

Initial Environmental Examination

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India: Tripura Urban and Tourism Development
Project – Improvement of Roads and Storm Water
Drainage System in Cluster IIIA Towns

Package NO: R&SD-03

Prepared by Tripura Urban Planning and Development Authority (TUDA), Urban Development
Department, Government of Tripura for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 27 April 2023)

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\$1.00	=	₹ 81.80

ABBREVIATIONS

ADB	– Asian Development Bank
AMC	– Ambassa Municipal Council
CPCB	– Central Pollution Control Board
CTE	– Consent to establish
CTO	– Consent to operate
DBE	– Design Basis Earthquake
DHQ	– Districts headquarter
DMC	– Dharamanagar Municipal Council
DWS	– Drinking water & sanitation
EAC	– Expert appraisal committee
EARF	– Environmental assessment and review framework
EHS	– Environment, health and safety
EIA	– Environmental impact assessment
EMP	– Environmental management plan
EMS	– Environmental management specialist
GoT	– Government of Tripura
GRC	– Grievance redress committee
GRM	– Grievance redress mechanism
IEE	– initial environmental examination
IRP	– iron removal plant
KMC	– Kailashahar Municipal Council
KMC	– Kumarghat Municipal Council
MoEFCC	– Ministry of Environment, Forest and Climate Change
NWQMP	– National Water Quality Monitoring Programme
TSPCB	– Tripura State Pollution Control Board
NOC	– No objection certificate
OHS	– Occupational health and safety
PGA	– Peak Ground Acceleration
PIU	– project implementation unit
PMSC	– Project management supervision consultant
PMU	– Project management unit
RFA	– Recorded Forest Area
ROW	– Right of way
SDCC	– Sustainable Development and Climate Change Department
SGC	– Safeguards and gender cell
SPS	– Safeguard Policy Statement
TOR	– Terms of Reference
TUDA	– Tripura Urban Planning and Development Authority
TUTDP	– Tripura Urban and Tourism Development Project
WHO	– World Health Organization
WTP	– Water treatment plant

WEIGHTS AND MEASURES

dba	-	decibel
°C	-	degree Celsius
km	-	kilometer
lpcd	-	litre per capita per day
m	-	meter
mgl	-	meter below ground level
mm	-	millimeter
MLD	-	million liters per day
km ²	-	square kilometer

NOTE

In this report, "\$" refers to United States dollars.

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EXECUTIVE SUMMARY

Proposed Tripura Urban and Tourism Development Project (TUTDP) will improve the municipal infrastructure and public services and will lay the foundation for tourism development in the State of Tripura. Tripura is in the Northeast Region (NER) of India, covering an area of 10,490 square km, with a population of 4.1 million (estimated 2022), and Agartala as the state's capital. The project targets key urban local bodies (ULBs) along the main national highways in Tripura, major infrastructure components of which include water supply, stormwater drainage, communal or neighbourhood roads, and tourism development support.

The project is aligned with the following impact(s): clean and sustainable environment in ULBs achieved, and Tripura increasingly recognized in the India tourism industry as a new destination. The project will have the following outcome: Adequate, safe, and climate- and disaster-resilient, urban services (water, storm drainage, and municipal roads) provided and sustainable tourism improved in project areas. Project has four outputs: (i) Output 1: Municipal reforms and capacity of ULBs strengthened, (ii) Output 2: Urban infrastructure improved. The project will improve various public infrastructures, such as (i) water supply, (ii) stormwater drainage, and (iii) municipal roads, (iii) Output 3: Tourist destinations improved, and (iv) Output 4: Capacity of tourism corporation's operational services improved. Government of Tripura acting through Urban Development Department (UDD) will be the project executing agency. Tripura Urban Planning and Development Authority (TUDA) and Tripura Tourism Development Corporation Limited (TTDCL) will be the implementing agencies.

Under phase 1 of the project, 12 towns have been selected for improvement of water supply, roads and storm water drains, and tourism facilities. Improvement of roads and storm water drains in Kailashahar, Kumarghat, Dharmanagar and Ambassa towns (Package - R&SD-03) is one of the subprojects proposed under the TUTDP.

Kailashahar town - Subproject includes the following, (i) **Road sector:** Rehabilitation of 4 nos. roads- Unakoti Lodge to Bimal Sinha Housing Complex & Haijan colony, PWD Road to Gopal Malakar House near BSNL Office, Veterinary Hospital to Naba Jagrata club west side of Embankment, and Flood Control Office to House of Biswajit Bhattacharjee Via Kajir Gaon School) replacement of kuccha, brick road), strengthening of road as per requirement within existing ROW, with one side drain & provision of catch pit on other side construction of Interlocking concrete paver blocks (ICB) pavement of 2.52 km with side drains of 1.57 km length & provision of catch pit on other side. and (ii) **Drainage sector:** Drainage development works at RGM Hospital-Laxmi Cherra catchment and Mora Cherra catchment via Thana More & Unakoti Lodge. Construction of RCC covered drains approx. 5.16 km planned left side/ right side of road with 0.8-2.5 m wide, 0.7-2.9 m deep.

Kumarghat town – Subproject includes the following, (i) **Road sector:** Rehabilitation and construction of 12 nos. roads, Interlocking concrete paver blocks (ICB) pavement (replacement of kuccha/ semi pucca- brick road including construction of part of new road), strengthening of road as per requirement within existing ROW, with one side drain & provision of catch pit on other side of 2.87 km road with side drains of 2.87 km and (ii) **Drainage sector:** Drain improvement works (RCC covered drain) for 6 nos. drain section at Pabia Cherra Catchment, Bhagat Sing Chowmuhani Catchment, Deo River Catchment and North Pabia Cherra Catchment. Total length of drain approx. 2.37 km, with proposed drain width of 0.6-1.5m and depth of 0.8-2.7m.

Dharmanagar town - Subproject includes **Drainage sector:** Construction of RCC drain of approx. 1.243 km from Batarasi Tri-Junction to Kakri River. Drain is proposed for Batarasi Road

– Rajbari Catchment. The subproject area covers parts of ward 13, 21, 22, 23, and adjoining of ward 23 of Dharmanagr Municipal Council. Proposed drain width in between 0.6 & 2.0 m, while drain depth of 0.7-2.85, No road project is considered at Dharmanagar under the package.

Ambassa town - Subproject includes the following, (i) **Road sector**: Rehabilitation of 10 road sections - Interlocking concrete paver blocks (ICB) pavement (replacement of kuccha/ semi pucca road- brick road including construction of part of new road), strengthening of road as per requirement within existing ROW, with one side drain & provision of catch pit on other side for 3.04 km road, and (ii) **Drainage sector**: Drain improvement works- RCC covered drain for 6 drain sectors at NH-Ambassa Colony Catchment, NH-Motor Stand Road Catchment, NH-PS Link Road Vivekanand Nagar Catchment and Ambedkar Nagar Malakar Para Catchment. Total length of drains is approx. 5.7 km, with proposed drain width of 0.5-1.4m and depth of 0.6-2.6m.

Screening and Categorization. assessment of potential impacts. This road and drainage subproject is classified as environmental category B as per ADB's Safeguard Policy Statement (SPS), 2009, and accordingly this initial environmental examination (IEE) assesses the environmental impacts and provides mitigation and monitoring measures to ensure that there are no significant impacts as a result of the subproject. As per the Government of India environmental impact assessment (EIA) Notification, 2006, this subproject does not require EIA study or environmental clearance. In case works require shifting of utilities such as telephone and electricity lines, permission from respective agencies will be obtained.

Description of the Environment. The subproject towns Kailashahar, Kumarghat, Dharmanagar and Ambassa are in Tripura state in northeast India. It is third-smallest state, bordered by Assam and Mizoram to the east and by Bangladesh to the north, south and west. Agartala is the capital and the largest city in the state. The whole of northeast India, including Tripura, falls under seismic zone V and is highly vulnerable to earthquakes. Proposed roads and drains components are within urban areas of project towns. There are no forests or protected areas or archeologically or historically sensitive areas in or near project sites. Sites do not fall under any buffer or eco sensitive zone.

Kailashahar is a headquartered of the Unakoti district located at 24°19'36.52"N and 92° 0'45.46" E. It is the fourth largest urban centre of Tripura. The town is situated on the bank of river Manu, the longest river of Tripura. Kailashahar has highest elevation of 18 meter & lowest elevation as 16 meters approx. The total area of the town approximately is 6.19 Sq. km divided into 17 wards, with total population of 22,405 (2011 census). Kailashahar typically receives about average 2600 mm of precipitation in a year. Identified roads considered under the present project are, Unakoti Lodge to Bimal Sinha Housing Complex & Harijan colony, PWD Road to Gopal Malakar House near BSNL Office, Veterinary Hospital to Naba jagrata club west side of Embankment, and Flood Control Office to House of Biswajit Bhattacharjee Via Kajir Gaon School. Proposed drain is considered near veterinary hospital road, Sriniketan shopping complex Unakoti lodge and outfall near Noorpur catchment. The Rowa Wildlife Sanctuary located about 14.5 km (aerial distance) from Kailashahar The village Uttar Unakoti Reserve Forest and Eco Park is in Kailashahar C.D. Block of Unakoti District.

Kumarghat is a town with Municipal Council area in the Unakoti district, located at 24.9 9' 30" N and 92° 1' 47"E. Kumarghat town has an average elevation of 36 meters. The total Area of the town is 8.23 km² divided in 15 wards with total population of 13,054 (2011 census). Manu and Deo are the main rivers, both flowing South to North. Total 12 roads considered under the project are, from Akhil Sinha to Santimoy Deb house, from Asram Palli ICDS to Samir Suklabaida House, from S.E. Office to Nantulal Dey House, from Babul Barua house to Tanu Sinha House, from Ujjal

Sharma House to Dilip Sinha House and from Shyamal Bhattacharya house to Nikrunja Das House, NH-8 to Arati Nomo House, from Kalipada Roy house to Tarani Kr. Deb House, Pandap Saha house to Jhantu Debnath House, from Ranu Debnath to Kripamoy Das house, from agriculture office to Swapan Das House, from Bhusan Chandra Das House to Kakali Dhar Das House, and from Kartik Dhar House to Pabichara fish Market. RCC covered drain is planned along the National Highways from Kumarghat Railway Station to existing underground drain nearby SP Mukherjee Lane near 91 miles covering different stretches. The Rowa Wildlife Sanctuary is located about 20.0 km (aerial distance) from Kumarghat. Sculptured hills of Unakoti have high potential tourism in the district. The road distance from Kumarghat to Unakoti is about 17.5 km. Unakoti is ASI protected area.

Dharmanagar is a town with a Municipal Council in the North Tripura district. It is the second largest urban body in the state of Tripura, after Agartala. Dharmanagar has average elevation of approx. 21 m. The town covers an area of about 10.69 sq. km. divided into 25 wards with total population of 40,595 (2011 census). The major drainage channel of the town is Sakai Cheera, Sukna Cherra which are outfall to Juri/Kakri river flowing through Dharmanagar town. The Juri River is a trans-boundary river in India and Bangladesh. Drain will be constructed from Batarasi Tri-Junction to Kakri River. There are no sensitive areas nearby the project sites. The Rowa Wildlife Sanctuary is located within 10 km from Dharmanagar. Choraibari RF is located about 11 km from Dharmanagar.

Ambassa Municipal Council is situated in rural region of Tripura in Dhalai district. Located at 23°55'10.8" N and 91°50'42" E and average elevation of 89 m. Total area of the town is 15.347 km² divided into 15 wards, with total population of 16,285 (2011 census). The river Dhalai passes from the north of Ambassa town. Total 10 roads considered under the project are, from Adhir sikdar house to Sujit Das house via Partha raj Debbarmann house, from Motor stand southside to Susuma Modak house via Siburanjan Dey house and Haralal Pal house, from Chunilal Debnath house to Babulal pal house, from Alok Debnath house to Ganesh Goswami house, from NH-8 To Kalpana Jadav house, from Dum Dum Marak house to Laxmi charan Debnath house, Anil medical hall to Tejendra Mitra house, from P.R.T.I. Building to Dhalai river, NH-08 to Sudhangshu Datta house to Laxmi Charan Debnath house and from Narayan Debnath house to Biswajith Sarma house via Niorde sadhu Asram. RCC covered drain planned in 6 stretches which are, from NH-08 to Kalpana Jadav house, from PS link road to Chandrai para school ground, from NH-8 to Zila Parisad office via Ramkrishna Ashram, from Ambassa motor stand to Arun Debnath house at TRTC para, from Tripura Garmin Bank to Ambassa P.S. & Bankumari Bazar via Naresh Sharma house at V.K. Nagar and from Parendra Debnath house to NH-8 via Ambedkar Nagar J.B. School The Nearest reserves forest from town is Kulai Reserve Forest, which is located about 5.16 Km from Ambassa town. The Rowa Wildlife Sanctuary is situated about 49 km away from the project location. There is no archeological protected area in and around Ambassa.

Potential Environmental Impacts and Mitigation measures. Environmental impacts due to the project design or location are not significant as various measures are already included in site planning and preliminary design. All roads' works are planned within the right of way (ROW) of existing roads and existing drain will be improved with the existing width and new drains will be within the ROW of existing roads. Necessary drains and cross drainage works are proposed to facilitate surface runoff and mitigate any negative impacts of road improvement. Potential impacts during construction are considered significant but temporary and are common impacts of construction in urban areas, and there are well developed methods to mitigate the same. Construction impacts arise mainly from dust and noise, hauling of construction material, waste, and equipment on local roads (traffic, dust, safety etc.), mining of construction material, occupational health, and safety (OHS) aspects. Road and drains work in roads congested with

people, activities, and traffic may have impacts arising mainly from the disturbance of residents, businesses, and traffic due to construction work; safety risk to workers, public and nearby buildings due to deep trench excavations in the road; access impediment to houses and business, disposal of large quantities of construction waste etc.

In operation phase there may be requirement of repairs in road & drainage system, maintenance of drain- disposal of drainage sludge etc. Various provisions are already made in the design. It is unlikely that there will be any significant negative impacts.

Environmental Management Plan. An environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels, along with the delegation of responsibility to appropriate agency. Various design related measures are already included in the project design. During construction, the EMP includes mitigation measures such as (i) proper planning and scheduling of road and drains works to minimize public inconvenience; (ii) measures to avoid impacts on heritage building and chance find procedures (iii) barricading, dust suppression and noise control measures; (iv) traffic management measures for works along the roads and for hauling activities; (v) occupational and community health and safety, labour welfare, (vi) provision of walkways and planks over trenches to ensure access will not be impeded; (vii) reuse of excavated materials to extent possible, (viii) spill and sediment control measures to avoid water and soil pollution, etc. EMP will guide the environmentally-sound construction of the subproject. EMP includes a monitoring program to measure the effectiveness of EMP implementation and include observations on- and off-site, document checks, and interviews with workers and beneficiaries. A copy of the updated EMP/ site environmental management plan (SEMP) shall be always kept on-site during the construction period. The EMP will be included in bids and contracts, and implementation shall be binding on contractors.

Implementation Arrangements. Urban Development Department (UDD) of Government of Tripura (GOT) is the executing agency, and the implementing agencies are Tripura Urban Planning and Development Authority (TUDA, for urban component) and Tripura Tourism Development Corporation Limited (TTDCL, for tourism component). A project management unit (PMU) in Agartala and six project implementation units (PIUs, 3 urban and 3 tourism) will be established in Agartala, Udaipur and Kumarghat. Project management and supervision consultant (PMSC) will be engaged to assist PMU and the PIUs. At PMU, the project coordinator will be the nodal officer for environmental, social safeguards and gender and will be responsible for ensuring compliance with ADB's Safeguards Policy Statement (SPS), 2009. An environmental safeguards officer (ESO) will be engaged to support the project coordinator. Project Manager or Assistant Project Manager of PIU will be designated as safeguards focal in each PIU. The PMSC team will include an Environmental Safeguards Specialist (ESS), and three support safeguards staff located in PIUs. Contractor will appoint an Environment, Health, and Safety (EHS) cum social supervisor.

Consultation, Disclosure. The stakeholders were involved in developing the IEE through FGD and public consultation at project area level, after which views expressed were incorporated into the IEE and in the planning and development of the project. Focus Group Discussions (FGDs) and consultations have been conducted in four towns: **Kailashahar** – November 2021, February, April & May 2022, and March 2023 with 115 participants (67 male and 48 female). **Kumarghat:** April 2022 and March 2023 with 108 participants (40 male and 68 female). **Dharmanagar:** January, February and April 2022 and May 2023 with 87 participants (52 male and 35 female) and **Ambassa:** March, April and September 2022 and March 2023 with 157 participants (71 male and 86 female). All participants are expressed need for the project and willingness to take it up and stakeholders were very supportive for the project and promises to extend full cooperation

during the construction phase as the activities are proposed to improve the road and drainage conditions and living standard.

Monitoring and Reporting. The PMU, PIU and consultants will be responsible for monitoring and reporting. During construction, results from internal monitoring by the contractor will be reflected in their monthly EMP implementation reports to the PIU. PIU with the assistance of PMSC, will monitor the compliance of contractor, prepare a quarterly environmental monitoring report and submit to PMU. The PMU will oversee the implementation and compliance and will submit semi-annual environmental monitoring reports (SEMR) to ADB. SEMRs will be disclosed on ADB and project websites.

Conclusions. The proposed project is unlikely to cause significant adverse impacts, and potential impacts are mainly due to construction and can be mitigated or minimized to acceptable levels through measures included in the EMP. The citizens of Kailashahar, Kumarghat, Dharmanagar and Ambassa will be the major beneficiaries. The subproject is primarily designed to improve environmental quality and living conditions of these towns through provision of good road and drain. The benefits arising from this subproject include: (i) increased connectivity; (ii) reduced time of water stagnation time during monsoon time; (iii) better public health particularly reduction in waterborne and infectious diseases.

Based on the findings of the IEE, the classification of the project as Category “B” is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS (2009) or GoI EIA Notification (2006). This IEE needs to be updated during the project implementation in case of change in scope, location; will be reviewed, and approved by ADB, and disclosed accordingly in ADB and project website.

I. INTRODUCTION

A. Tripura Urban and Tourism Development Project (TUTDP)

1. Proposed Tripura Urban and Tourism Development Project (TUTDP) will improve the municipal infrastructure and public services and will lay the foundation for tourism development in the State of Tripura. Tripura is in the Northeast Region (NER) of India, covering an area of 10,490 square kilometers, with a population of 4.1 million (estimated 2022), and Agartala as the state's capital. The project targets key urban local bodies (ULBs) along the Northeast Economic Corridor (NEEC), major infrastructure components of which include water supply, stormwater drainage, communal or neighborhood roads, and tourism development support. The government of Tripura acting through Urban Development Department (UDD) will be the project executing agency. Tripura Urban Planning and Development Authority (TUDA) and Tripura Tourism Development Corporation Limited (TTDCL) will be the implementing agencies.

2. The project is aligned with the following impact(s): clean and sustainable environment in ULBs achieved, and Tripura increasingly recognized in the India tourism industry as a new destination.¹ The project will have the following outcome: Adequate, safe, and climate- and disaster-resilient, urban services (water, storm drainage, and municipal roads) provided and sustainable tourism improved in project areas.² Outputs of the project are:

3. **Output 1: Municipal reforms and capacity of ULBs strengthened.** The project will strengthen (i) the capacity of technical staff in project management and operation and maintenance (O&M) of urban infrastructure; (ii) ULB own-source revenue generation, financial management and accounting reforms; (iii) advisory support for city-wide inclusive sanitation for ULBs that complements government financing scheme;³ (iv) integration of climate change- and disaster resilience in urban planning with universal design consideration, and gender equality and social inclusion (GESI) analysis and (v) support to developing building regulations and building byelaws for the state.

4. **Output 2: Urban infrastructure improved.** The project will improve various public infrastructures, such as (i) water supply, (ii) stormwater drainage, and (iii) municipal roads.

5. **Output 3: Tourist destinations improved.** The project will strengthen public infrastructure that is vital for ecotourism such as (i) tourism destination development with climate resiliency and green infrastructure retrofitting; (ii) museum development at the Neermahal Palace (iii) Improved tourist accommodation and family oriented-Adventure Park; and (iv) Tourism-related goods and equipment for selected tourism destinations.

6. **Output 4: Capacity of tourism development corporation's operational services improved.** Tripura tourism through TTDCL will (i) develop a 10-year business plan including marketing and coordination with the private sector (including exploring outsourcing and O&M of tourism facilities and assets for local business, small and medium enterprise opportunities for women), (ii) demonstrating community-based tourism development (iii) stakeholder tourism capacity and skill development program, (iv) marketing and tourism promotion activities.

¹ Government of India, Ministry of Housing and Urban Affairs. 2015. [Smart Cities Mission Guidelines](#). Delhi; Government of Tripura, Department of Tourism. 2020. [Tourism Policy 2020–2025](#). Agartala.

² The design and monitoring framework is in Appendix 1 of PAM.

³ ADB is working with Global Water and Sanitation Center under Bill and Melinda Gates Foundation to provide CWIS support preliminary study for 2 towns that would be potentially financed in the planned Phase 2.

7. Under phase 1 of the project, 12 towns have been selected for improvement of water supply, roads and storm water drains. Improvement of road and drains in **Kailashahar, Kumarghat & Ambassa** and only **drains in Dharmanagar** town (Package R&D/03) is proposed under this subproject proposed under the TUTDP.

B. Purpose of Initial Environmental Examination Report

8. As per ADB's Safeguards Policy Statement, 2009, ADB requires the consideration of environmental issues in all aspects of the Bank's operations. Using rapid environmental assessment (REA) checklist **Appendix 1**, subproject is unlikely to cause significant adverse impacts, and classified as **Category B** and per ADB SPS requirements this IEE is conducted.

C. Scope of IEE

9. The subproject will be implemented under the Item Rate Contract modality. Thus, this IEE is based on the project design report. The IEE is conducted mainly based on field reconnaissance surveys and secondary sources of information. Stakeholder consultation was an integral part of the IEE. IEE will be updated during implementation if there are any changes in project scope, design or sites updates will supersede the earlier version.

