license number (A/G/HO/KL/07/12 (G51262))
2.	No Objection Certificate from District Magistrate for setting up the fuel station	Yes ☒ No ☐ NA ☐	IOCL Aravind fuel station is operational after obtaining NOC from District Magistrate. Additional NOC for setting up CNG facility are not required
3.	Does the facility have borewell? Has the OMC obtained Permission/approval	Yes ☐ No ☒ NA ☐	Borewell is not available. Water is made available

	for groundwater abstraction from CGWB?		through Govt. water supply body.
4.	Has Contract Labour Licenses under Contract Labour (Regulation and Abolition) Act 1970 been obtained?	Yes ☒ No ☐ NA ☐	Available with OMC, however records not available for review.
5. A	Is the land leased or owned by the OMC? Provide lease duration.	Yes ☒ No ☐ NA ☐	Land is Leased by OMC for the period of 30 years.
	Labour Compliances	**Status**	**Remarks/ Non Compliances**
6.	Minimum wages paid to various worker categories (are wages as per the latest notification) - check for males and females and workers categories- unskilled, semi-skilled, skilled, highly skilled. (review of wage register)	Yes ☒ No ☐ NA ☐	IOCL is a Govt organisation under the Ministry of Petroleum and Natural Gas. IOCL is the principal employer of all workers in the facility. It is the responsibility of IOCL to ensure minimum wages payment to all workers. Under MSA, IOCL has agreed to compile with all statutory norms. Wage register was not available for review.
7.	Working hours in accordance with Indian Labour Law (review of attendance records)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
8.	Overtime wages paid (review of wage register)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
9.	Any child labour observed at the OMC station (review of age proof documents)	Yes ☐ No ☒ NA ☐	Age proof documents are available at RO and AG&P verified the same.
10.	Are workers being provided Provident Fund and ESIC safeguards?	Yes ☒ No ☐ NA ☐	All workers are comes under PF and ESIC.
11.	Is grievance redressal system implemented and well documented	Yes ☒ No ☐ NA ☐	Grievance redressal system are in place

			and document verified by AG&P.
12.	Are grievances reported by workers & staff	Yes ☒ No ☐ NA ☐	Reported grievance are addressed by RO/OMC
	General	**Status**	**Remarks/ Non Compliances**
13.	Does the OMC have EHS Policy and procedures?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer.
14.	Is EHS Policy conspicuously displayed at the fuel station?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer
15.	Is drinking water available for workers and staff?	Yes ☒ No ☐ NA ☐	Available to all workers/staff / customers.
16.	Are proper sanitation facilities available, kept clean, and adequately supplied?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
17.	Are smoking areas designated and away from fuel storage and handling areas?	Yes ☒ No ☐ NA ☐	As a policy matter, smoking inside the premises are not allowed. Smoker has to go away from the fuel station for smoking.
18.	Are confined spaces labelled?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
19.	Are safety signages adequately displayed at various locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
20.	Are storm water drains provided and are in good condition?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
21.	Is the housekeeping adequate and are waste bins provided?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
22.	Are daily wage rates displayed at office?	Yes ☐ No ☒ NA ☐	Daily wage rates were not displayed at the OMC sites as observed during ERM site visit.

23.	Are the toilets connected to septic tank/ soak pit or any other arrangement made?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Emergency Preparedness	**Status**	**Remarks/ Non Compliances**
24.	Are emergency contact numbers displayed at conspicuous locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
25.	Are fire extinguishers readily available, and identified?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
26.	Are fire extinguishers periodically inspected, maintained and tagged at all locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
27.	Is fire hydrant system available (in line with PESO requirement) and regularly maintained? Provide details	Yes ☐ No ☐ NA ☒	As per PESO guideline CO2/ DCP are available at site. Fire hydrant system are not required**.**
28.	Are first aid kit(s) available and inspected weekly?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Personnel Protective Equipment	**Status**	**Remarks/ Non Compliances**
29.	Are safety glasses and masks worn by maintenance and cleaning staff?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
30.	Are safety shoes worn by all employees and workers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
31.	Are the fuel handling staff provided with reflective vests and gloves?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
32.	Is hearing protection available and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
33.	Are other PPE (such as hard hats, Goggles or face shields, fall protection equipment, etc.) provided and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Chemical, Oil and Waste Storage and Handling	**Status**	**Remarks/ Non Compliances**