D. Report Structure

10. This Report contains the following sections:

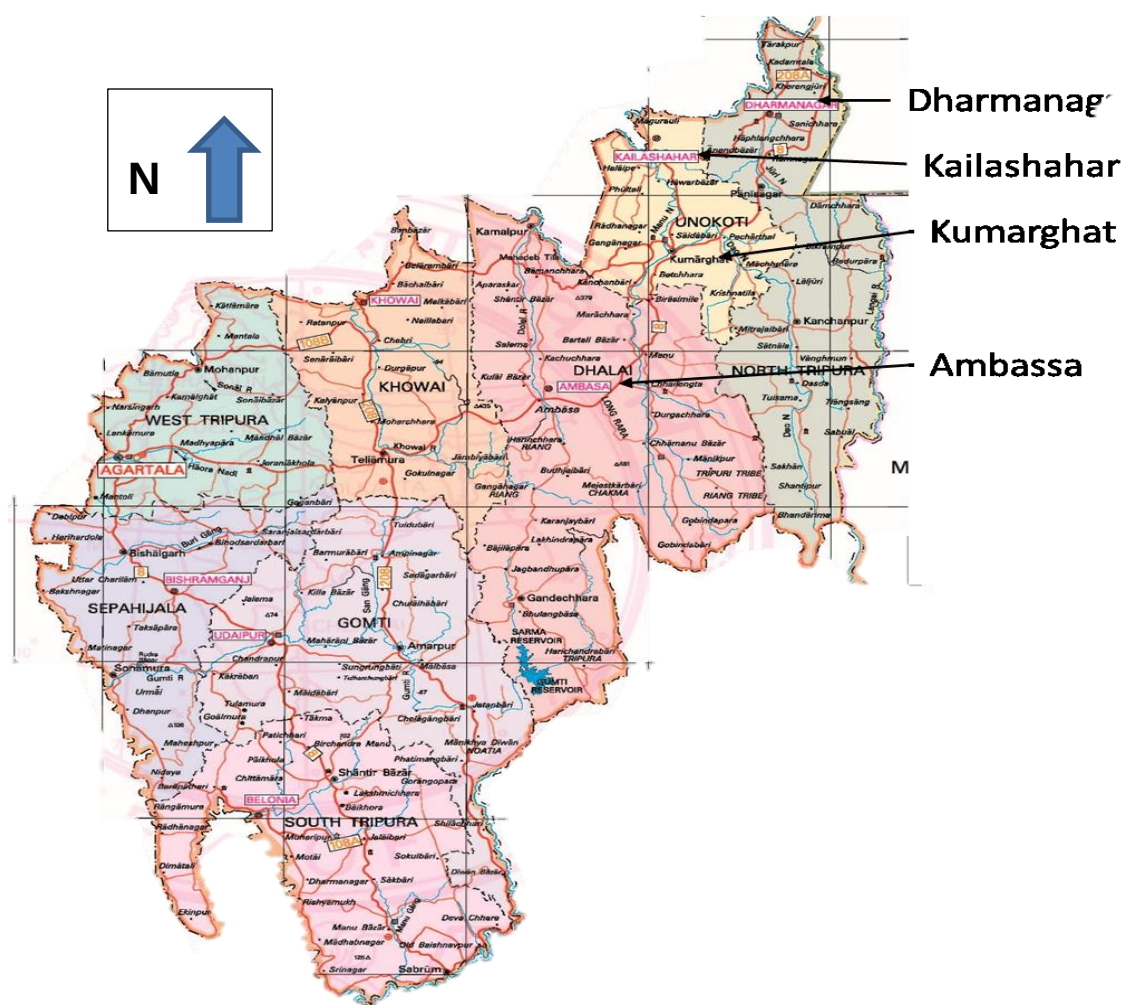
- (i) Executive summary;
- (ii) Introduction;
- (iii) Description of the project;
- (iv) Analysis of alternatives;
- (v) Policy, legal and administrative framework;
- (vi) Description of the environment;
- (vii) Anticipated environmental impacts and mitigation measures;
- (viii) Public consultation and information disclosure;
- (ix) Grievance redress mechanism;
- (x) Environmental management plan; and
- (xi) Conclusions and recommendations.

II. DESCRIPTION OF THE PROJECT

A. Project Location

11. Project towns Kailashar, Kumarghat, Dharamagar and Ambasa are located in Tripura state in northeast India. It is bordered by Assam and Mizoram to the east and by Bangladesh to the north, south and west. Agartala is the capital and the largest city in the state. **Kailashahar** is a town located at 24°19'36.52"N and 92° 0'45.46" E and is about 140 km from Agartala. Town area is 6.19 sq. km divided into 17 wards. The population is 22,405 (2011 census). **Kumarghat** is a town located at 24.9 9' 30" N and 92 1' 47" E and is about 120 km from Agartala. Town area is 8.23 sq. km divided into 15 wards. The population is 13,054 (2011 census). **Dharmanagar** is a town located at 24°22'41.84"N, 92° 9'17.09"E, and is about 160 km from Agartala. Town area is 10.69 sq. km divided into 25 wards. Population 40,595 (2011 census). **Ambassa** is a town located at 23°55'10.8" N and 91°50'42" E E, and is about 82 km from Agartala. Town area is 15.34 sq. km divided into 15wards. The population is 16,285 (2011 census).

Figure 1 : Geographical Location of Subproject towns on State map of Tripura



Source - <https://surveyofindia.gov.in>

B. Existing Urban Road and Drain Situation

1. Existing Urban Road situation

12. In all four towns the condition of roads is mostly good with the pavement of bituminous & cement concrete, CC road paver block and brick soled. However, few roads are found to be damaged. ROW is varying from 11.0 to 23.0 m whereas carriageway width is varying from 5 m to 11 m in Kailashahar, ROW is varying from 6.0 to 12.0 m whereas carriageway width is varying from 3.75 m to 5.5 m in Kumarghat and ROW is varying from 4.0 to 9.0 m whereas carriageway width is varying from 3m to 5 m in Ambassa The summary of existing roads in three towns are presented in **Table 1**.

13. Summary of the existing urban roads of all three towns are given below:

Table 1: Summary of Urban Roads Infrastructure in Cluster IIIA towns

Parameter	Kailashahar	Kumarghat	Ambassa
Total length of major roads	39.658 Km	4.750 Km	30.00 Km
Total length of other roads	41.032 Km.	22.09 Km	30.00 Km
Details of right of way of major roads	Varying from 11 m to 23 m	Varying from 6 to 12 m	Varying from 4 to 9 m
Average width of carriage way (including municipal road, NH/SH/MDR/ODR)	Varying from 5 to 11.0 m	Varying from 3.75 to 5.5 m for major & minor roads	Varying from 3 to 5 m
Details of road Pavement (Type and condition)	Bituminous macadam pavement, CC, Soling & All roads are in good condition	Bituminous roads and All roads are in good condition	Brick soled, CC, Bituminous macadam pavement and kuccha road & most of the roads are in good condition with few are in bad condition.
Total length of Kucha Road	4.7 km	-	11.61 Km
Numbers of Road Intersections:	14 nos.	15 nos.	Not Accessed
Total numbers of signalized intersections	2 Nos.	3 nos.	1 no.
Mode of public transportation available	Public transport like auto Rickshaw, E-Rickshaws, Rickshaw and Maruti car/Van.	Govt./private intercity bus service, private auto & Others private 4-Wheeler Vehicle	Govt./private intercity bus service, private auto & Others private 4-Wheeler Vehicle

2. Overview of the Existing Drainage System

14. The existing storm water drainage system in these town is piecemeal construction of open *nallah* as per local and temporary requirements without proper whole to part designs. Currently, rainwater during monsoon season flows toward the sides of the road which have lower elevation and then flows to nearby low-lying lands or ponds. These low laying land and ponds serve as rainwater conveyance, passageway, waterlogging areas during monsoon seasons and practically dry grassy ditches or fields during summer seasons. The town has mainly open drains. Summary of the existing drains are given below:

Table 2: Summary of Drains Infrastructure in Cluster IIIA towns

Parameter	Kailashahar	Kumarghat	Dharmanagar	Ambassa
Total length of drains in the town:	95 km (mixed i.e., both side and one side of the road)	43.55 km (mixed i.e., both side and one side of the road)	76.12 km (mixed i.e., both side and one side of the road)	35 km (mixed i.e., both side and one side of the road)
Coverage of existing drains with respect to road network:	79%	84.0%	49.52%	38.88 %
Area coverage of storm water drainage network in the town	60.00 sq. km (stormwater catchment area)	2.88 sq. km (stormwater catchment area as per ULB record)	-	5.96 sq. km (stormwater catchment area)

Parameter	Kailashahar	Kumarghat	Dharmanagar	Ambassa
	as per KMC record)			as per AMC record)
Length of existing natural and manmade major drains	Manmade: 35.00 km Natural: 60.00 km	Manmade: 28.75 km Natural: 14.8 km	Manmade: 76.12 km Natural: 13 km	Manmade: 30 km Natural: 5 km
Types of drains	• Brick masonry drain, • R.C.C. drains and • Earthen drain (Covered and Open).	• Brick masonry drain, • R.C.C. drains and • Earthen drain (Covered and Open).	• Brick masonry drain, • R.C.C. drains and • Earthen drain (Covered and Open).	• Masonry Drain, • R.C.C. Drains, • Feeder Drain & Normal Drain (Covered and Open)
Maximum and minimum sizes of drains:	Minimum Size: 0.5 m. Maximum Size: 2.5 m.	Minimum Size: 0.60 m X 0.60 m Maximum Size: 1.5 m X 1.8 m	Minimum Size: 0.60 m X 0.60 m Maximum Size: 1.0 m X 1.0 m	Minimum Size: 0.30 m X 0.30 m Maximum Size: 1.2 m X 1.5 m
Location of disposal points of drains	Laxmi cherra, Mora Chhera	To Deo River and Pabia cherra	Juri River	-
Details of locations for chocking of drains due to solid waste:	Not Assessed	Near Pabia Cherra and ward 4,5 and 6 Reasons: Narrow drains, low lying area and chocking of drains.	Signal basti, shibbari, Jail Road, Sakaibari, College Road, Sukanta Sarani.	In front of Ambassa Motor Stand (major point of Ambassa), Dalubari, TRTC Para, Santi Para
How many times a year flooding occurs	1-2 times	4 or 5 times	1 -2 times	4 or 5 times
Final discharge	Manu river	Deo and Kakri river	Kakri river	Dhalai river

15. At present there is no existing sewerage system and mostly three towns depend on septic tank arrangement. There are few drainage lines which are laid by ULB or by PWD.

C. Proposed Project

1. Road infrastructure

16. Most of the length of subproject road runs through plain terrain cutting across towns. Keeping in view that the lack of adequate road infrastructure and availability of adequate right of way (ROW) of roads as mentioned in the subproject component list, project sites have been identified for its detailed improvement with construction of roads with inter-locking concrete paver blocks. These proposed road sections shall be included the roadside drain on one side and catchpits on the other sides of the section.

17. Under the package no road improvement is considered in Dharmanagar, in remaining three towns urban road is considered. Details of the proposed road are given below.

Table 3: Proposed Road list – Kailashahar, Kumarghat, Ambassa

[illegible]

Sl. No.	Road From-To	Proposed works	Existing ROW (M)	Proposed ROW (M)	Proposed carriage way width (M)	Side drain width (M)	Road Length (M)
1	From Akhil Sinha to Santimoy Deb house, Road No.1	Works: Interlocking concrete paver blocks (ICB) pavement (replacement of kuccha/ semi pucca-brick road including construction of part of new road), strengthening of road as per requirement within existing ROW, with one side drain & provision of catch pit on other side	3.0	3.0	2.0	0.6	367.15
2	From Asram Palli ICDS to Samir Suklabaida House, Road No. 2		4.5	4.5	2.6	0.5	254.33
3	From S.E. Office to Nantulal Dey House, Road No. 3		4.0	4.0	2.2	0.6	303.3
4	From Babul Barua house to Tanu Sinha House, Road No. 4		3.0	3.0	2.0	0.6	304.74
5	From Ujjal Sharma House to Dilip Sinha House and From Shyamal Bhattacharya house to Nikrunja Das House, Road No.5		3.0	3.0	2.0	0.35- 0.5	305.73
6	NH-8 to Arati Nomo House, Road No. 6		2.5	2.5	1.5	0.4	248.0
7	From Kalipada Roy house to Tarani Kr. Deb House, Road No. 7		3.0	3.0	2.0	0.3	103.26
8	From Pandap Saha house to Jhantu Debnath House, Road No. 8		3.5	3.5	2.5	0.3	130.0
9	From Ranu Debnath to Kripamoy Das house, Road No. 9		3.0	3.0	2.0	0.5	260.0

Sl. No.	Road From-To	Proposed works	Existing ROW (M)	Proposed ROW (M)	Proposed carriage way width (M)	Side drain width (M)	Road Length (M)
10	From Agriculture office to Swapn Das House, Road No. 10		4.0	4.0	2.2	0.4	139.0
11	From Bhusan Chandra Das House to Kakali Dhar Das House, Road No. 11		3.0	3.0	2.0	0.35	140.2
12	From Kartik Dhar House to Pabichara fish Market, Road No. 12		4.0	4.0	2.2	0.4	320.0
Total Road length- Kumarghat							2875.71
Ambassa							
1	Adhir sikdar house to Sujit das house via Partha raj debbarman house	Works: Interlocking concrete paver blocks (ICB) pavement (replacement of kuccha/ semi pucca road- brick road including construction of part of new road), strengthening of road as per requirement within existing ROW, with one side drain & provision of catch pit on other side	3- 4	4.0	3.0	0.4	320
2	Motor stand southside to susuma modak house via Siburanjan dey house and haralal pal house		4.0	4.0	3.0	0.4	329
3	Chunilal Debnath house to Babulal pal house		4.0	4.0	3.0	0.4	46
4	Alok Debnath house to Ganesh Goswami house		4.0	4.0	3.0	0.4	162
5	NH-8 To Kalpana Jadav house		4.0	4.0	3.0	0.4	657
6	Dumdum marak house to Laxmi charan Debnath house		3.0	3.0	3.0	0.4	316

Sl. No.	Road From-To	Proposed works	Existing ROW (M)	Proposed ROW (M)	Proposed carriage way width (M)	Side drain width (M)	Road Length (M)
7	Anil medical hall to Tejendra Mitra house		4.0	4.0	3.0	0.4	265
8	P.R.T.I. Building to Dhalai river		4.0	4.0	3.0	0.4	295
9	NH-08 to Sudhangshu Datta house to Laxmi charan debnath house		4.0	4.0	3.0	0.4	177
10	Narayan debnath house Biswajith Sarma house via Niorde Sadhu Asram		4.0	4.0	3.0	0.4	474
	Total Road Length - Ambassa						3,041.0

* In the road "Veterinary Hospital to Naba Jagrata Club west side of Embankment" - no drainage facility considered since the road on embankment

2. Proposed Cross Section Details for Road

18. Cross section of e ICB pavement with drain is shown in **Figure 4**. Cement concrete paver blocks is proposed for a major part of the project road. The guidelines contained in IRC: SP: 63-2018 are applicable for Interlocking concrete paver block pavements.

19. For Interlocking paver block the thickness required is 80 mm as per IRC 63. To suit the site condition in individual town, it is proposed to have 3 types of road improvement work having 3 different types of thickness.

20. The proposed project roads of all four Cluster IIIA towns having a 1.5 m to 3.0 m carriageway width. Cement concrete paver blocks is proposed for the major part of the project road. The guidelines contained in IRC: SP: 63-2018 are applicable for Interlocking concrete block pavements with average of 10 Msa. Pavement composition of ICB pavement is given below.

- (i) Block thickness- 80mm
- (ii) Sand Bed- 40mm
- (iii) WBM/WMM-250mm
- (iv) GSB-200 mm
- (v) Sub-Grade-300mm

21. **Traffic:** In project area, people use to travel by Motorcycle, Bi-cycle, since the external load on pavement is less, assuming 10Msa for the design of Concrete block pavements; Guidelines for Interlocking concrete block pavements, for safe & smooth plying of vehicles as well as non-motorized traffic including pedestrians.

22. The present traffic data on each of these roads typically very few vehicles per day on most of the stretches. The traffic largely comprises motorcycles/two wheelers, tractors, light commercial vehicles, animal drawn carts and bicycles.

3. Proposed Drainage System

Kailashahar

23. The subproject area covers parts of ward 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,11, 12 of KMC area. Total area coverage under this catchment is about 217.71 ha with a design population (2053) of about 25,712.

24. The entire sub-project area has been divided into two numbers of drainage catchment depending on the drainage outlet as mentioned below:

- (i) RGM Hospital-Laxmi Cherra Catchment
- (ii) Mora Cherra Catchment

25. The proposed drainage development works confined within RGM Hospital-Laxmi Cherra catchment and Moar Cherra catchment. Part of SWF generated from the sub project area is proposed to be discharged to Laxmi Cherra through existing gravity outfall/ PS arrangement and part of SWF is designed to be conveyed to the Mora Cherra.

26. Type of drainage cross sections proposed in towns are as follows, drawings of these typical cross sections are given in **Figure 10**.

- (i) Type A - Typical Arrangement of Storm Water Drain Along Both Side of Road with Catch Pit (Drain Width Bellow 1.00 m)
- (ii) Type B - Typical Arrangement of Storm Water Drain Along Both Side of Road with Catch Pit (Drain Width Above 1.00 m)
- (iii) Type C - Typical Arrangement of Storm Water Drain Along Both Side of Road without Catch Pit and Drain Top Level Flashing. Finished Road Level (Drain Width Bellow 1.00 m)
- (iv) Type D - Typical Arrangement of Storm Water Drain Along Both Side of Road without Catch Pit and Drain Top Level Flashing. Finished Road Level (Drain Width Above 1.00 m)
- (v) Type E - Typical Arrangement of Storm Water Drain Along One Side of Road with Catch Pit connected from other side of road and Drain Top Level Flashing. Finished Road Level (Drain Width Bellow 1.00 m)
- (vi) Type F - Typical Arrangement of Storm Water Drain Along One Side of Road with Catch Pit connected from other side of road and Drain Top Level Flashing Finished Road Level (Drain Width Above 1.00 m)
- (vii) Type-G - Typical Arrangement of Storm Water Drain Along Both Side of Road with Out Catch Pit and Drain Top Slab Flashing with Finished Road Level With 1 M Height Earth Retaining Wall (Drain Width Below 1.00 M)
- (viii) Type-H - Typical Arrangement of Storm Water Drain Along Both Side of Road with Out Catch Pit and Drain Top Slab Flashing with Finished Road Level With 2 M Height Earth Retaining Wall (Drain Width Below 1.00 M).

27. Length of storm water drain to be implemented under the package at Kailashahar is given below (Table 4). The main proposed storm water drains to be implemented within the project area are as follows (Table 5).

Table 4: Length of Storm water Drain to be implemented under the Package at Kailashahar

Description	Catchments		Total
	RGM Hospital Laxmi Chhera	Mora Chhera	
RCC Box Drain (1000 mm & above) (m)	590	2,870	3,460
RCC Box Drain (below 1000 mm) (m)	472	1,228	1,700
Total Length (M)	1,062	4,098	5,160

Table 5: Main Proposed Storm water Drainage stretch to be implemented in Kailashahar Town

Main Drain	Catchment	Part of Proposed Drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth) - RCC covered drain	Cross section type of RCC covered drain*
Construction of RCC covered drains left side/ right side of road near veterinary hospital road, Sriniketan shopping complex Unakoti lodge and outfall near Noorpur	RGM Hospital Laxmi Cherra Catchment	Northern side of Road from Netaji Corner to District Jail	At existing Laxmi Cherra near Kailashahar to Paitar bazar bridge 24°19'5.84"N, 92° 0'12.62"E	Manu River	77	Cemented Covered Drain	1.5m	0.85m	(850 x 1108) to (850 x 1193)	Type-A
					412		1.2m	1.3m	(1300 x 1350) to (1300 x 2880)	Type-B
					489.0					
		Southern side of Road from Netaji Corner to RGM Hospital	At Integrated drain crossing Ayush Hospital 24°19'5.57"N, 92° 0'11.41"E	Manu River	395	Cemented Open Drain	1m	0.8m	(800 x 700) to (800 x 1087)	Type-A
					75		1m	1 m	(1000 x 1178) to (1000 x 1277)	Type-B
					102.3		1m	1.5m	(1500 x 1746) to (1500 x 1456)	Type-B
					572.3					
	Mora Cherra Catchment	Western Side of Road from Netaji Corner to crossing	At the proposed single drain crossing border road 24°19'54.45" N,	Manu River	381	Cemented Open Drain	0.8m	0.8m	(800 x 764) to (800 x 1183)	Type-A
					114		0.8m	0.85m	(850 x 1183) to (850 x 1186)	Type-A and Type-C

Main Drain	Catchment	Part of Proposed Drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth) - RCC covered drain	Cross section type of RCC covered drain*
		of Border Road	91°59'57.02" E		343.7		1.8m	1m	(1000 x 1186) to (1000 x 1062)	Type-B
					249.6		1.3m	1.2m	(1200 x 1201) to (1200 x 1669)	Type-B
					369.5		0.8m	1.4m	(1400 x 1669) to (1400 x 1478)	Type-B and Type-D
					1457.8					
		Eastern Side of Road from Netaji Corner to crossing of Border Road	At the proposed single drain crossing border road 24°19'54.45" N, 91°59'57.02" E	Manu River	732.2	Cemented partly Covered and partly Open Drain	1.2m	0.8m	(800 x 700) to (800 x 910)	Type-A
					169		0.5m	1.8m	(1800 x 1454) to (1800 x 1328)	Type-B and Type-D
					241.3		0.5m	2m	(2000 x 1550) to (2000 x 2160)	Type-B and Type-D
					324		0.8m	2.3m	(2300 x 2130) to (2300 x 1680)	Type-B and Type-D
					1466.5					
		Eastern Side of			505		1.5m	2.5m	(2500 x 1687) to	Type-B

Main Drain	Catchment	Part of Proposed Drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mmm) [Varying] (Width x Depth) - RCC covered drain	Cross section type of RCC covered drain*
		Road from crossing of Border Road to Culvert over Mora Chhera via crossing of Noopur Jamey Masjid Road	At the mora Cherra (dead drain) 24°20'13.18" N 92° 0'19.78"E	Manu River		Cemented Open Drain			(2500 x 1745)	
					272.9		1.5m	2m	(2000 x 1595) to (2000 x 1511)	Type-B and Type-D
					393.5		2m	2.5m	(2500 x 1715) to (2500 x 1608)	Type-B and Type-D
					1171.4					

(* cross section type shown in Figure 10
Provision of catchpit as per design and drainage location)

Kumarghat

28. The subproject area covers parts of ward 7, 8, 9, 10, 11, 12, 14, and 15 of Kumarghat MC area. Total area coverage under this catchment is about 121.50 ha with a design population (2053 AD) of about 8,691.

29. The entire sub-project area has been divided into four numbers of drainage catchment depending on the drainage outlet as mentioned below:

- (i) Pabia Cherra Catchment
- (ii) Bhagat Sing Chowmuhanani Catchment
- (iii) Deo River Catchment
- (iv) North Pabia Cherra Catchment

30. Length of storm water drain to be implemented under the package at Kumarghat is given below (Table 6). The main proposed storm water drains to be implemented within the project area are given in Table 7.

Table 6: Length of Storm water Drain to be implemented under the Package at Kumarghat

Description	Catchments				Total
	Pabia Cherra	Bhagat Sing Chowmuhanani	Deo River	North Pabia Cherra	
RCC Box Drain (1000 mm & above) (m)	392.60	696.00	591.20	64.30	1744.1
RCC Box Drain (below 1000 mm) (m)	388.10	-	-	236.80	624.9
Total Length (M)	780.70	696.00	591.20	301.10	2369.00

Table 7: Main Proposed Storm water Drainage stretch to be implemented in Kumarghat

Catchments	Part of Proposed Drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth)- RCC Covered Drain	Cross section type of RCC covered drain*
		Proposed Drain existing outfall	Final Outfall			Existing width	Proposed width		
Pabia Cherra Catchment	National Highway Western Side of Road from the junction Railway Station Road to Pabia Cherra	At the end point of the drain near Ajanta footcare Kumarghat 24° 9'31.20"N 92° 2'10.34"E	Deo River	780.70	Partly Open Cemented, Partly Kutcha and Partly cemented covered Drain	0.5m-0.8m	0.8m, 1m, 1.2m and 1.3m	800 x 1250 to 1300 x 2250	Type-A and Type-B
Bhagat Sing Chowmuhanani Catchment	National Highway Eastern Side of Road from the Bhagat Sing Chowmuhanani to Cherra near Netaji Pally Road	Near Shoes World shop 24° 9'35.66"N 92° 2'15.27"E	Deo river	117.90	Covered cemented Drain	0.8m	1m	1000 x 1300 to 1000 x 1800	Type-B
	National Highway Eastern Side of Road from nearby SDM Office to Cherra near Netaji Pally Road	Near Shefali hotel 24° 9'53.55"N 92° 2'20.96"E	Deo river	578.10	Partly Cemented Open and partly cemented covered Drain	0.5m	0.6m and 1m	600 x 850 to 1000 x 2300	Type-A and Type-B
Deo River Catchment	National Highway Eastern Side of Road nearby SDM	Near Deo River existing culvert	Deo river	154.60	Cemented open drain	0.5m	0.8m	800 x 800	Type-A

Catchments	Part of Proposed Drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth)- RCC Covered Drain	Cross section type of RCC covered drain*
		Proposed Drain existing outfall	Final Outfall			Existing width	Proposed width		
	Office to an existing culvert near SDM Office	24° 9'57.13"N 92° 2'25.18"E							
	National Highway Western Side of Road from nearby BDO office to culvert under National Highway nearby SDM office and outfall to Deo River	Near Deo River existing culvert 24° 9'57.13"N 92° 2'25.18"E	Deo river	436.60	Cemented open drain	0.5m	0.6m and 0.8m	600 x 700 to 1000 x 1250	Type-A
North Pabia Cherra Catchment	National Highway Western Side of Road from nearby BDO office to an existing underground drain nearby SP Mukherjee Lane.	Near the existing underground drain nearby SP Mukherjee Lane 24°10'3.46"N 92° 2'44.15"E	Deo river	301.10	Kutcha Drain	1m	0.8m and 1.5m	800 x 1100 to 1500 x 2700	Type-A and Type-B

(* cross section type shown in **Figure 10**
Provision of catchpit as per design and drainage location)

31. Gravity Outfall Structure to be Implemented within the project area as below

Name of the Stretch	Location	Size of Flap Gate (In mm)
National Highway Western Side of Road from the junction Railway Station Road to Pabia Cherra	Outfall Point to Pabia Cherra	1300 x 1500
National Highway Eastern Side of Road from the Bhagat Sing Chowmuhan to Cherra near Netaji Pally Road	Outfall Point to Cherra Near Netaji Pally	1000 x 1100
National Highway Eastern Side of Road from nearby SDM Office to Cherra near Netaji Pally Road	Outfall Point to Cherra Near Netaji Pally	1000 x 1000
National Highway Western Side of Road from nearby BDO office to culvert under National Highway nearby SDM office and outfall to Deo River	Outfall Point to Deo River	1000 x 900

Dharmanagar

32. The subproject area covers parts of ward 13, 21, 22, 23, and adjoining of ward 23 of Dharmanagr Municipal Council. Total area coverage under this catchment is about 93 ha (93000 sqm) with a design population (2053) of about 7,814.

33. Entire subproject area drain is considered at Batarasi Road – Rajbari catchment.

34. Table 8 shows length of the storm water to be implemented in Dharmanagar under the package. The main proposed storm water drains to be implemented within project area are as follows (Table 9).

Table 8: Length of Storm water Drain to be implemented under the Package at Dharmanagar

Description	Catchments	Total
	Batarasi Road-Rajbari	
RCC Box Drain (1000 mm & above) (m)	1134.00	1134.00
RCC Box Drain (below 1000 mm) (m)	109.00	109.00
Total Length (M)	1243.00	1243.00

Table 9: Main Proposed Storm water Drainage stretch to be implemented in Dharmanagar

Catchment	Part of proposed drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth)- RCC Covered Drain	Cross section type of RCC covered drain*
		Proposed Drain existing outfall	Final Outfall			Existing width	Proposed width		
Batarasi Road – Rajbari catchment - Batarshi Tri Junction to Kakri River (Length = 1243 m)	Batarasi Tri-Junction to Junction of Motor Stand Road and MB Unit Road along the Southern Side of Motor Stand Road	Near the junction of the motor stand road and MB unit road 24°22'29.63"N 92°10'15.56"E	Kakri River	627.64	Partly Kutcha Drain and partly cemented covered drain	1m-2m	1.8m	1800x1850 to 1800x2850	Type-B and Type-D
	Railway Gate near Lalbahadur Shastri Road to MB Unit Road along the Southern Side of Motor Stand Road	Near the junction of the motor stand road and MB unit road 24°22'29.63"N 92°10'15.56"E	Kakri River	137.28	No existing drain	-	1m	1000x700 to 1000x1650	Type-B
	Railway Gate near Lalbahadur Shastri Road to MB Unit Road along the Northern Side of Motor Stand Road	Near the junction of the motor stand road and MB unit road 24°22'30.04"N 92°10'15.06"E	Kakri River	144.87	Kutcha Drain	2.5m	1m	1000x700 to 1000x1700	Type-B and Type-D
	Road crossing drain from Southern side of Motor Stand Road to Northern Side	Northern side of drain 24°22'29.96"N, 92°10'15.61"E	Kakri River	10.56	Culvert	1.5m	1.9m	1900x2100	Type-D
	Downstream of Motor Stand Road crossing drain to Upstream of MB Unit Road Crossing Drain	Near MB unit road crossing drain 24°22'30.05"N 92°10'15.06"E	Kakri River	15.99	Kutcha Drain	2m	1.9m	1900x2100	Type-B
	Road crossing drain from eastern side of MB Unit Road to Western Side	Upstream of MB Unit road 24°22'29.89"N 92°10'14.64"E	Kakri River	12.84	Culvert	1.8m	1.9m	1900x2160	Type-B and Type-D

Catchment	Part of proposed drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth)- RCC Covered Drain	Cross section type of RCC covered drain*
		Proposed Drain existing outfall	Final Outfall			Existing width	Proposed width		
	Junction of MB Unit Road and Motor Stand Road to Outfall at Juri/Kakri River along the Northern side of road	Near downstream of MB unit road in northern side 24°22'31.04"N 92°10'11.37"E	Kakri River	108.96	Cemented Open Drain	0.8m	0.6m	600x1070 to 600x1150	Type-A
	Road crossing drain from Northern side of MB Unit Road to Southern Side	At southern side of MB unit road 24°22'30.93"N 92°10'11.20"E	Kakri River	5.88	Culvert	5.5m	1m	1000x1150	Type-D
	Junction of MB Unit Road and Motor Stand Road to Outfall at Juri/Kakri River along the Southern side of road	Near Juri/Kakri river 24°22'30.97"N 92°10'8.92"E	Kakri River	178.96	Cemented Open Drain	0.8m	2m	2000x2070 to 2000x2600	Type-B and Type-D
				1243.00					

(* cross section type shown in **Figure 10**
Provision of catchpit as per design and drainage location)

35. Gravity Outfall Structure to be Implemented within the project area as below

Name of the stretch	Location	Size of flap gate (in mm)
Junction of MB Unit Road and Motor Stand Road to Outfall at Juri/Kakri River along the Southern side of road	Juri River	2000 x 1700

Ambassa

36. The proposed subproject area covers parts of ward 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 of Ambassa MC Area. Total area coverage under this catchment is about 271.23 ha with a design population (2053 AD) of about 19,176.

37. Development of Drainage network of 5.7 km within the Ambassa town. The entire sub-project area has been divided into four numbers of drainage catchment depending on the drainage outlet as mentioned below:

- (i) NH Ambassa Colony Catchment,
- (ii) NH Motor Stand Road Catchment,
- (iii) NH PS Link Road Bankubazar Catchment and
- (iv) Ambedkar Nagar Malakar Para Catchment.

38. Table 10 shows length of the storm water to be implemented in Ambassa under the package. The main proposed storm water drains to be implemented within project area are as follows (Table 11).

Table 10: Length of Storm water Drain to be implemented under the Package at Ambassa

Description	Catchments				Total
	NH Ambassa Colony Catchment	NH Ps Link Road Banku Bazar Catchment	NH Motor Stand Road Catchment	Ambedkar Nagar Malakar Para Catchment	
RCC Box Drain (1000 mm & above) (m)	475.3	2006.9	66.20	76.50	2624.9
RCC Box Drain (below 1000 mm) (m)	1868.2	322.9	759.2	123.30	3073.6
Total Length (M)	2343.5	2329.8	825.4	199.8	5698.5

Table 11 : Main Proposed Storm water Drainage stretch to be implemented in the project at Ambassa

Catchment	Part of proposed drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth)- RCC Covered Drain	Cross section type of RCC covered drain*
		Proposed Drain existing outfall	Final Outfall			Existing width	Proposed width		
NH Ambassa Colony Catchment	NH to Kalpana Jadav House	Near an existing Charra 23°55'20.06" N 91°51'55.02" E	Dhalai River	1042.10	Cemented Open Pucca Drain	0.6m	0.5m	(500 x 600) to (500 x 1190)	Type-G
NH PS Link Road Bankubazar Catchment	PS Link Road to Chandraipara School	In the dhalai river 23°55'24.69" N 91°51'5.14"E	Dhalai River	1201.70	Kutcha Drain and partly cemented open drain	1m	1m	(1000 x 600) to (1000 x 2055)	Type-B
				74.90		0.7m	1.1m	(1100 x 1055) to (1100 x 1087)	Type-B
				250.30		0.6m	1.2m	(1200 x 1055) to (1200 x 2237)	Type-B
				1526.9					
NH Ambassa Colony Catchment	Ambassa Colony to Dhalai River (Part of NH-8 to Zila Parisad office via Ramkrishna Ashram)	Near to Dhalai river , crossing Ramkrishna Seva Sadan 23°55'9.24"N 91°51'14.36" E	Dhalai River	591.50	Partly Kutcha Drain and partly cemented open drain	0.8m	0.5m	(500 x 600) to (500 x 1869)	Type-C
				30.90		1m	0.6m	(600 x 700) to (600 x 1704)	Type-C
				203.70		1m	0.8m	(800 x 1091) to (800 x 1791)	Type-C
				292.50		1.2m	1.2m	(1200 x 1112) to	Type-D

Catchment	Part of proposed drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth)- RCC Covered Drain	Cross section type of RCC covered drain*
		Proposed Drain existing outfall	Final Outfall			Existing width	Proposed width		
								(1200 x 1947)	
				39.90		1.5m	1.3m	(1300 x 1800) to (1300 x 1961)	Type-D
				46.60		2m	1.4m	(1350 x 1877) to (1300 x 1947)	Type-D
				96.30		2m	1.4m	(1400 x 1731) to (1400 x 2345)	Type-D
				1300.4					
NH Motor Stand Road Catchment	TRTC Para to existing main drain at Motor Stand Road (Part of Ambassa motor stand to Arun Debnath house at TRTC para)	In Existing drain at motor stand road	Dhalai River	672.80	Kutcha Drain	1.2m	0.6m	(600 x 700) to (600 x 862)	Type-A
				15.80		2m	0.7m	(700 x 713)	Type-A
				70.60		1.5m	0.8m	(800 x 803) to (800 x 833)	Type-A
				66.20		1.5m	1m	(1000 x 800) to (1000 x 951)	Type-B
				825.4					
NH PS Link Road Bankubazar Catchment	Chandraipara School to Vivekananda Nagar to Outfall	In Dhalai river near Ambassa rialway bridge	Dhalai River	9.70	Cemented Open Drain	0.5m	0.6m	(600 x 832) to (600 x 846)	Type-C

Catchment	Part of proposed drain	Outfall Point		Length (M)	Existing Drain Condition	ROW		Section (Mm*Mm) [Varying] (Width x Depth)- RCC Covered Drain	Cross section type of RCC covered drain*
		Proposed Drain existing outfall	Final Outfall			Existing width	Proposed width		
	at Dhalai River (Part of Tripura Garmin Bank to Ambassa P.S. & Bankumari Bazar via Naresh Sharma house at V.K. Nagar)	23°55'40.59" N 91°51'2.28"E		313.20		0.5m	0.7m	(700 x 1219) to (700 x 1444)	Type-C
				231.80		0.5m	1.1m	(1100 x 1973) to (1100 x 2338)	Type-D
				64.60		0.5m	1.1m	(1150 x 2057) to (1150 x 2614)	Type-C
				61.50		0.5m	1.2m	(1200 x 1112) to (1200 x 1947)	Type-C
				122.10		0.5m	1.25m	(1250 x 1257) to (1250 x 1273)	Type-C
				802.9					
Ambedkar Nagar Malakar Para Catchment	Parendra Debnath to Ambedkar nagar (Part of Parendra Debnath house to NH-8 via Ambedkar Nagar J.B. School)	To Cherra at Ambedkar Nagar SB School 23°54'54.88" N 91°50'37.87" E	Dhalai River	123.30	Kutchra Drain	2m	0.5m	(500 x 620) to (500 x 658)	Type-C
				76.50		2m	1m	(1000 x 805) to (1000 x 3173)	Type-H
				199.8					

(* cross section type shown in **Figure 10**
Provision of catchpit as per design and drainage location)

39. Following Figure 2 to 4 shows proposed roads in google map, proposed plan and profile of road and typical cross section of the road for Kailashahar, Figure 5 to 10 shows the proposed and existing drain, catchment area map and typical cross section of the drain of Kailashahar town. Figure 11 and 12 shows proposed roads in google map, plan and profile of the proposed roads of the Kumarghat. Figure 13 to 19 shows the proposed and existing drain, catchment area map of Kumarghat town. Figure 20 to 22 shows the proposed and existing drain, catchment area map of Dharmanagar town. Figure 23 and 24 shows proposed roads in google map, plan, and profile of the proposed roads of the Ambassa town. Figure 25 to 31 presents maps of existing and proposed drain and catchment area map of Ambassa town.

D. Implementation Schedule

40. Implementation of Package of cluster IIIA as item rate contract. Project will be implemented in 36 months. Bids to be invited for the package likely on August 2023, and construction work is expected to commenced in January 2024 and will be completed by January 2027.