34.	All loose oily rags and waste removed from fuel area and stored in proper covered containers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
35.	All trash and combustible material removed from office premises as necessary?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
36.	Waste containers labelled and covered?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
37.	Are chemicals and other maintenance items stored away from fuel areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Electrical Hazards	**Status**	**Remarks/ Non Compliances**
38.	Covers installed on all outlets, switches, junction boxes, pull boxes, panel boards, etc., that are in service at the office and fuel handling areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
39.	All circuits identified at panel boards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
40.	Extension cords in good condition (not frayed, broken) with current inspection markings?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
41.	Extension Cords and other temporary wiring protected from damage and arranged so as not to create tripping hazards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer

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Name of the geographical area	Alappuzha, Kollam & Thiruvananthapuram
Name of the network component	CNG dispensing system
District	Alappuzha
Taluka / Block	Ambalappuzha
Village / ULB	Alleppey
Geographical coordinates of OMC fuel outlet	9.504449, 76.328397
Name of the OMC	HPCL Prima fuel, Alleppey
Source of gas	IOAGPL Kochi / Cherthala LCNG(After May 21)
Number of cascades and capacity of gas storage	1 number of cascade 3000 Litres Water Capacity.
Details of other associated equipment	1 Dispenser 1 Booster Compressor
Name of GA Head	Mr. Arun Nayak
Contact number	9324814111
E-mail id	arun.nayak@agpglobal.com

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Permits/ Regulatory compliances	**Status**	**Remarks/ Non Compliances**
1.	Has License from Petroleum & Explosives Safety Organization (PESO) under The Petroleum Rules, 2002 been obtained for the OMC station? Provide details.	Yes ☒ No ☐ NA ☐	PESO license number (A/G/SC/KL/07/66 (G66950))
2.	No Objection Certificate from District Magistrate for setting up the fuel station	Yes ☒ No ☐ NA ☐	HPCL Prima fuel station is operational after obtaining NOC from District Magistrate. Additional NOC for setting up CNG facility are not required
3.	Does the facility have borewell? Has the OMC obtained Permission/approval	Yes ☐ No ☒ NA ☐	Borewell is not available. Water is made available

	for groundwater abstraction from CGWB?		through Govt water supply body.
4.	Has Contract Labour Licenses under Contract Labour (Regulation and Abolition) Act 1970 been obtained?	Yes ☒ No ☐ NA ☐	Available with OMC, however copies not available for review
5. A	Is the land leased or owned by the OMC? Provide lease duration.	Yes ☒ No ☐ NA ☐	Land is Leased by OMC for the period of 30 years.
	Labour Compliances	**Status**	**Remarks/ Non Compliances**
6.	Minimum wages paid to various worker categories (are wages as per the latest notification) - check for males and females and workers categories- unskilled, semi-skilled, skilled, highly skilled. (review of wage register)	Yes ☒ No ☐ NA ☐	HPCL is Govt organisation under the Ministry of Petroleum and Natural Gas. HPCL is the principal employer of all workers in the facility. It is the responsibility of HPCL to ensure minimum wages payment to all workers. Under MSA, HPCL has agreed to compile with all statutory norms. Wage register was not available for review.
7.	Working hours in accordance with Indian Labour Law (review of attendance records)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
8.	Overtime wages paid (review of wage register)	Yes ☒ No ☐ NA ☐	AG&P verified the records and found OK
9.	Any child labour observed at the OMC station (review of age proof documents)	Yes ☐ No ☒ NA ☐	Age proof documents are available at RO and AG&P verified the same.
10.	Are workers being provided Provident Fund and ESIC safeguards?	Yes ☒ No ☐ NA ☐	All workers are comes under PF and ESIC.
11.	Is grievance redressal system implemented and well documented	Yes ☒ No ☐ NA ☐	Grievance redressal system are in place and document verified.

12.	Are grievances reported by workers & staff	Yes ☒ No ☐ NA ☐	Reported grievance are addressed by RO/OMC
	General	**Status**	**Remarks/ Non Compliances**
13.	Does the OMC have EHS Policy and procedures?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer.
14.	Is EHS Policy conspicuously displayed at the fuel station?	Yes ☒ No ☐ NA ☐	Available with OMC and verified by AG&P engineer
15.	Is drinking water available for workers and staff?	Yes ☒ No ☐ NA ☐	Available to all workers/staff / customers.
16.	Are proper sanitation facilities available, kept clean, and adequately supplied?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
17.	Are smoking areas designated and away from fuel storage and handling areas?	Yes ☒ No ☐ NA ☐	As a policy matter, smoking inside the premises are not allowed. Smoker has to go away from the fuel station for smoking.
18.	Are confined spaces labelled?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
19.	Are safety signages adequately displayed at various locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
20.	Are storm water drains provided and are in good condition?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
21.	Is the housekeeping adequate and are waste bins provided?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
22.	Are daily wage rates displayed at office?	Yes ☐ No ☒ NA ☐	Daily wage rates were not displayed at the OMC sites as observed during ERM site visit.