Maps Showing existing and proposed Kailashahar Town Road

Figure 2: Proposed Urban Road Components in Kailashahar Google Earth

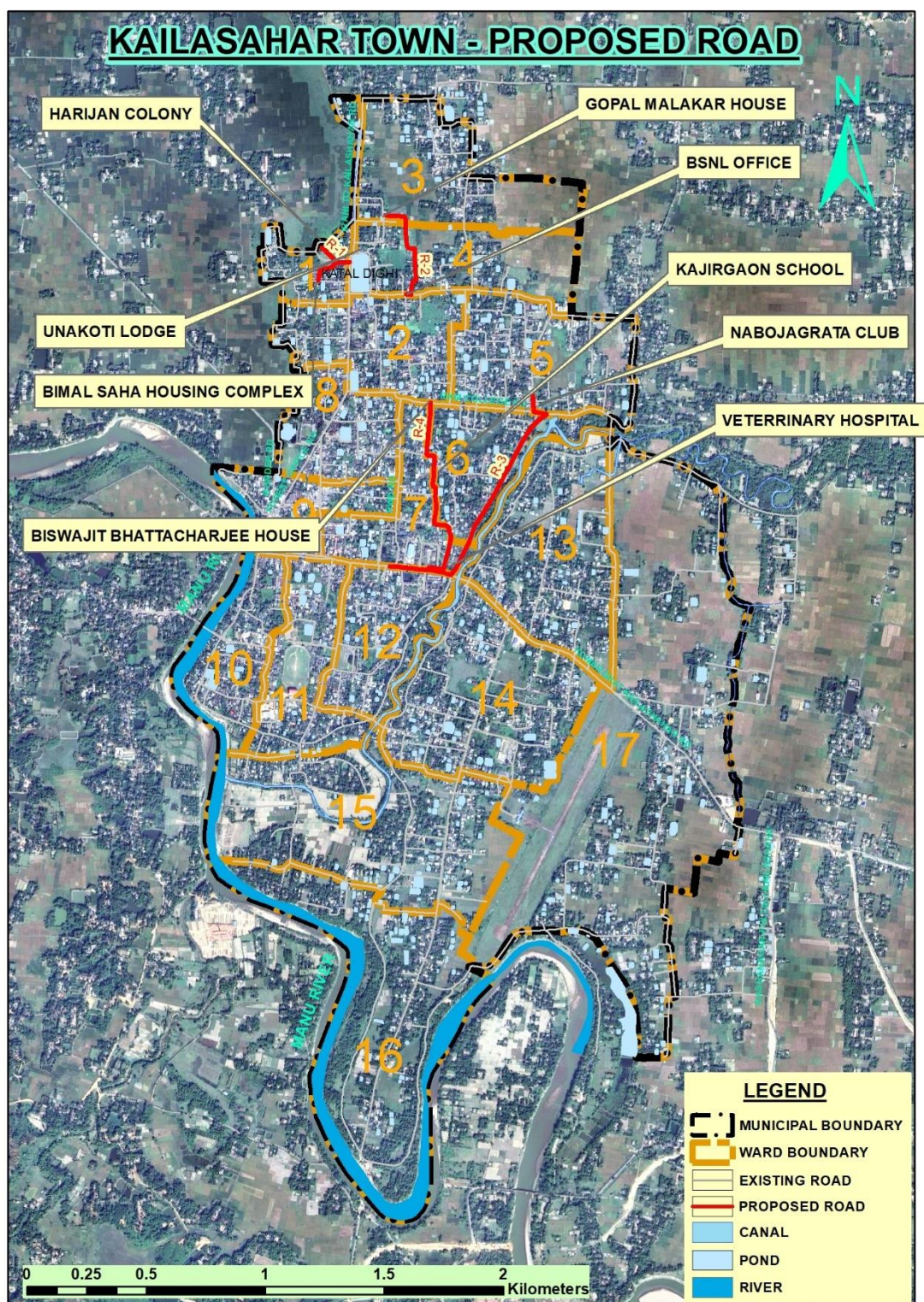
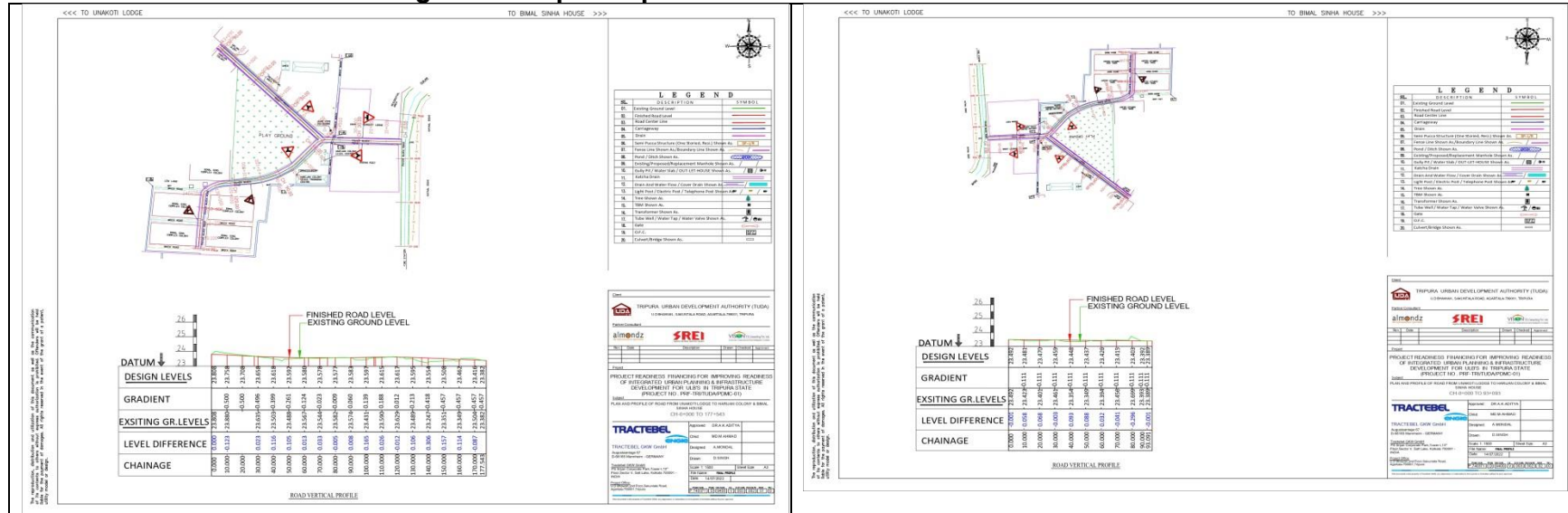
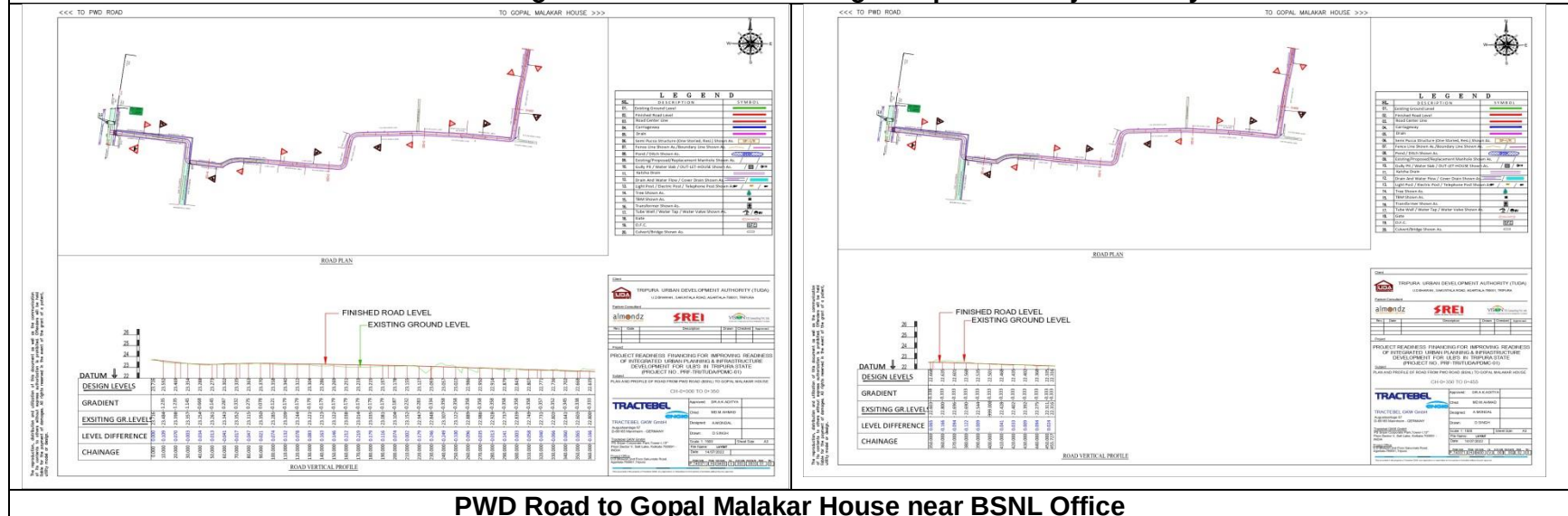
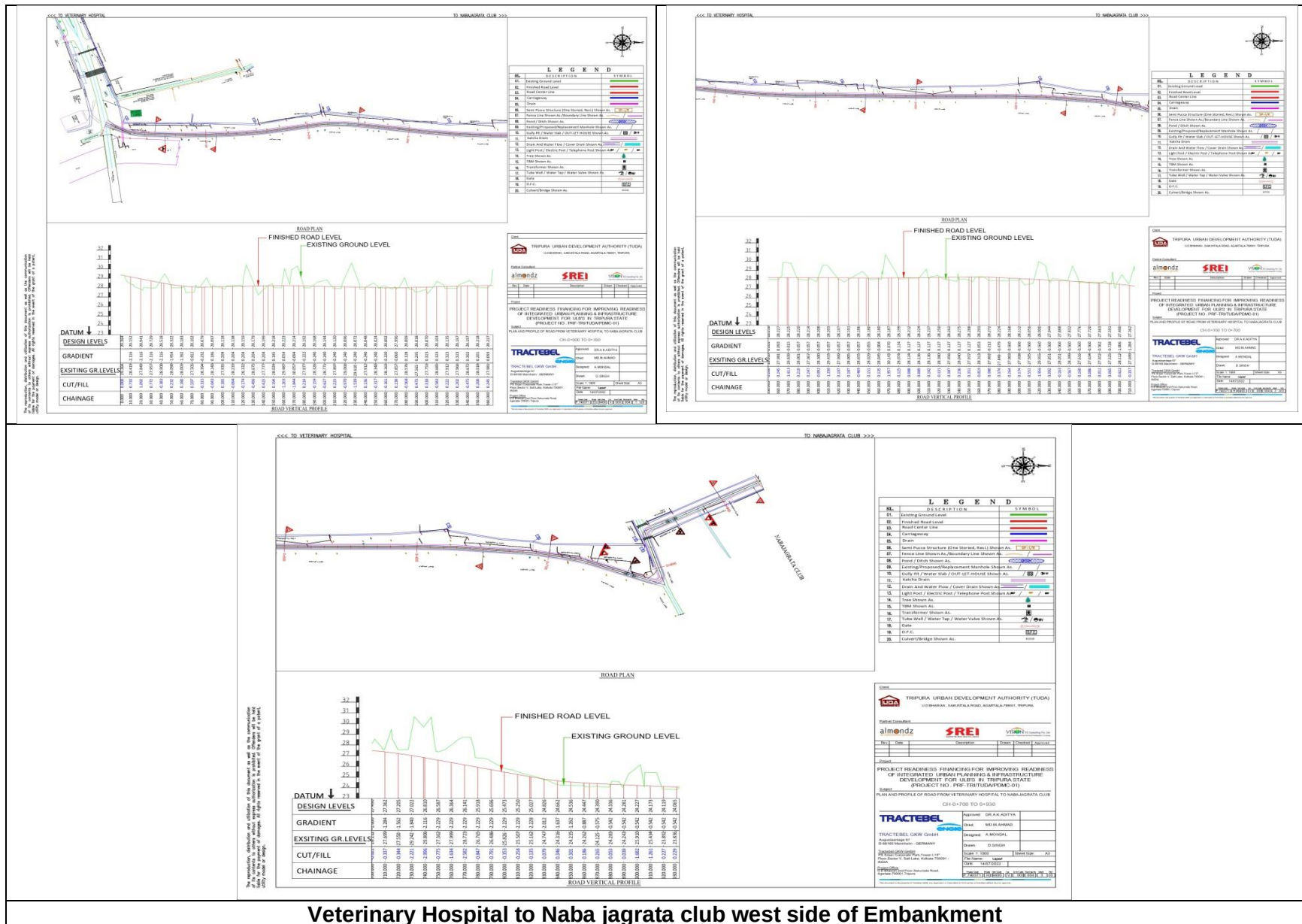


Figure 3: Proposed plan and Profile of the Roads – Kailashahar



Unakoti Lodge to Bimal Sinha Housing Complex & Harijan colony





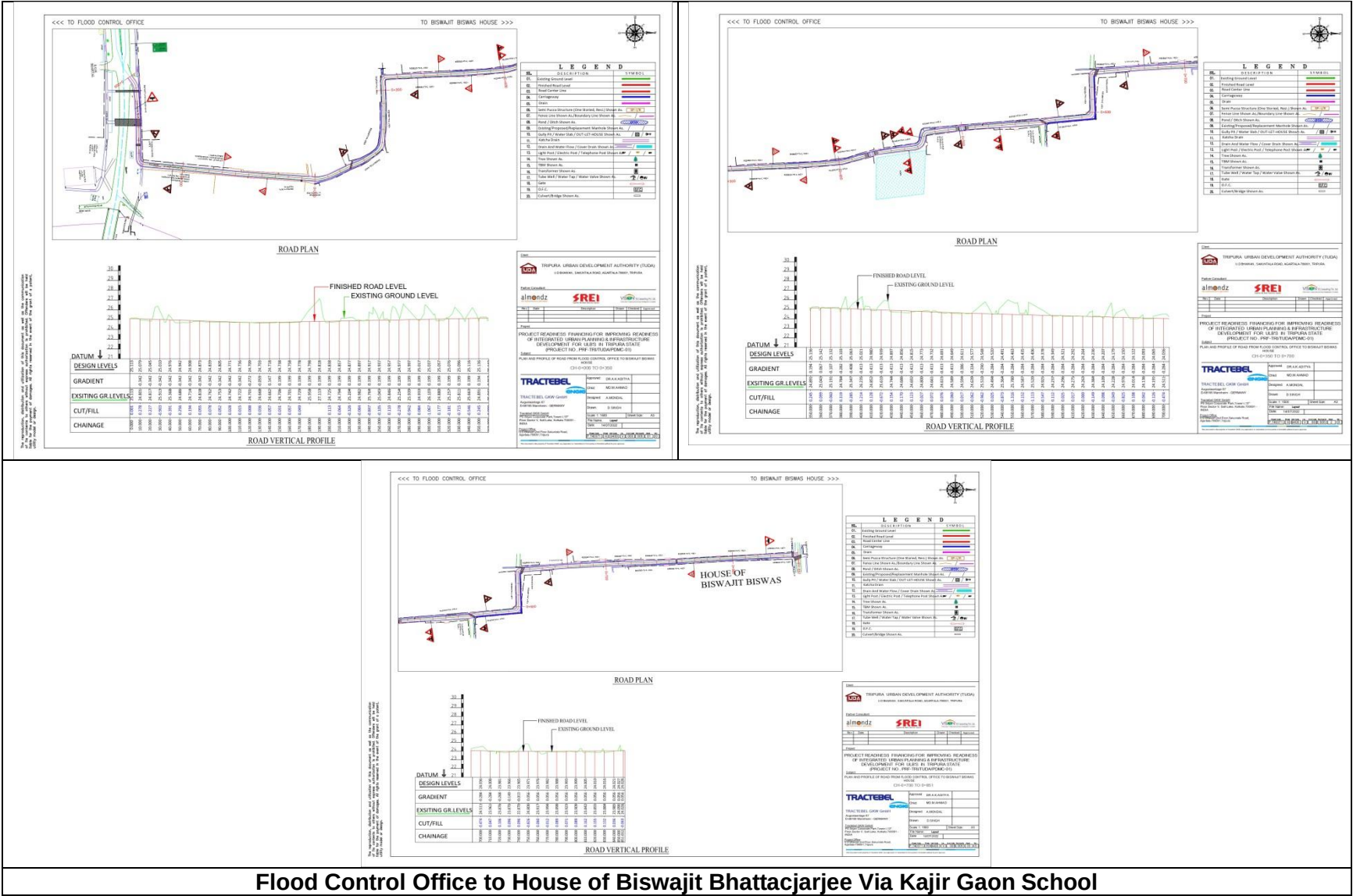
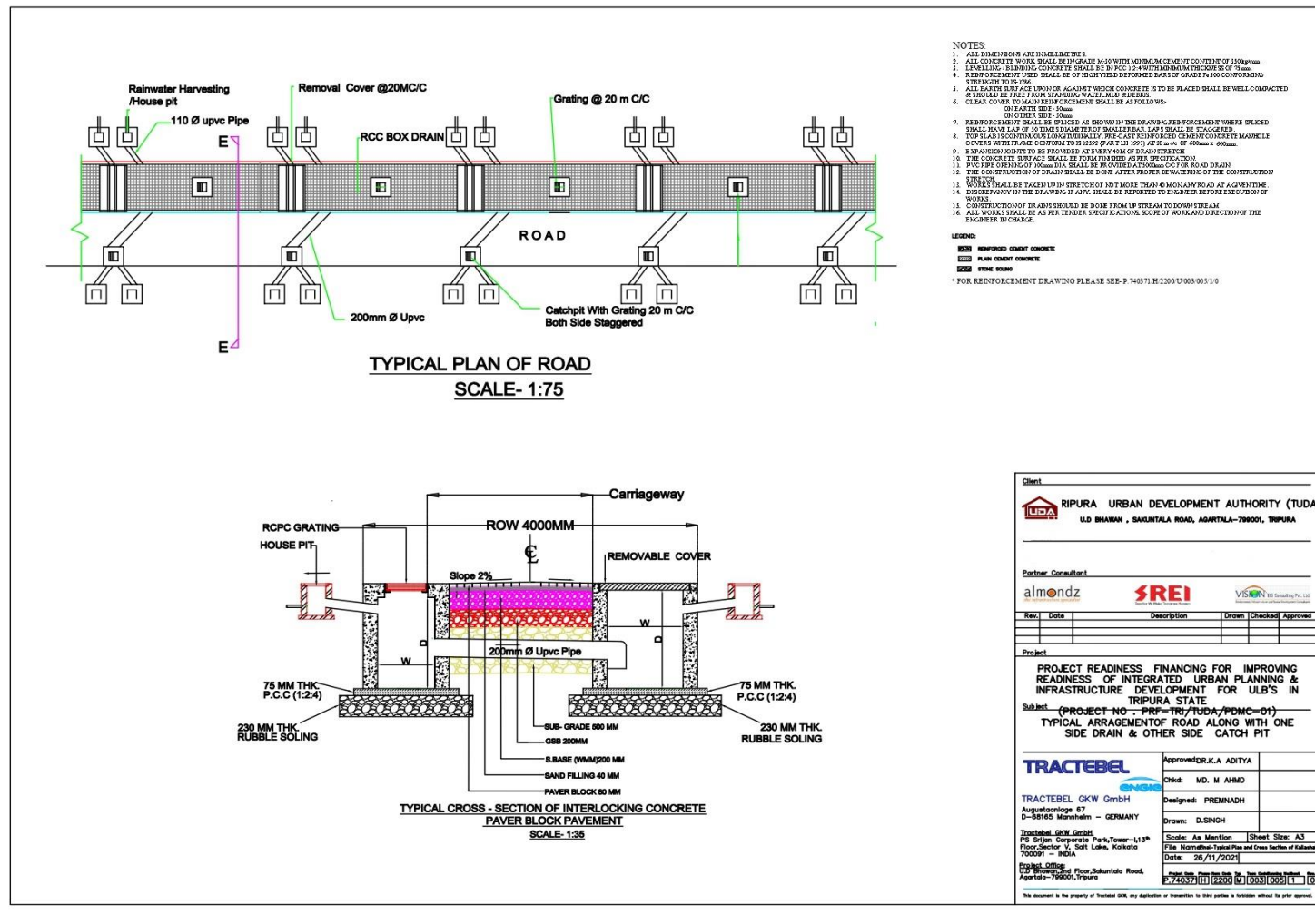


Figure 4: Typical Cross-section of the ICB pavement with drain—For all Town Roads



Maps showing Existing and Proposed Kailashahar Town Drain

Figure 5: Existing Drain of Kailashahar town

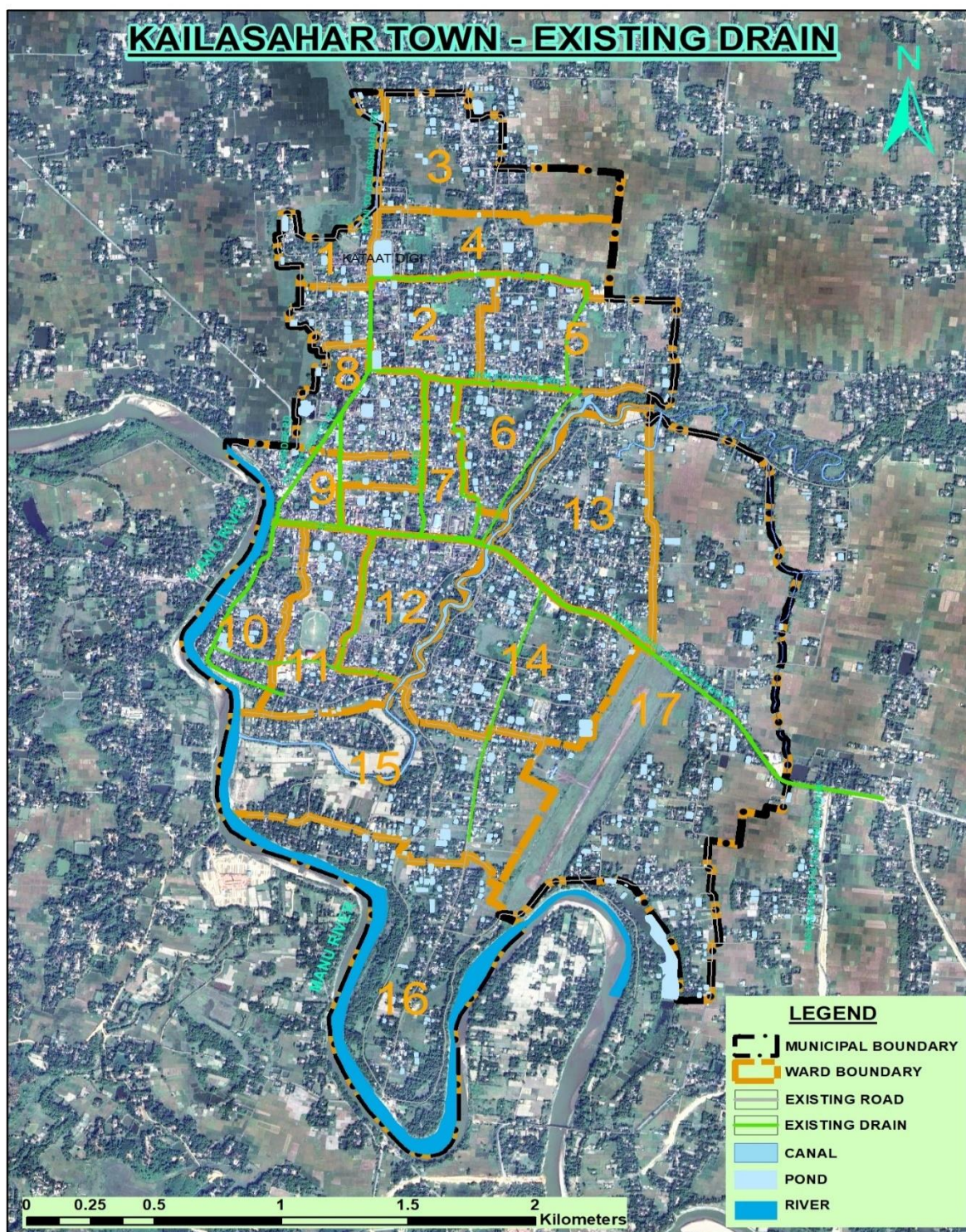


Figure 6: Proposed Drain in Kailashahar

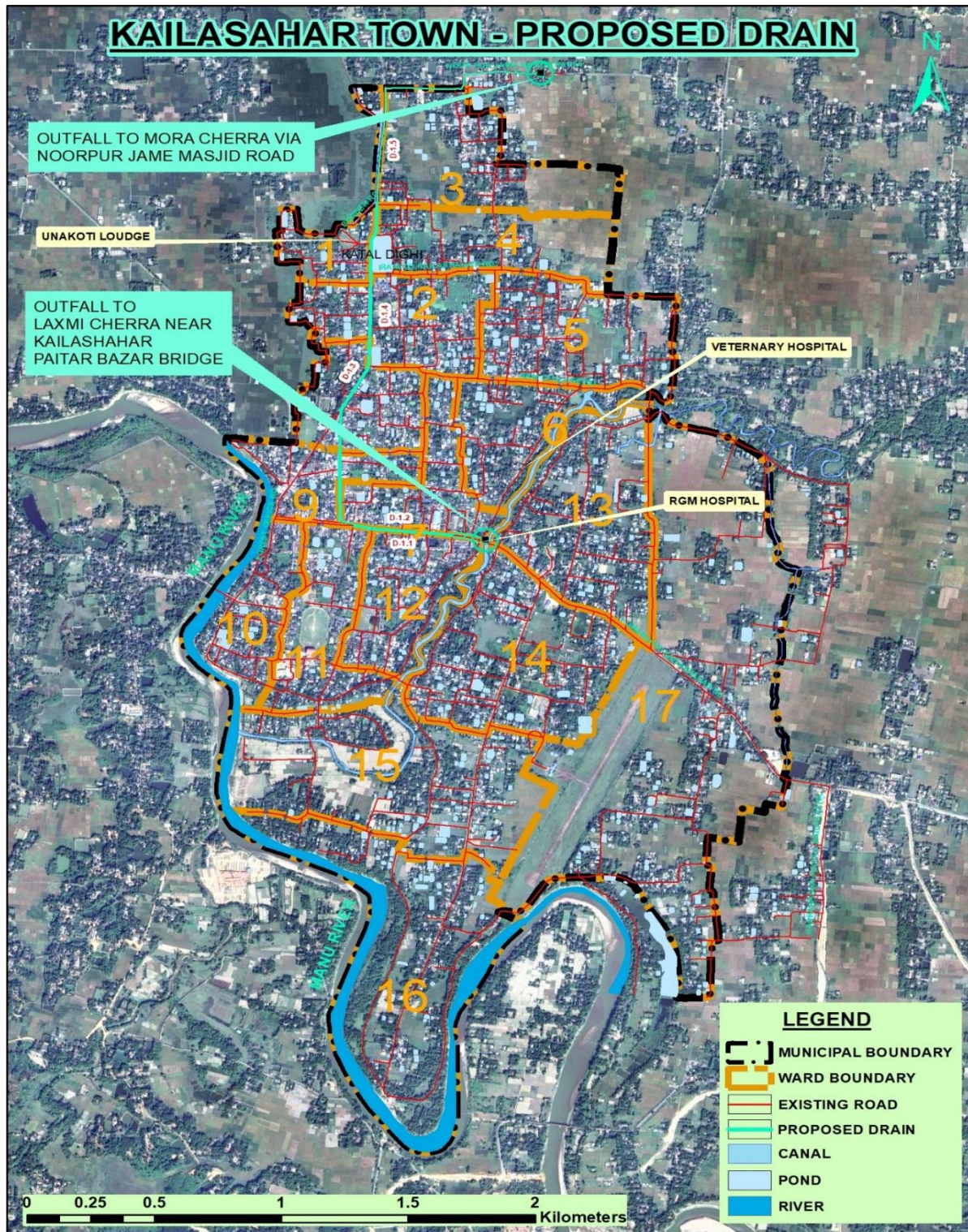


Figure 7: Proposed alignment of drain in RGM Hospital Lakshmi Cherra Catchment - Kailashahar