23.	Are the toilets connected to septic tank/ soak pit or any other arrangement made?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Emergency Preparedness	**Status**	**Remarks/ Non Compliances**
24.	Are emergency contact numbers displayed at conspicuous locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
25.	Are fire extinguishers readily available, and identified?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
26.	Are fire extinguishers periodically inspected, maintained and tagged at all locations?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
27.	Is fire hydrant system available (in line with PESO requirement) and regularly maintained? Provide details	Yes ☐ No ☐ NA ☒	As per PESO guideline CO2/ DCP are available at site. Fire hydrant system are not required**.**
28.	Are first aid kit(s) available and inspected weekly?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Personnel Protective Equipment	**Status**	**Remarks/ Non Compliances**
29.	Are safety glasses and masks worn by maintenance and cleaning staff?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
30.	Are safety shoes worn by all employees and workers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
31.	Are the fuel handling staff provided with reflective vests and gloves?	Yes ☐ No ☒ NA ☐	Based on ERM site observations
32.	Is hearing protection available and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
33.	Are other PPE (such as hard hats, Goggles or face shields, fall protection equipment, etc.) provided and used when needed?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Chemical, Oil and Waste Storage and Handling	**Status**	**Remarks/ Non Compliances**

34.	All loose oily rags and waste removed from fuel area and stored in proper covered containers?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
35.	All trash and combustible material removed from office premises as necessary?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
36.	Waste containers labelled and covered?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
37.	Are chemicals and other maintenance items stored away from fuel areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
	Electrical Hazards	**Status**	**Remarks/ Non Compliances**
38.	Covers installed on all outlets, switches, junction boxes, pull boxes, panel boards, etc., that are in service at the office and fuel handling areas?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
39.	All circuits identified at panel boards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
40.	Extension cords in good condition (not frayed, broken) with current inspection markings?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer
41.	Extension Cords and other temporary wiring protected from damage and arranged so as not to create tripping hazards?	Yes ☒ No ☐ NA ☐	Verified by AG&P engineer

Appendix D2: EHS Audit Checklist

In addition to Appendix D1, this checklist will be particularly used by AGP site team to screen potential issues associated with the setting up of CNG cascade, compressor and dispenser within premises of retail fuel outlets of OMCs.

A. General Information	
Name of the geographical area	Mysore Mandya Chamarajanagar
Name of the	CNG dispensing system

network component	
District	Mysore Mandya Chamarajanagar
Taluka / Block	Charged Areas 18 nos. (18Taluk)
Village / ULB	NA
Geographical coordinates of OMC fuel outlet	
Name of the OMC	Three OMCs are covered as follows: • IOCL Sri chakra Fuel Station. S. R. Patna- 12'24.995'N, 76'41.104'E-CA 11 • HPCL Sri Ranga Amaravathi Fuel station, SR Patna-12'25.725'N, 76'41.864'E – CA11 • HPCL ADHOC Sri Maruthi service station , Hebbal -12'21.858'N, 76'36.585'E- CA 7(Mysore)
Source of gas	LNCG station/GAIL IP-07
Number of cascades and capacity of gas storage	1 Cascade at each Daughter booster station (DBS), 3000 Litres water capacity
Details of other associated equipment	1 Booster compressor at each DBS 1 Dispenser at each DBS
Name of GA Head	Mr Arun Nayak
Contact number	9324814111
E-mail id	Arun.nayak@agpglobal.com

B. EHS Screening			
S. No.	**Aspect**	**Details**	**Remarks/ Non Compliances**
	Permits/ Regulatory compliances	**Status**	**Remarks/ Non Compliances**
1.	Has License from Petroleum & Explosives Safety Organization (PESO) under The Petroleum Rules, 2002 been obtained for the OMC station? Provide details.	Yes ☒ No ☐ NA ☐	Initial PESO approval of 05 OMC ROs are received. Remaining approvals are under process.
2.	No Objection Certificate from District Magistrate for setting up the fuel station	Yes ☒ No ☐ NA ☐	OMC pumps are operational. Additional DM NOC not required

3.	Does the facility have borewell? Has the OMC obtained Permission/approval for groundwater abstraction from CGWB?	Yes ☐ No ☒ NA ☐	This will be under OMC purview.
4.	Has Contract Labour Licenses under Contract Labour (Regulation and Abolition) Act 1970 been obtained?	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
5.	Is the land leased or owned by the OMC? Provide lease duration.	Yes ☒ No ☐ NA ☐	As reported by OMCs, the fuel stations are taken on lease for a duration of 30 years. Majority of them were 10 years old.
	Labour Compliances	**Status**	**Remarks/ Non Compliances**
6.	Minimum wages paid to various worker categories (are wages as per the latest notification) - check for males and females and workers categories- unskilled, semi-skilled, skilled, highly skilled. (review of wage register)	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
7.	Working hours in accordance with Indian Labour Law (review of attendance records)	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
8.	Overtime wages paid (review of wage register)	Yes ☐ No ☐ NA ☒	Same as above
9.	Any child labour observed at the OMC station (review of age proof documents)	Yes ☐ No ☒ NA ☐	No child labour was observed.

10.	Are workers being provided Provident Fund and ESIC safeguards?	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
11.	Is grievance redressal system implemented and well documented	Yes ☐ No ☐ NA ☒	Same as above
12.	Number of grievances reported by workers & staff	Yes ☐ No ☐ NA ☒	Same as above
	General	**Status**	**Remarks/ Non Compliances**
13.	Does the OMC have EHS Policy and procedures?	Yes ☐ No ☐ NA ☒	Same as above. AG &P is not responsible for the application of EHS policy and procedures of OMC.
14.	Is EHS Policy conspicuously displayed at the fuel station?	Yes ☐ No ☐ NA ☒	Same as above
15.	Is drinking water available for workers and staff?	Yes ☒ No ☐ NA ☐	RO drinking water facility was observed to be provided to OMC staff
16.	Are proper sanitation facilities available, kept clean, and adequately supplied?	Yes ☒ No ☐ NA ☐	Sanitation facility was observed to be provided to OMC staff and clean. The same will be used by AG &P workers during the construction & operation phase**.**
17.	Are smoking areas designated and away from fuel storage and handling areas?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
18.	Are confined spaces labelled?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
19.	Are safety signages adequately displayed at various locations?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC

20.	Are storm water drains provided and are in good condition?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
21.	Is the housekeeping adequate and are waste bins provided?	Yes ☒ No ☐ NA ☒	Under the Purview of OMC
22.	Are daily wage rates displayed at office?	Yes ☐ No ☐ NA ☒	Under the Purview of OMC
23.	Are the toilets connected to septic tank/ soak pit or any other arrangement made?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
	Emergency Preparedness	**Status**	**Remarks/ Non Compliances**
24.	Are emergency contact numbers displayed at conspicuous locations?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
25.	Are fire extinguishers readily available, and identified?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
26.	Are fire extinguishers periodically inspected, maintained and tagged at all locations?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
27.	Is fire hydrant system available (in line with PESO requirement) and regularly maintained? Provide details	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
28.	Are first aid kit(s) available and inspected weekly?	Yes ☐ No ☐ NA ☐	Under the Purview of OMC
	Personnel Protective Equipment	**Status**	**Remarks/ Non Compliances**
29.	Are safety glasses and masks worn by maintenance and cleaning staff?	Yes ☐ No ☒ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
30.	Are safety shoes worn by all employees and workers?	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The

			contractors and workers engaged by OMC comes under OMC's purview.
31.	Are the fuel handling staff provided with reflective vests and gloves?	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
32.	Is hearing protection available and used when needed?	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
33.	Are other PPE (such as hard hats, Goggles or face shields, fall protection equipment, etc.) provided and used when needed?	Yes ☐ No ☐ NA ☒	Not applicable at this stage. As the construction has not started at any of the facility by AG & P. The contractors and workers engaged by OMC comes under OMC's purview.
	Chemical, Oil and Waste Storage and Handling	**Status**	**Remarks/ Non Compliances**
34.	All loose oily rags and waste removed from fuel area and stored in proper covered containers?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
35.	All trash and combustible material removed from office premises as necessary?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
36.	Waste containers labelled and covered?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
37.	Are chemicals and other maintenance items stored away from fuel areas?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
	Electrical Hazards	**Status**	**Remarks/ Non Compliances**

38.	Covers installed on all outlets, switches, junction boxes, pull boxes, panel boards, etc., that are in service at the office and fuel handling areas?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
39.	All circuits identified at panel boards?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
40.	Extension cords in good condition (not frayed, broken) with current inspection markings?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC
41.	Extension Cords and other temporary wiring protected from damage and arranged so as not to create tripping hazards?	Yes ☒ No ☐ NA ☐	Under the Purview of OMC

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ERM India Pvt. Ltd.
4th Floor, Building 10A
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Gurgaon 122002

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