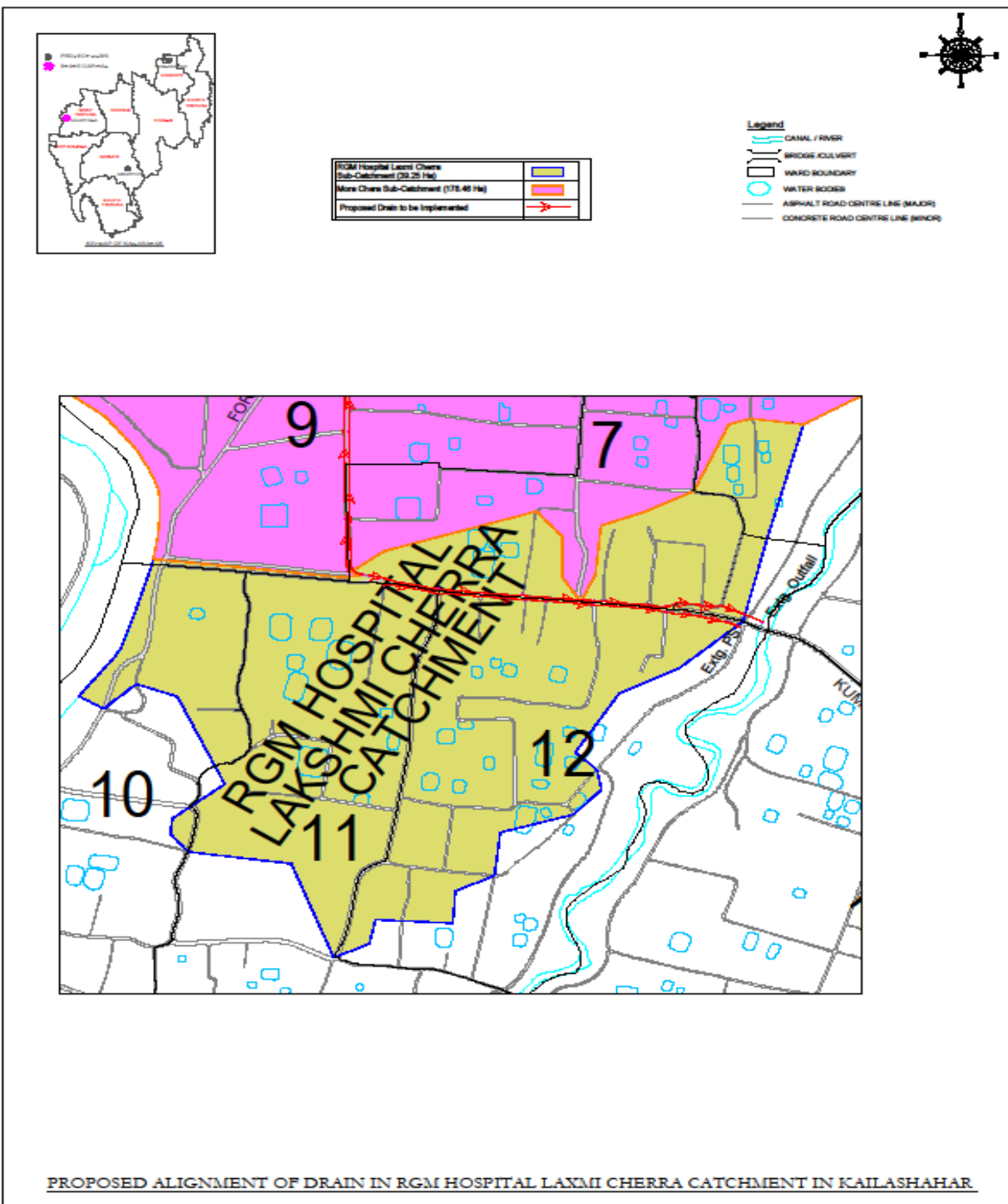


Figure 8: Proposed alignment of drain in Mora Cherra Catchment

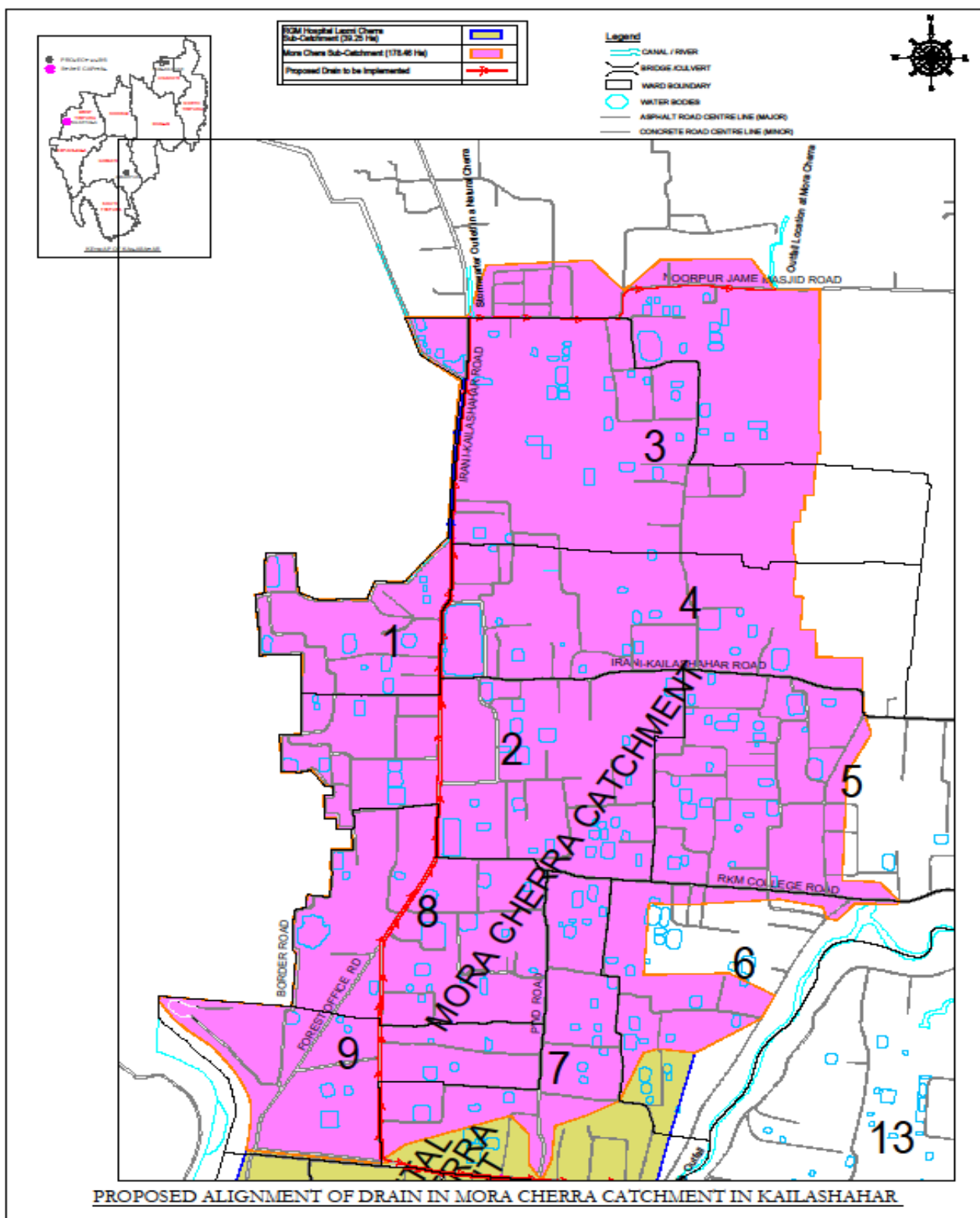


Figure 9: Proposed drainage work area – Kailashahar

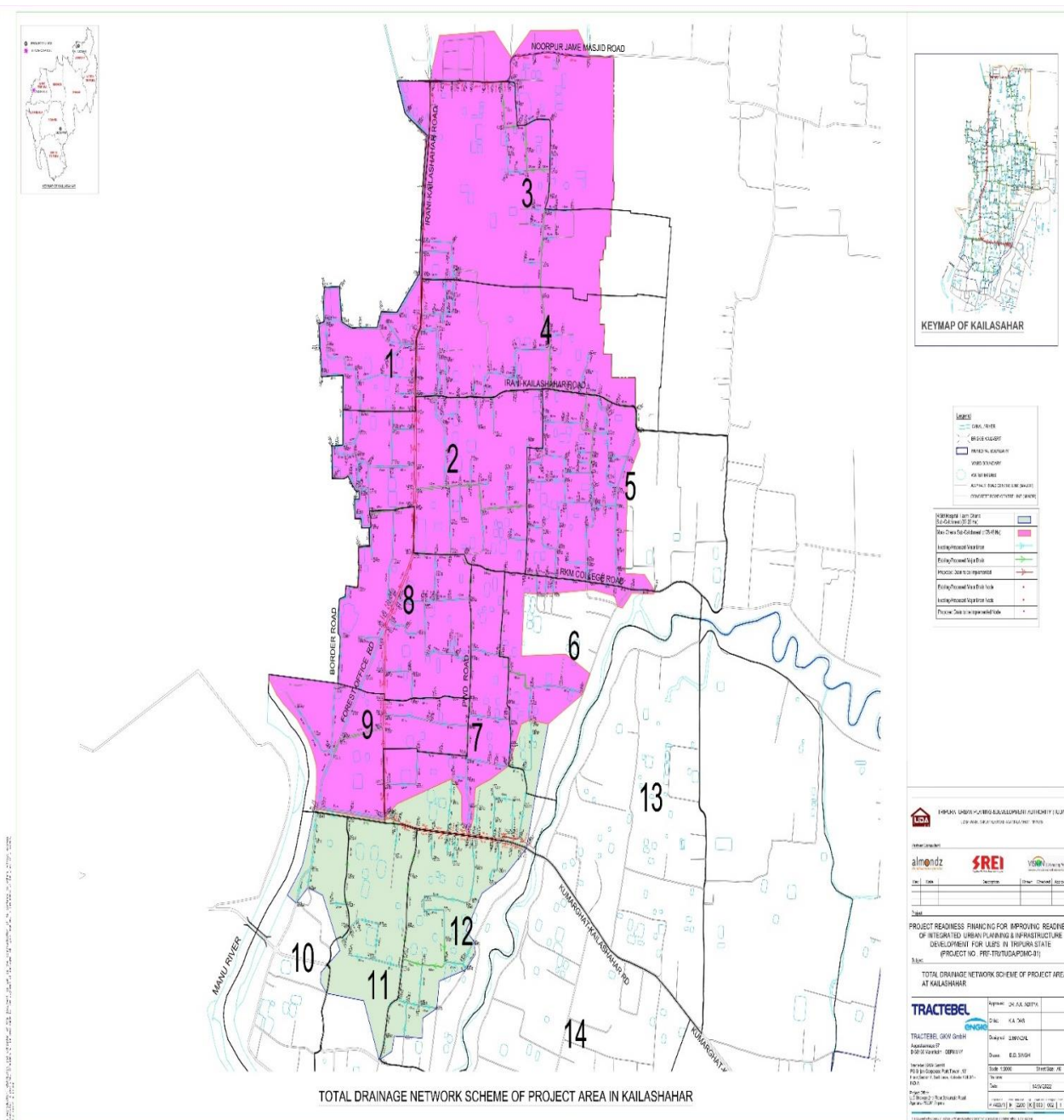
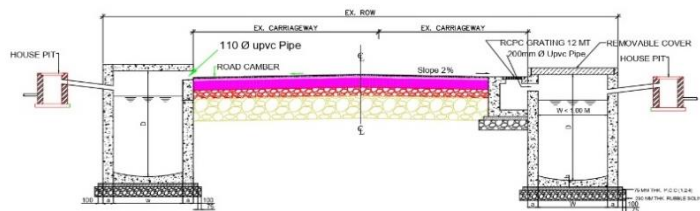
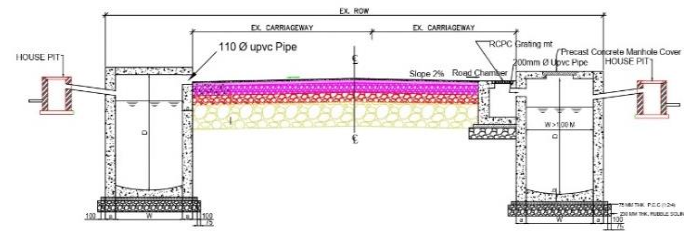


Figure 10: Typical cross section of Storm water drain- For all towns



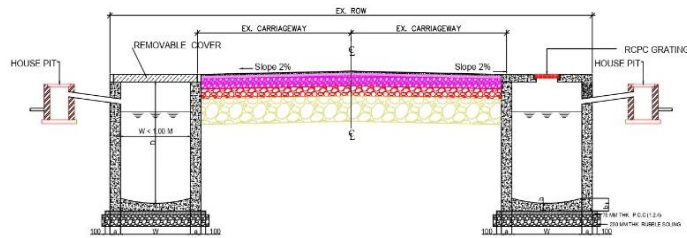
TYPICAL CROSS OF STORM WATER DRAIN (TYPE-A)
SCALE-1:60

Typical Arrangement of Storm Water Drain Along Both Side of Road with Catch Pit (Drain Width Below 1.00 m) - Type A



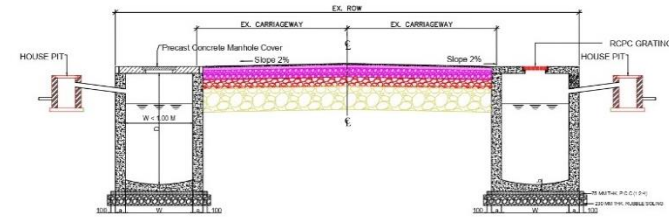
TYPICAL CROSS OF STORM WATER DRAIN (TYPE-B)
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Typical Arrangement of Storm Water Drain Along Both Side of Road with Catch Pit (Drain Width Above 1.00 m) - Type B



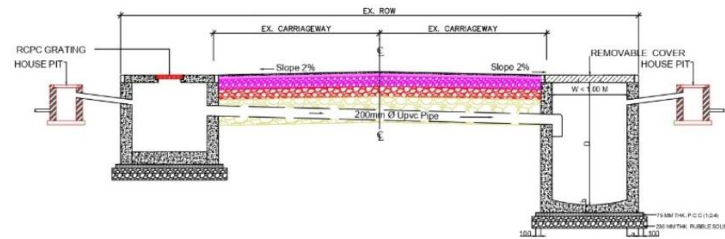
TYPICAL CROSS OF STORM WATER DRAIN (TYPE-C)
SCALE-1:60

Typical Arrangement of Storm Water Drain Along Both Side of Road without Catch Pit and Drain Top Level Flashing. Finished Road Level (Drain Width Below 1.00 m) - Type C



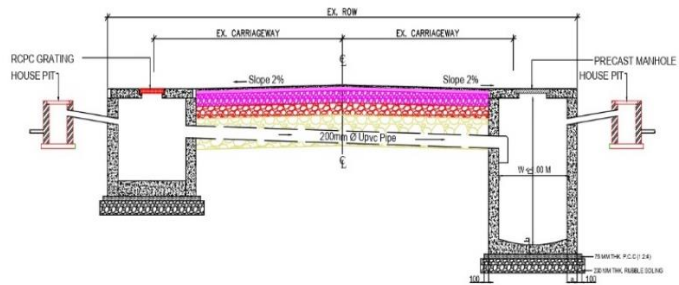
TYPICAL CROSS OF STORM WATER DRAIN (TYPE-D)
SCALE-1:60

Typical Arrangement of Storm Water Drain Along Both Side of Road without Catch Pit and Drain Top Level Flashing. Finished Road Level (Drain Width Above 1.00 m) - Type D



TYPICAL CROSS OF STORM WATER DRAIN (TYPE-E)
SCALE- 1:60

Typical Arrangement of Storm Water Drain Along One Side of Road with Catch Pit connected from other side of road and Drain Top Level Flashing Finished Road Level (Drain Width Below 1.00 m) - Type E



TYPICAL CROSS OF STORM WATER DRAIN (TYPE-F)
SCALE- 1:60

Typical Arrangement of Storm Water Drain Along One Side of Road with Catch Pit connected from other side of road and Drain Top Level Flashing Finished Road Level (Drain Width Above 1.00 m) - Type F

Maps Showing existing and proposed Kumarghat Town Road

Figure 11: Proposed urban road components in Kumarghat on Google Earth

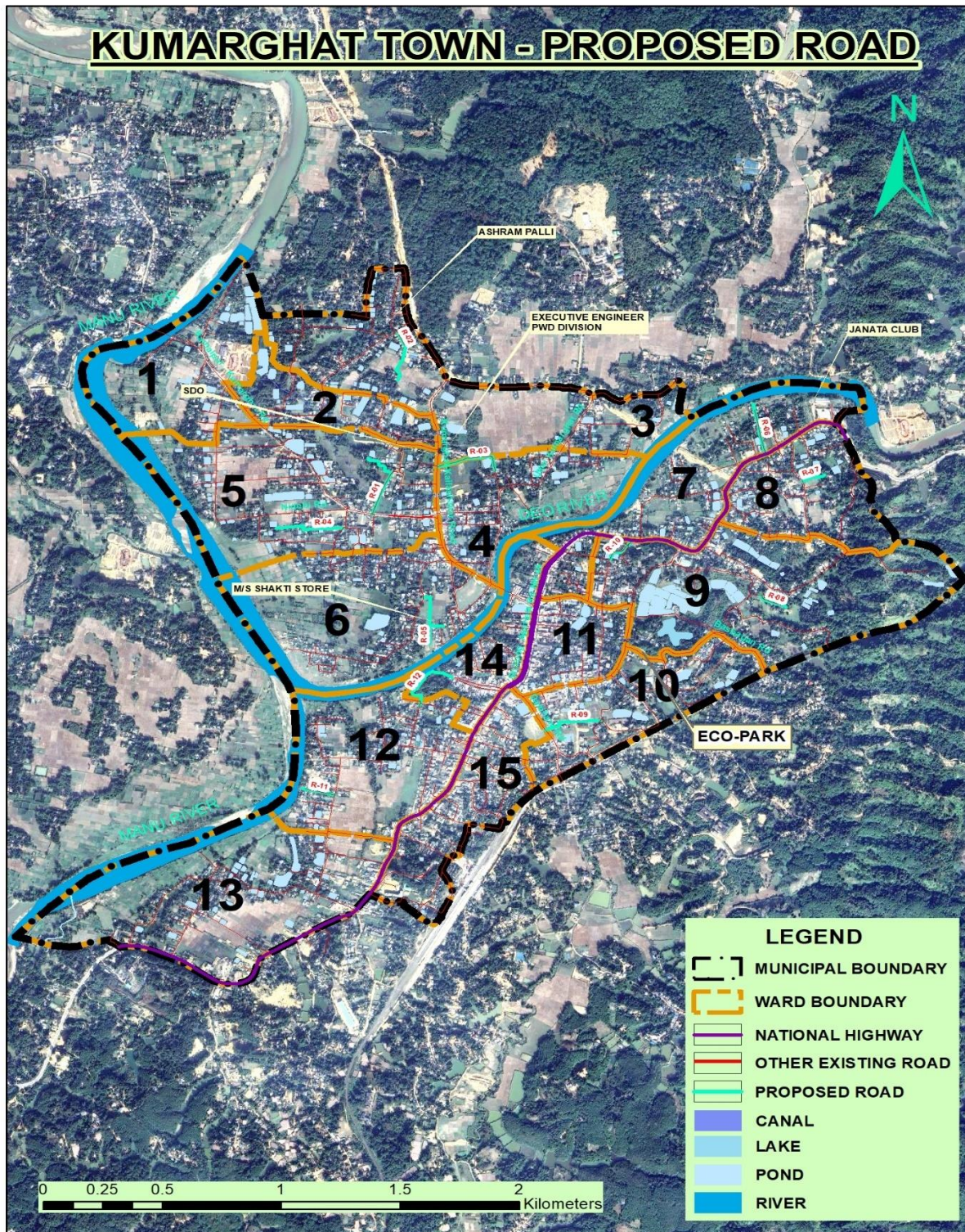
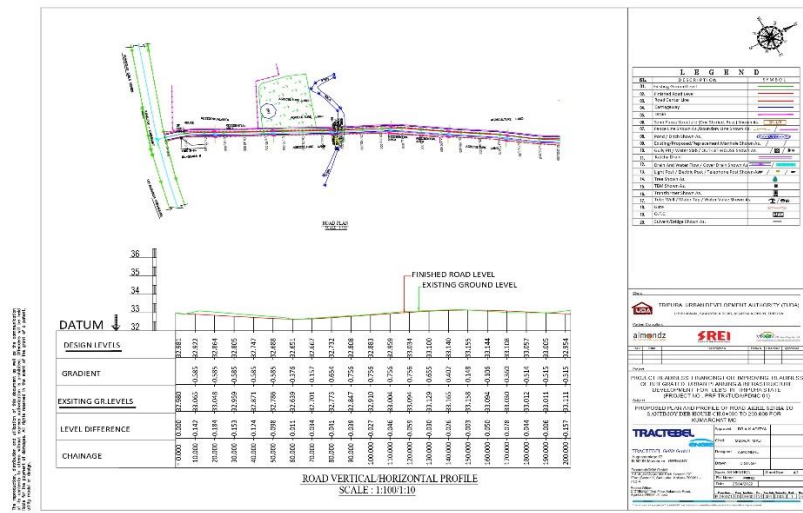
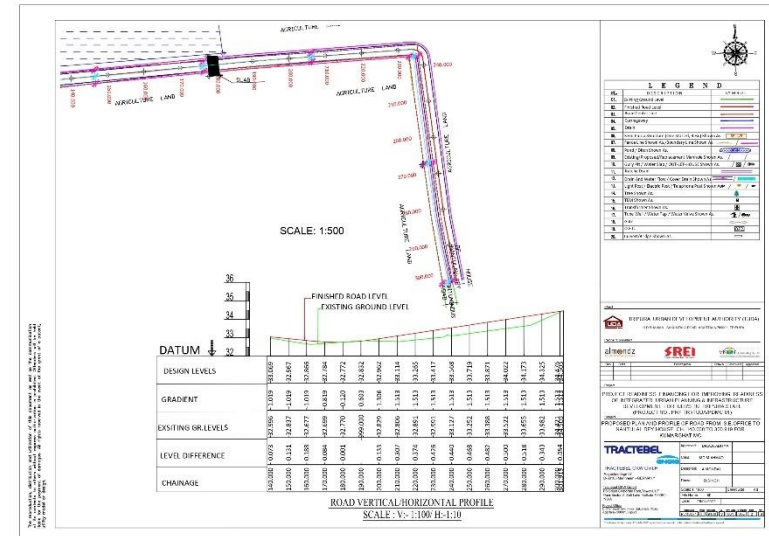
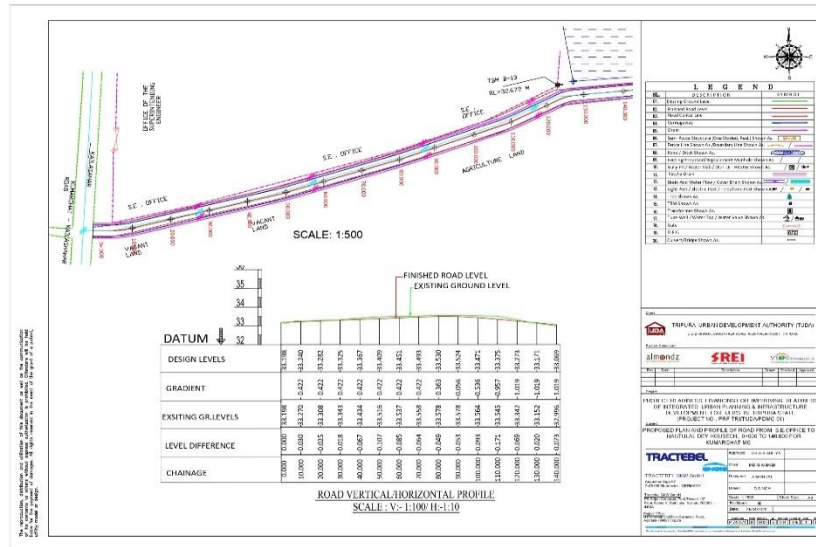
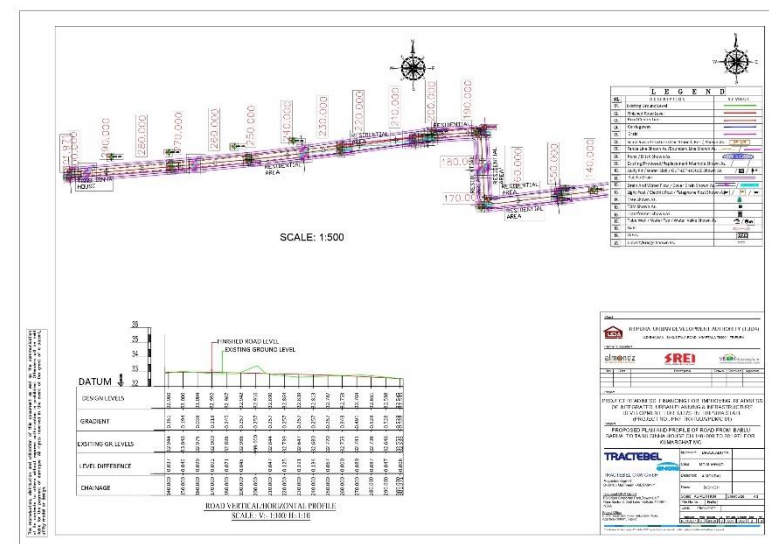
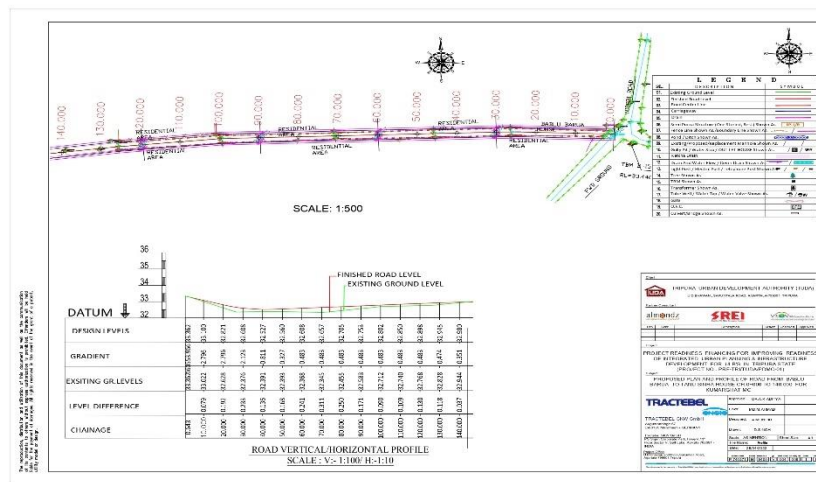


Figure 12: Proposed plan and Profile of the Roads- Kumarghat

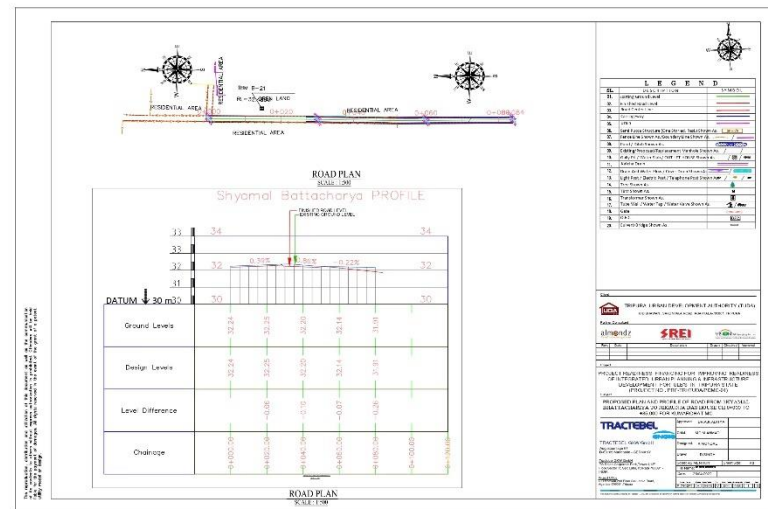
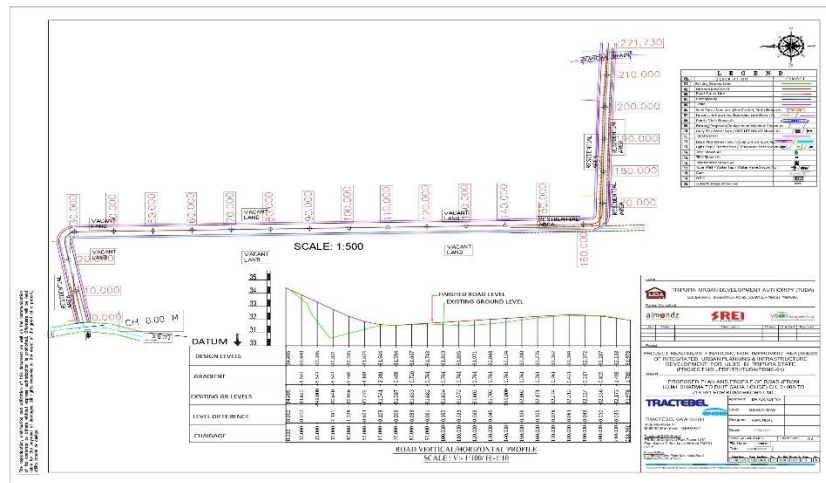




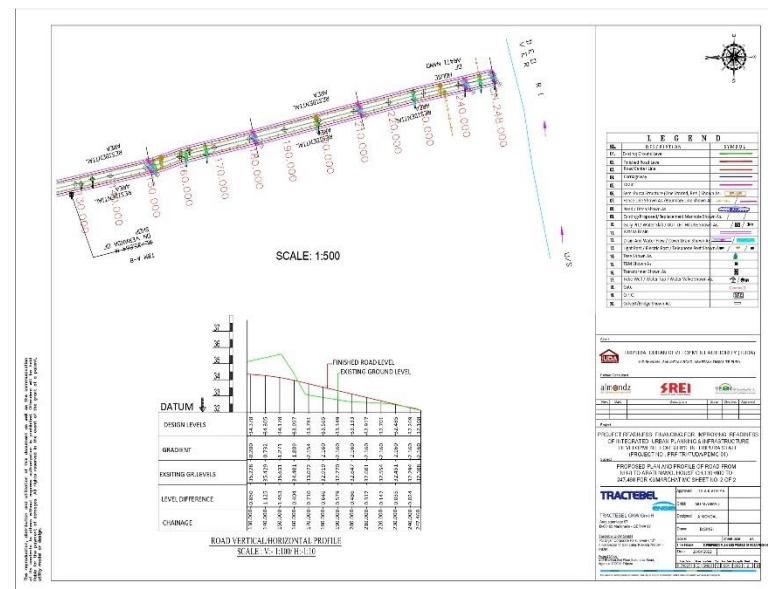
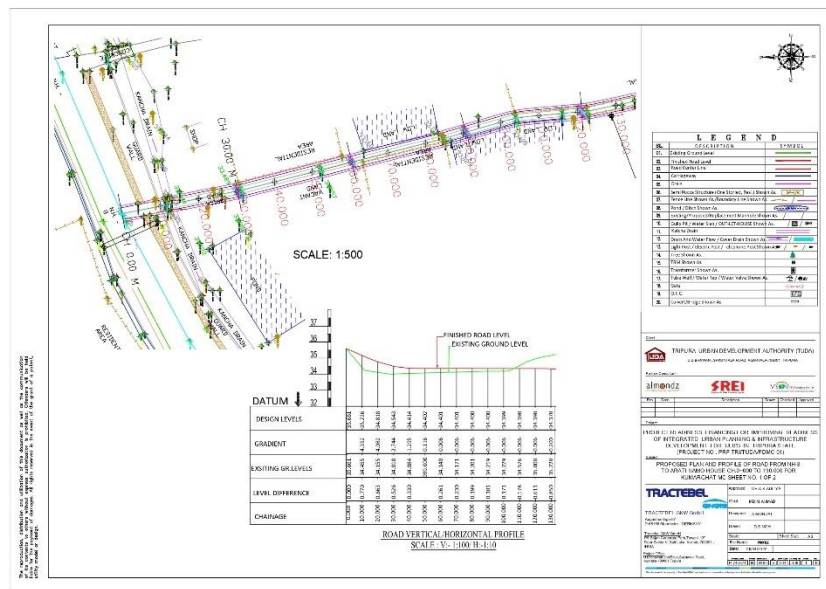
From S.E. Office to Nantulal Dey House, Road No. 3



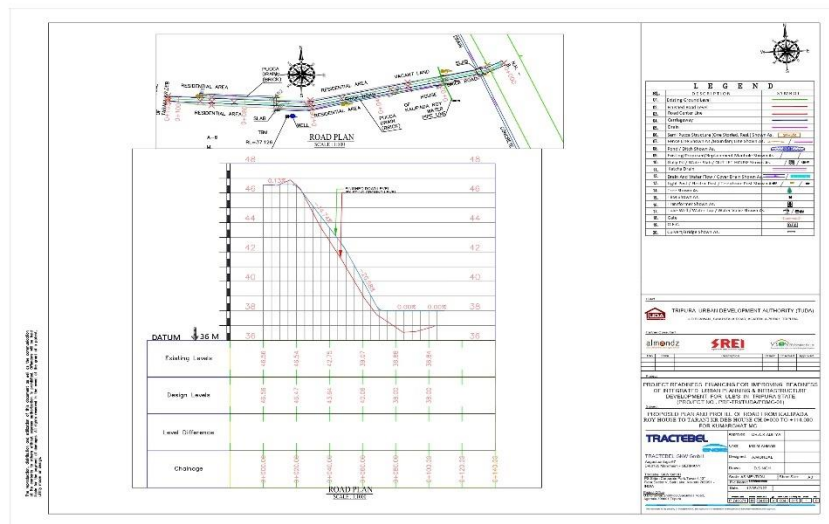
From Babul Barua house to Tanu Sinha House, Road No. 4



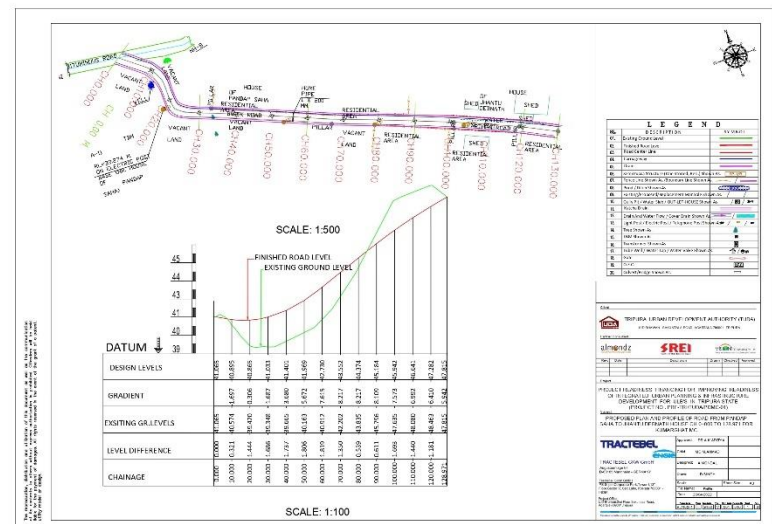
From Ujjal Sharma House to Dilip Sinha House and From Shyamal Bhattacharya house to Nikrunja Das House, Road No.5



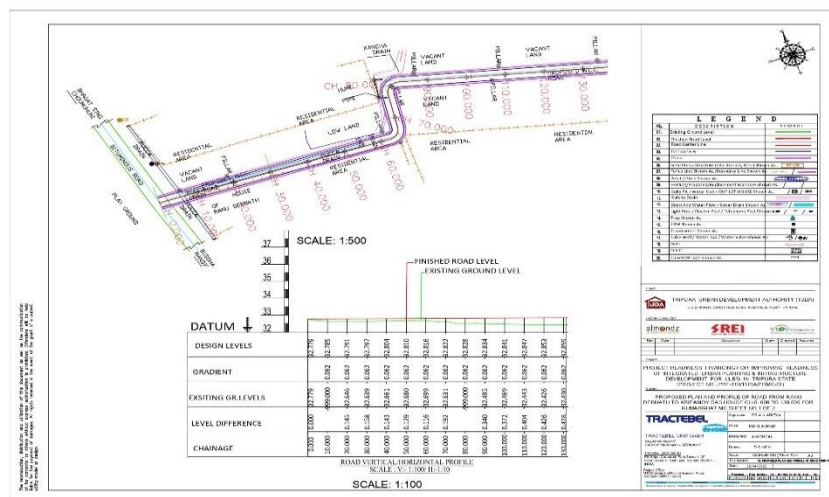
NH-8 to Arati Nomo House, Road No. 6



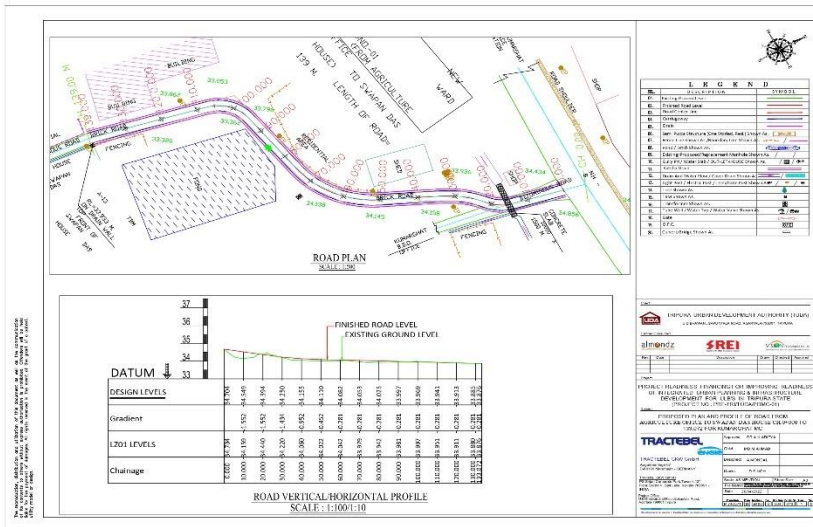
From Kalipada Roy house to Tarani Kr. Deb House, Road No. 7



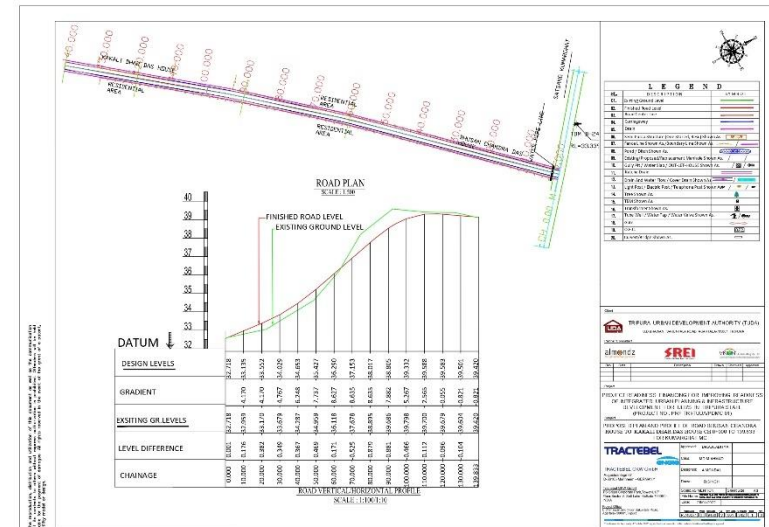
From Pandap Saha house to Jhantu Debnath House, Road No. 8



From Ranu Debnath to Kripamoy Das house, Road No. 9



From Agriculture office to Swapn Das House, Road No. 10



Maps showing Existing and Proposed Kumarghat Town Drain

Figure 13: Existing storm water drainage area of Kumarghat – (google map)

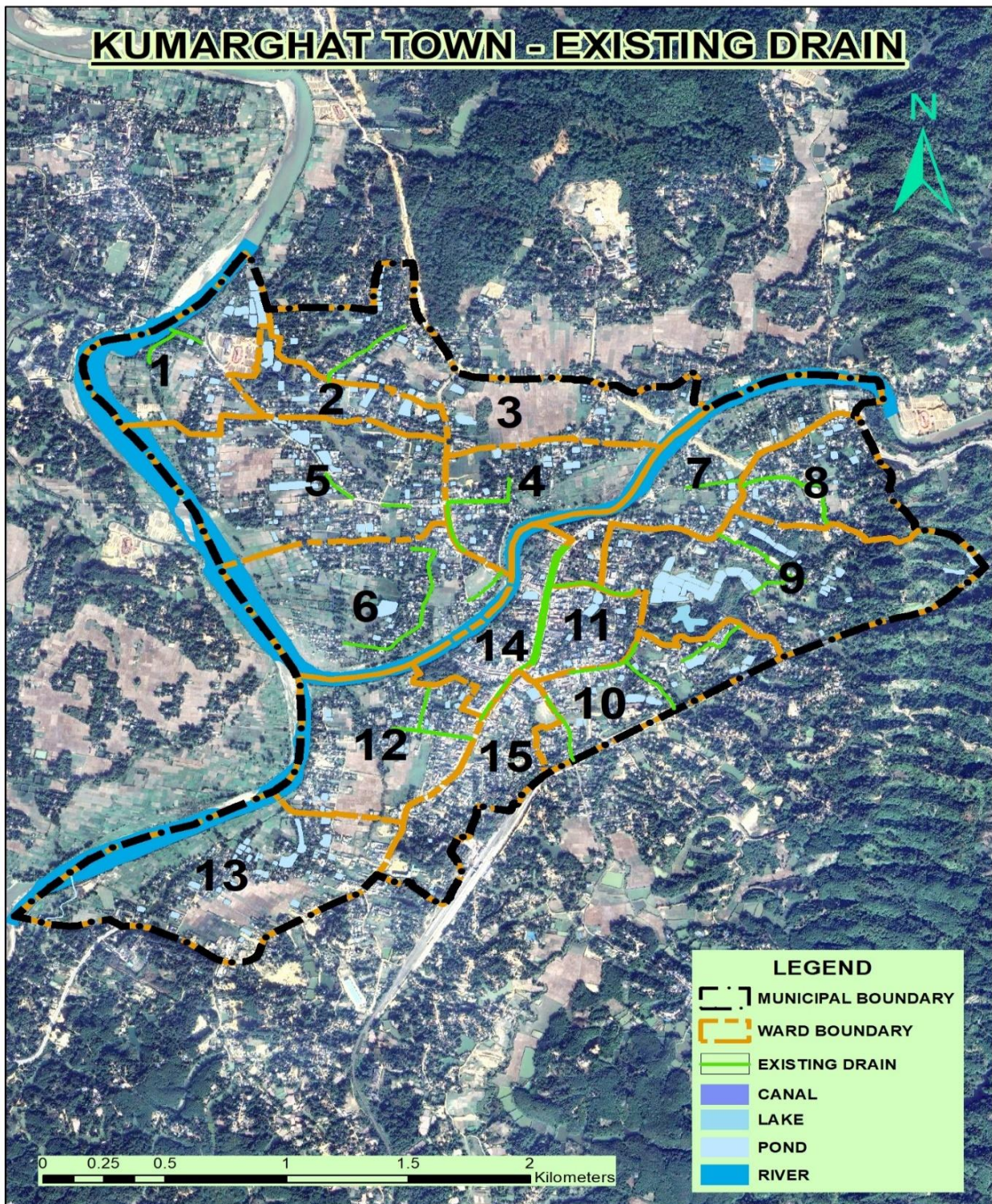


Figure 14: Proposed storm water Drain of Kumarghat

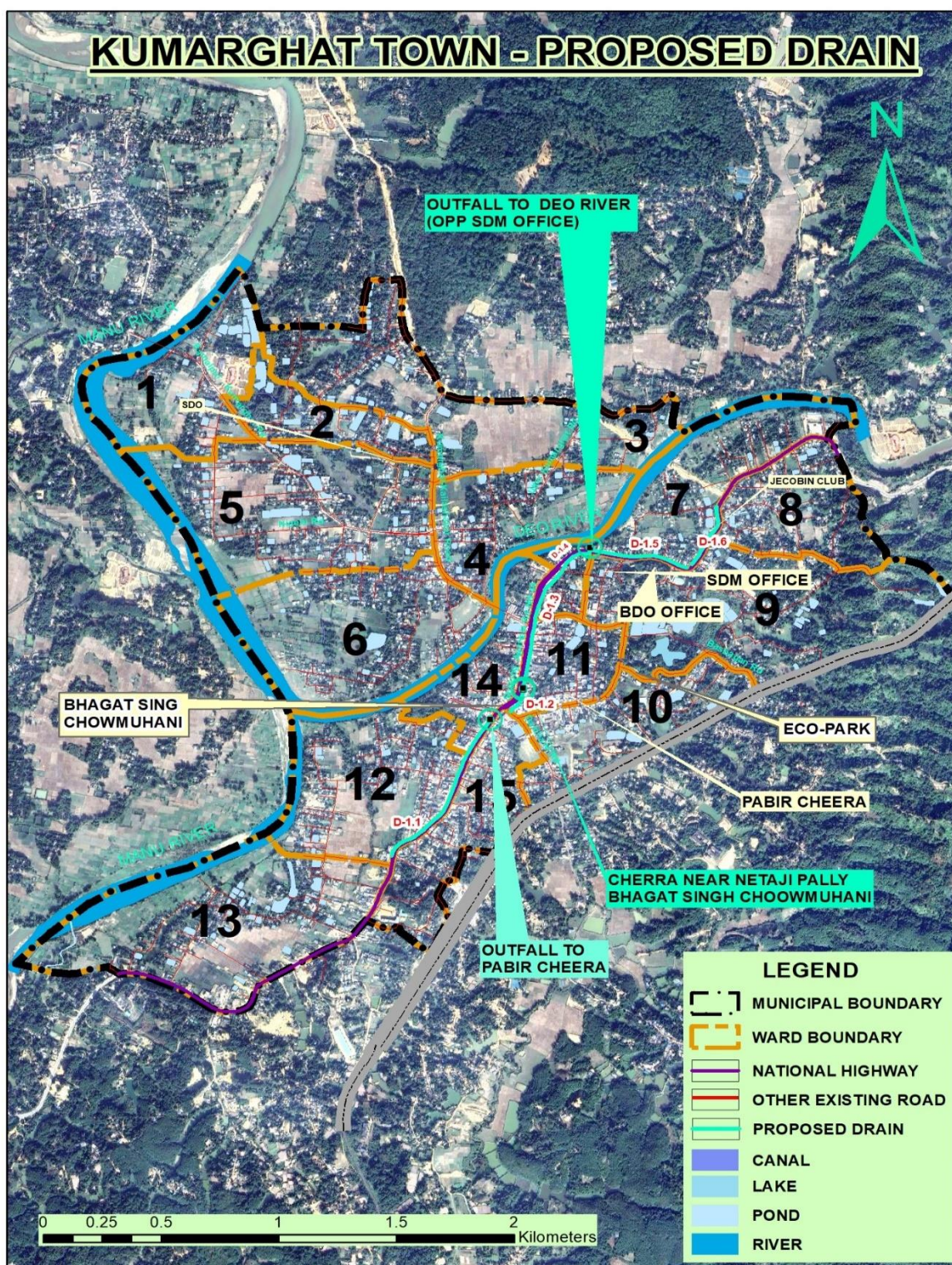


Figure 15: Proposed alignment of drain in Pabia Cherra Catchment

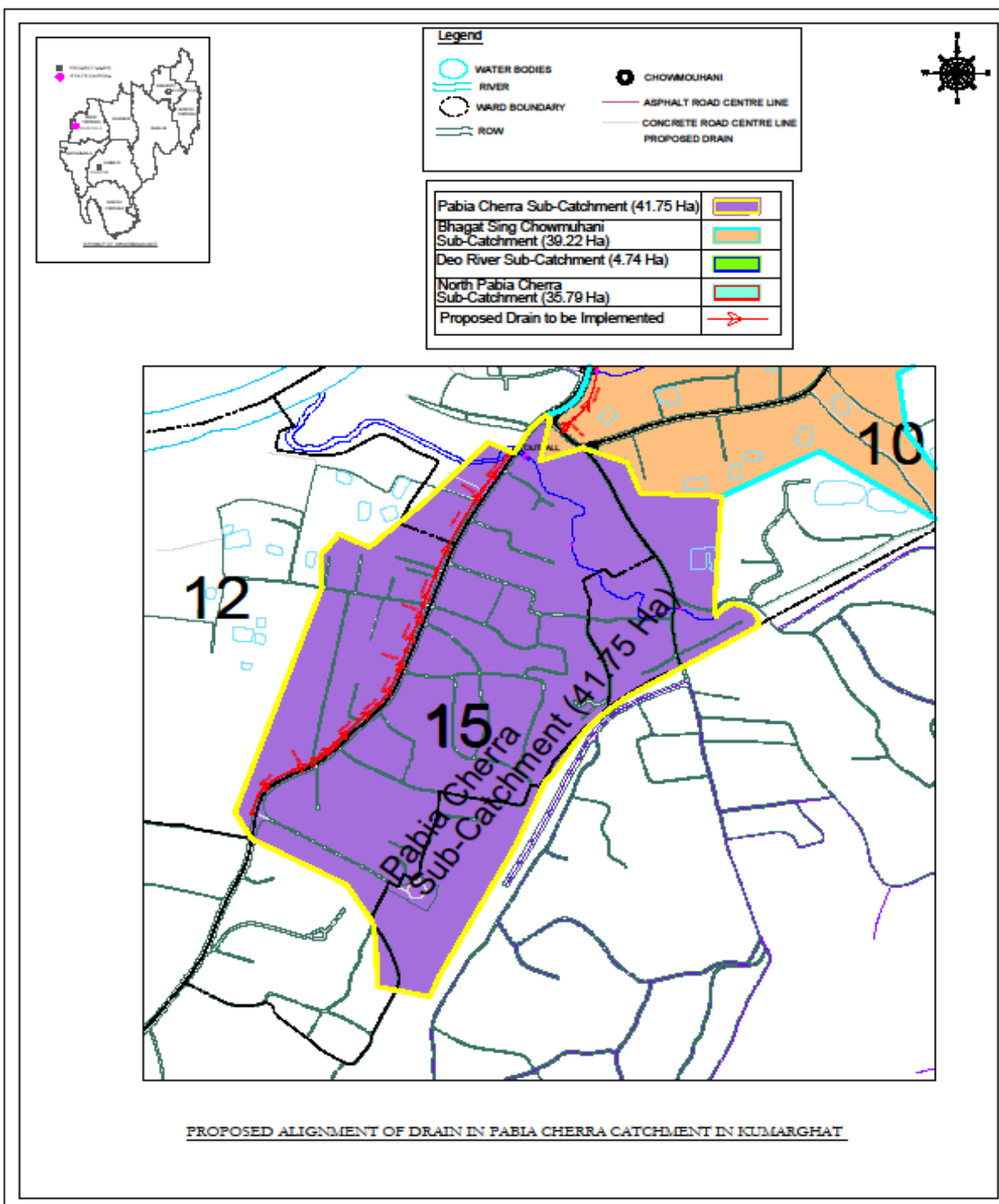


Figure 16: Proposed alignment of drain in Bhagat Sing Chowmuhani Catchment

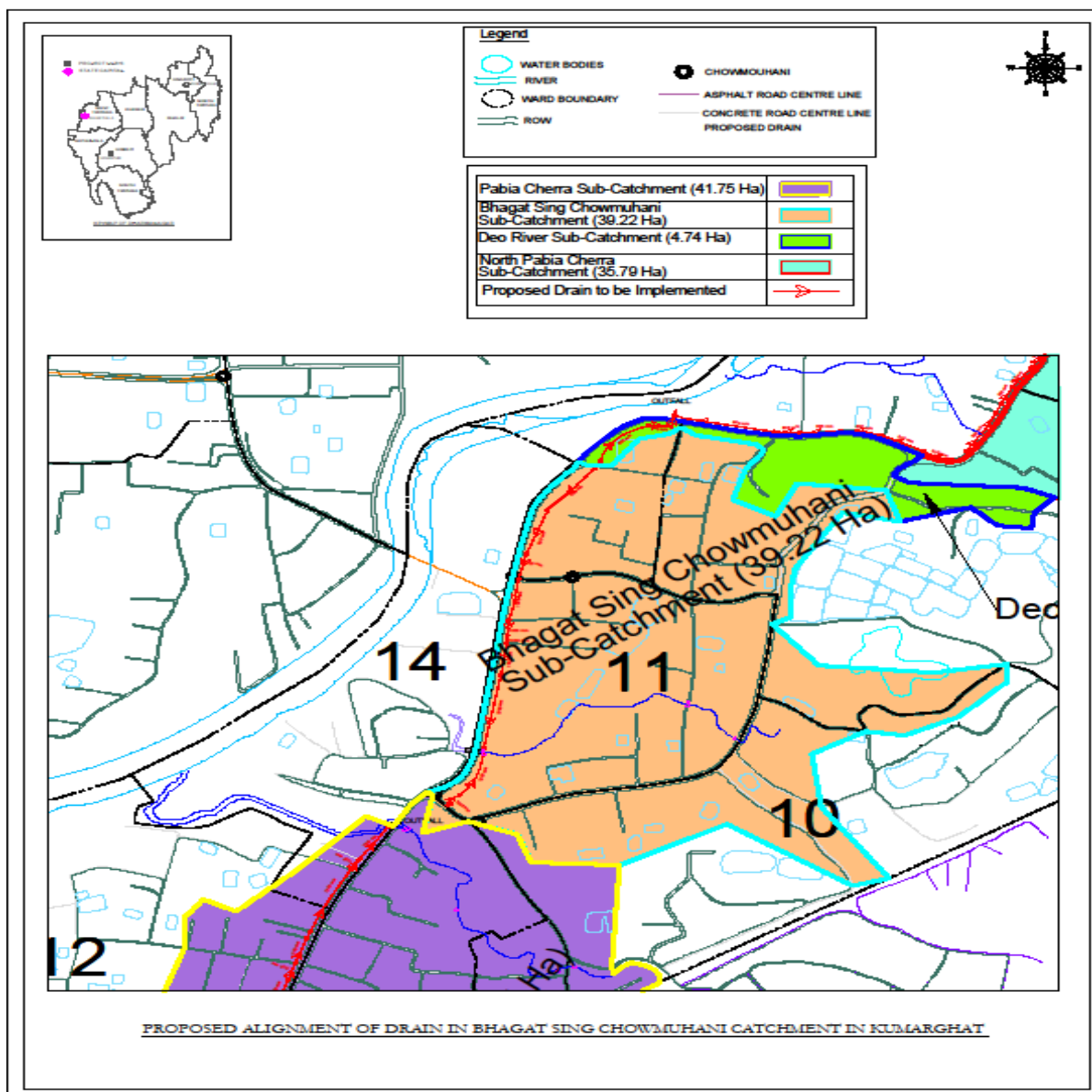


Figure 17: Proposed alignment of drain in North Pabia Cherra Catchment

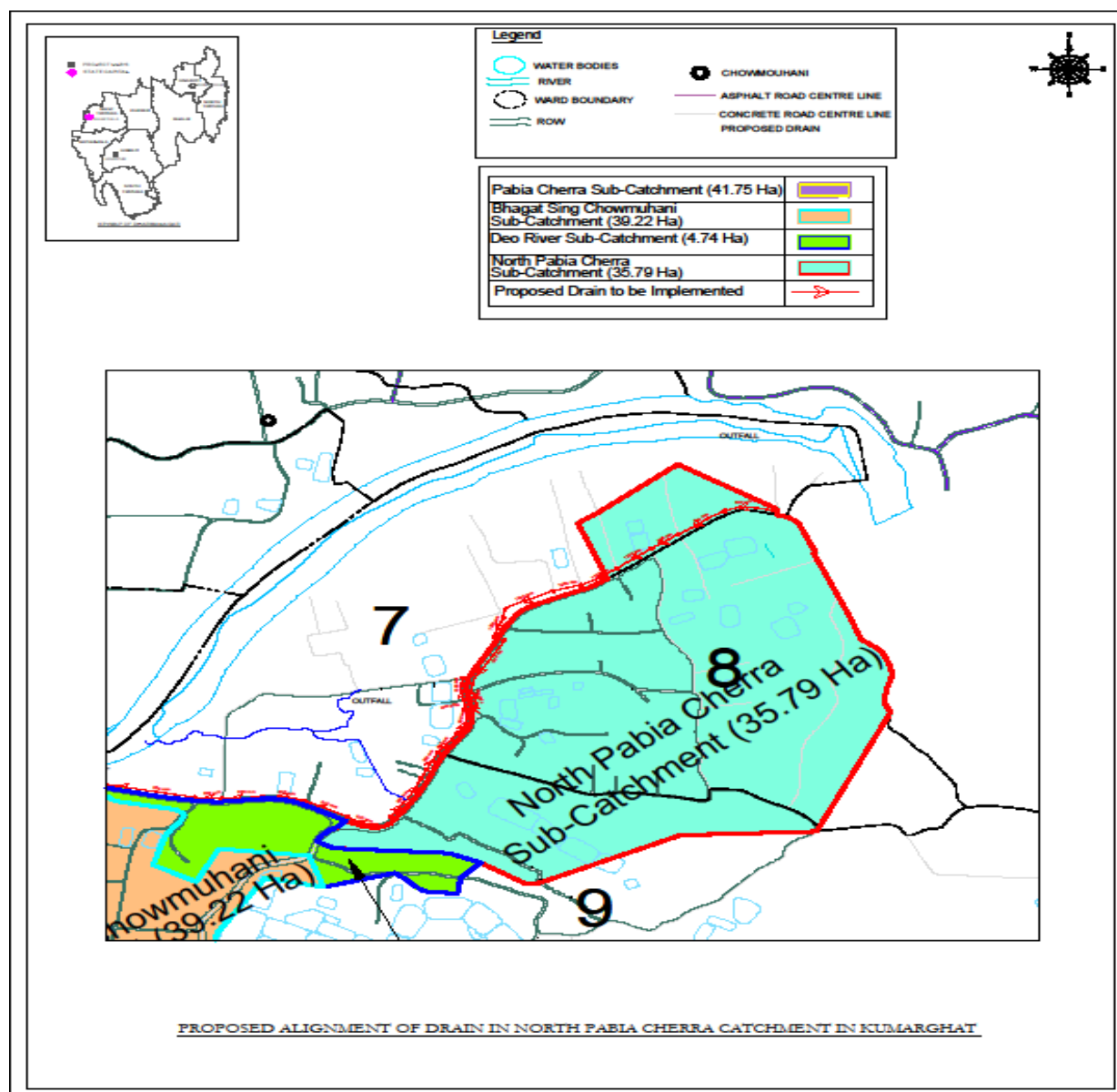


Figure 18: Proposed alignment of Drain in Deo River Catchment

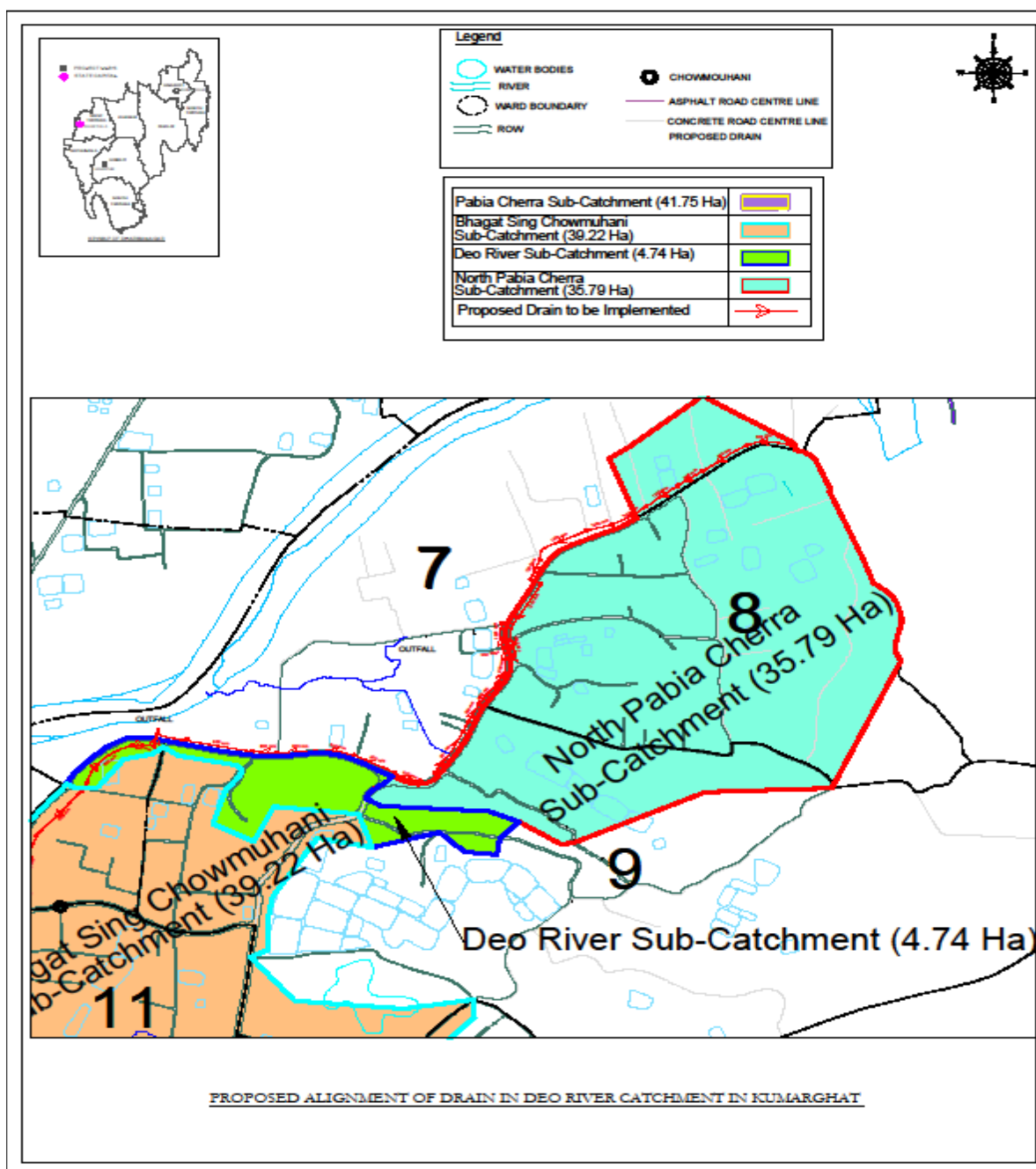
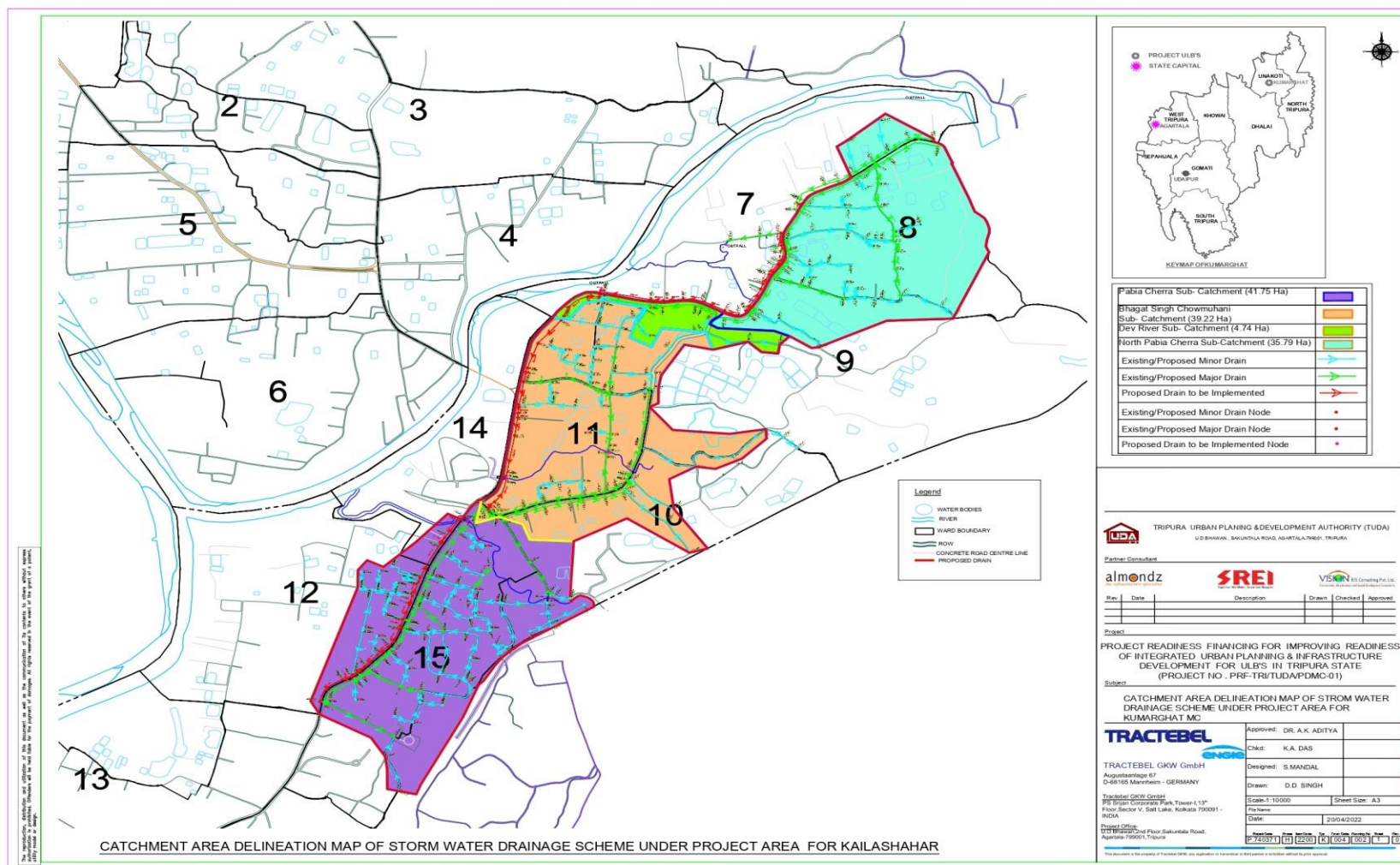


Figure 19: Proposed project area map of storm water drainage for Kumarghat



Maps Showing existing and proposed Dharmanagar Town – Drain

Figure 20: Existing Drain in Dharmanagar on Google Earth

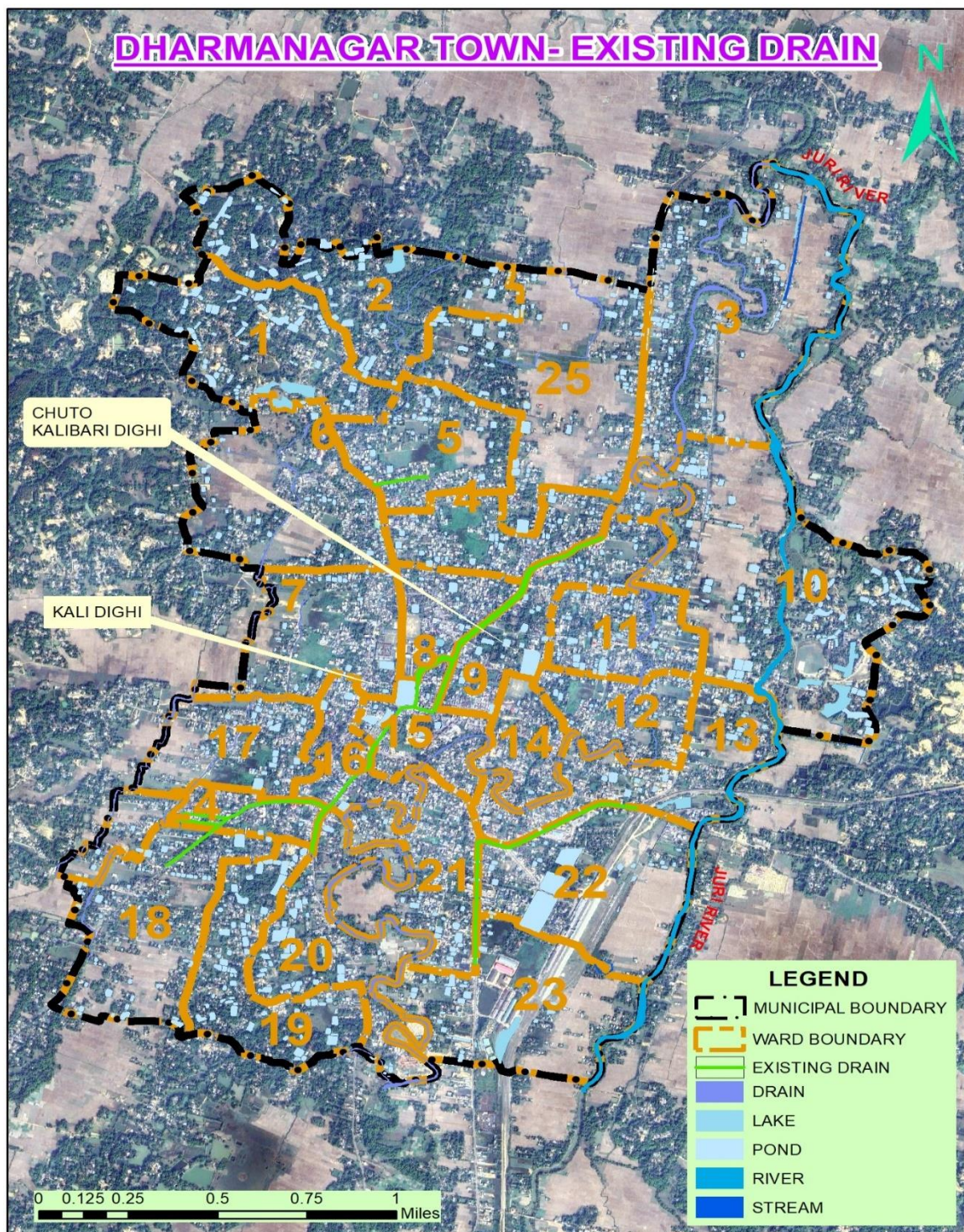


Figure 21: Proposed Drain in Dharmanagar on Google Earth

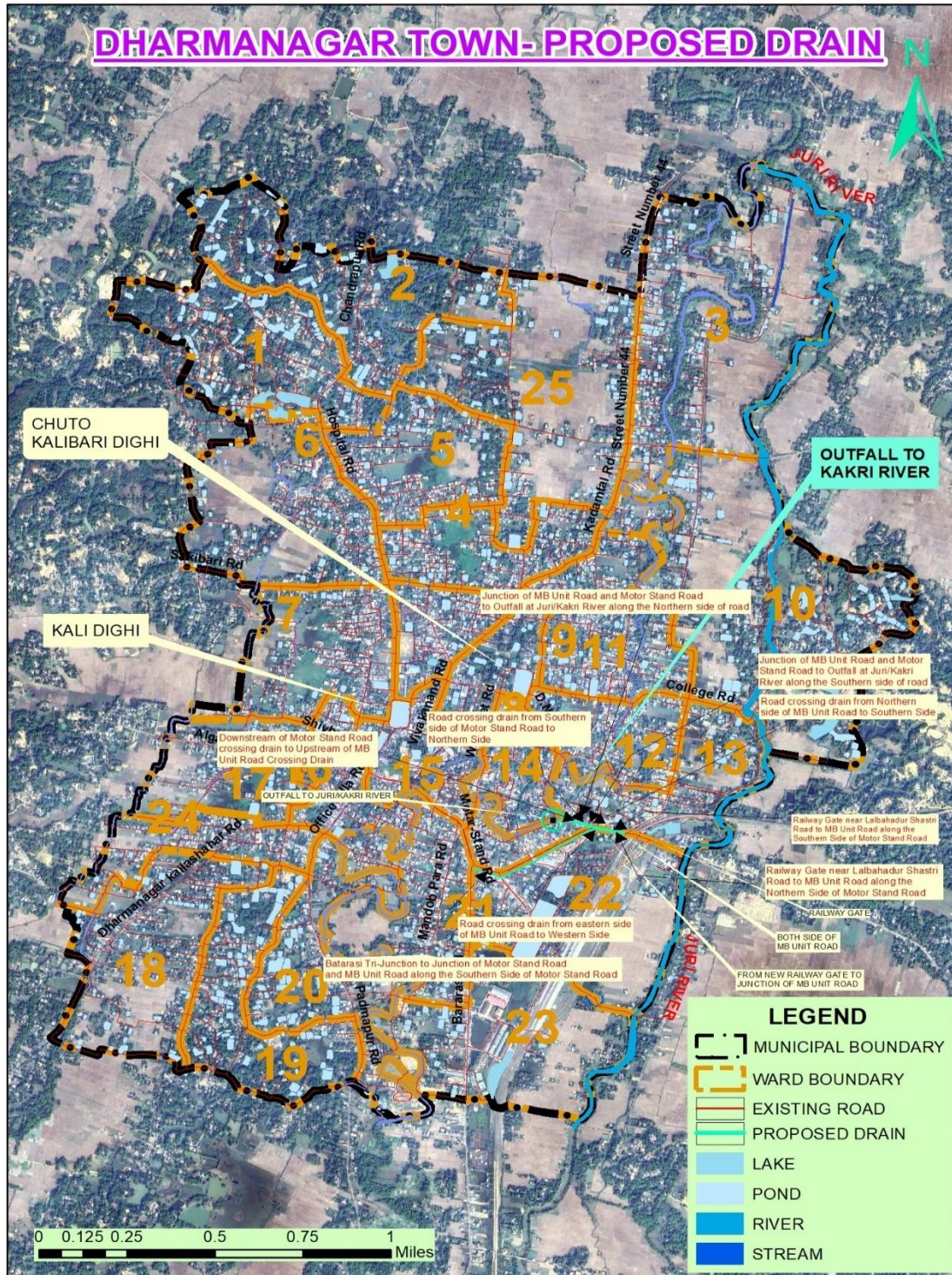
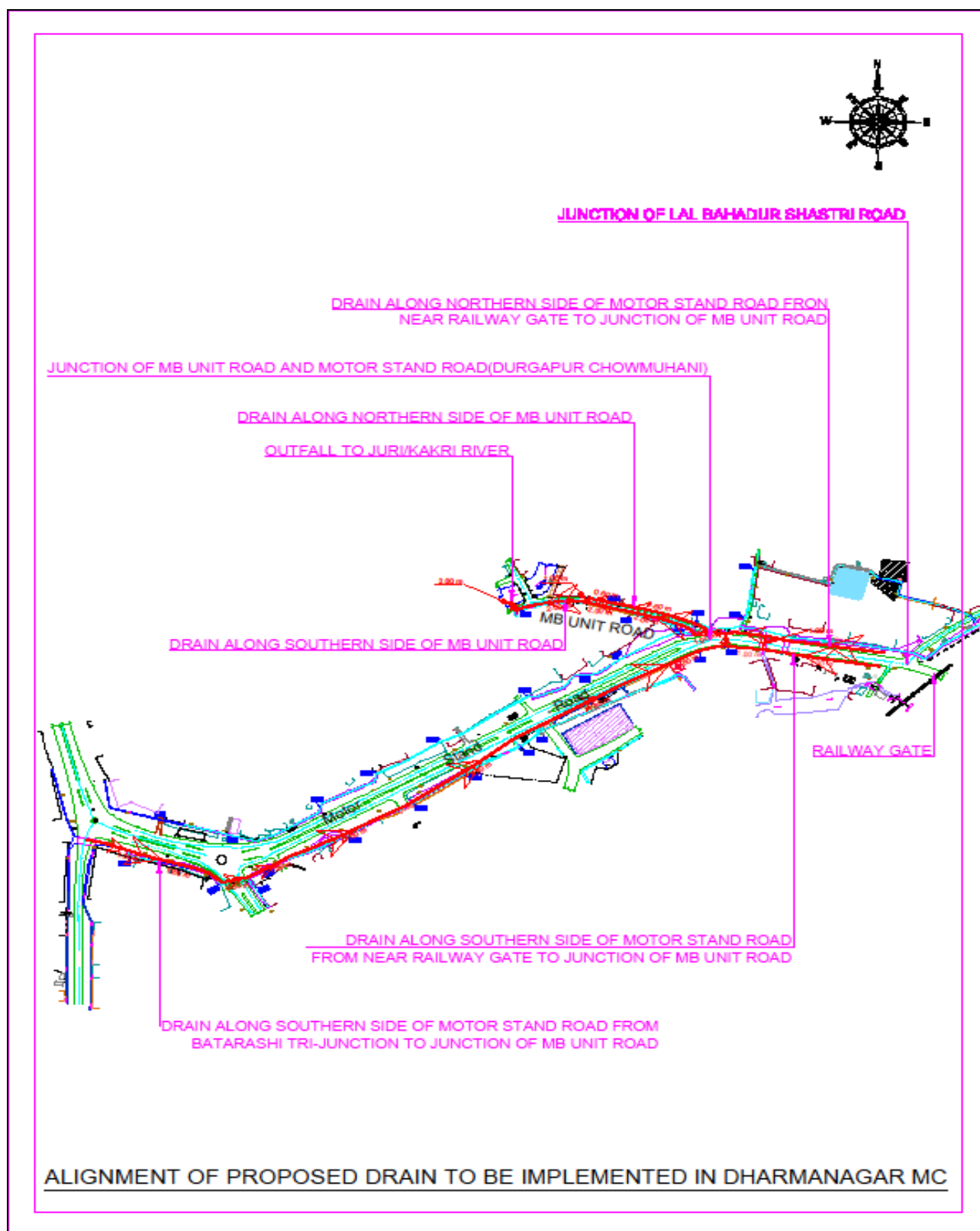


Figure 22: Total Drain Network of project area in Dharmanagar



Maps Showing existing and proposed Ambassa Town- Road

Figure 23: Proposed Roads in Ambassa on Google Earth

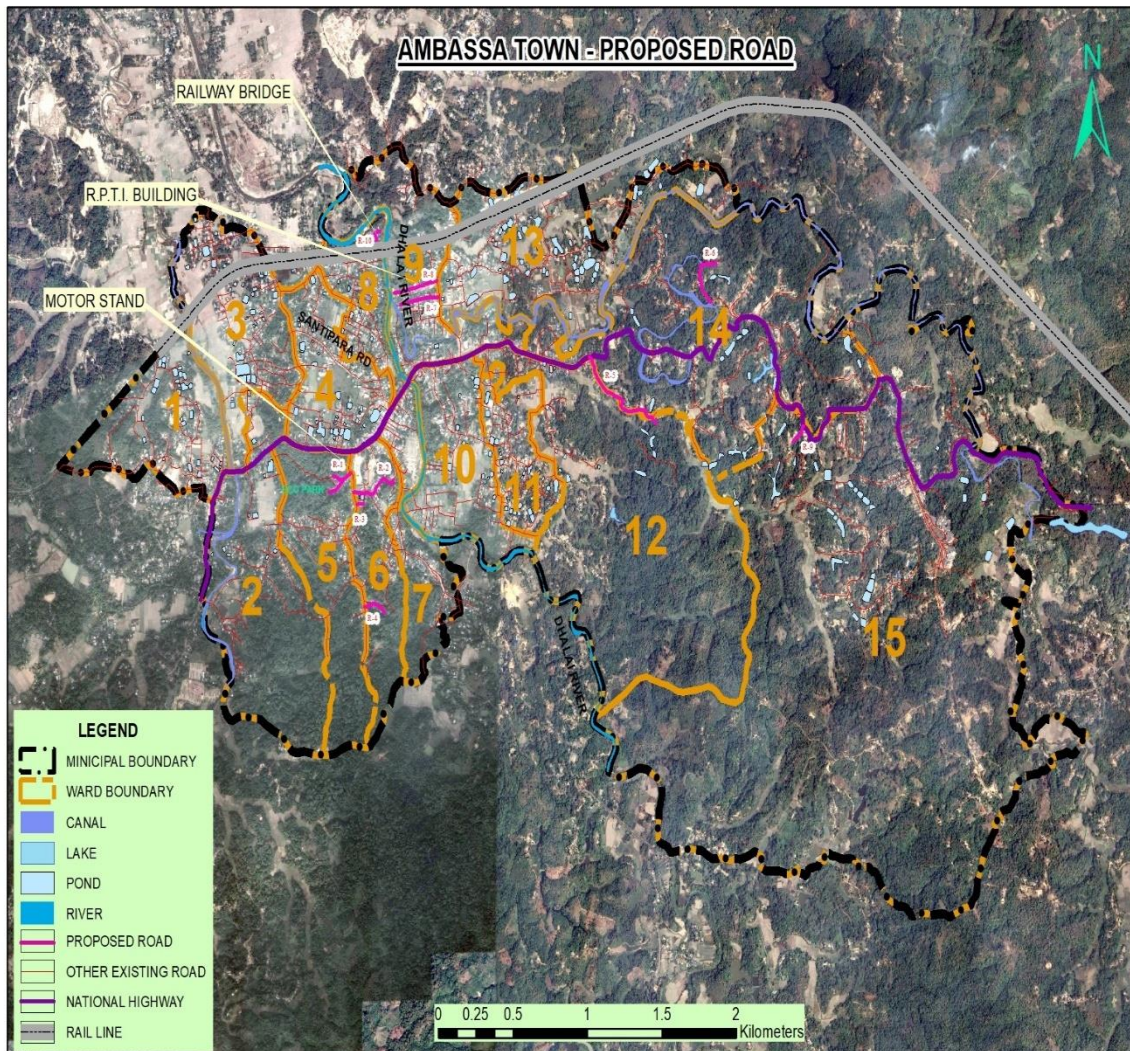
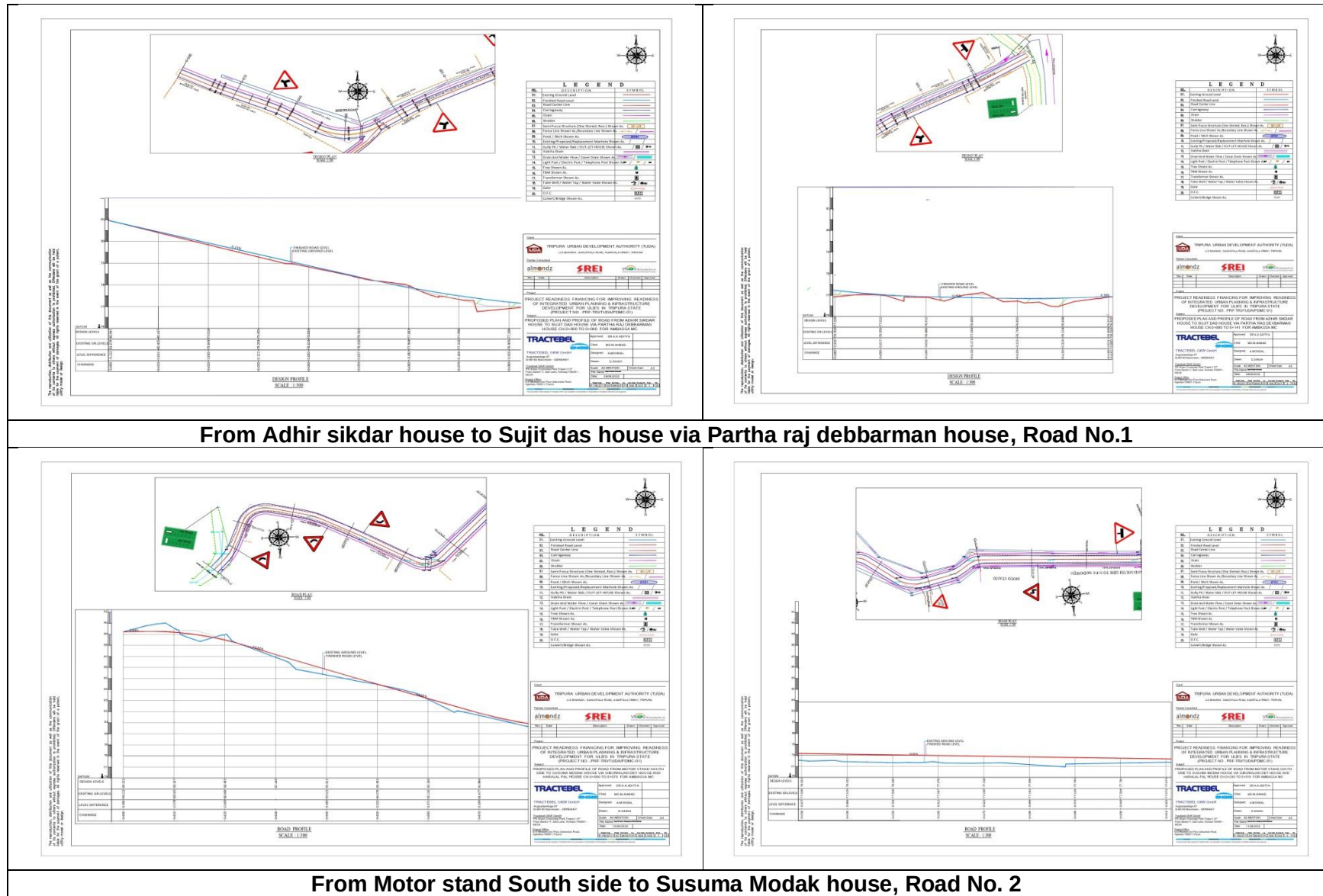
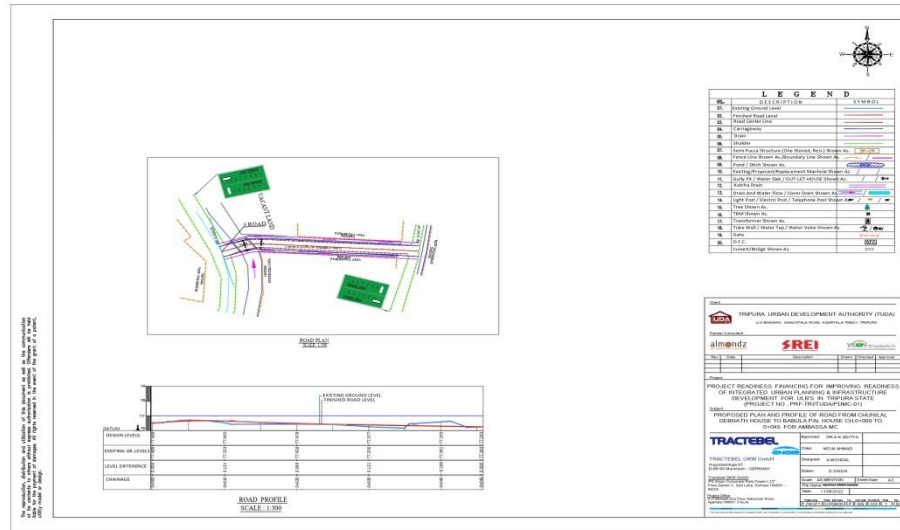
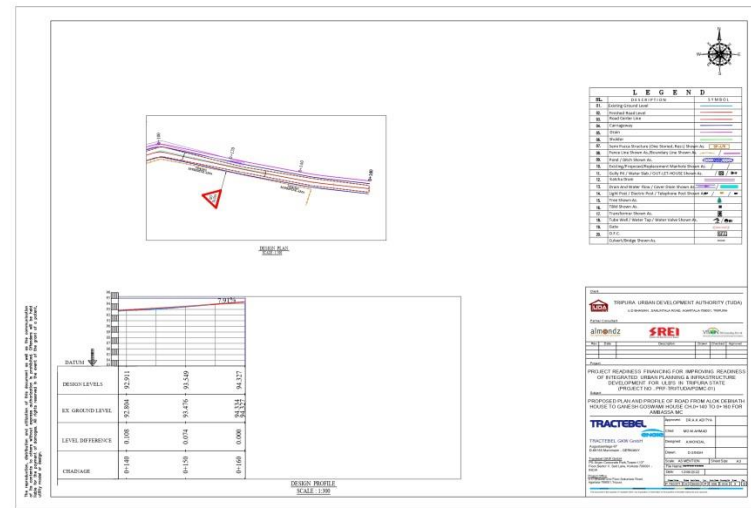
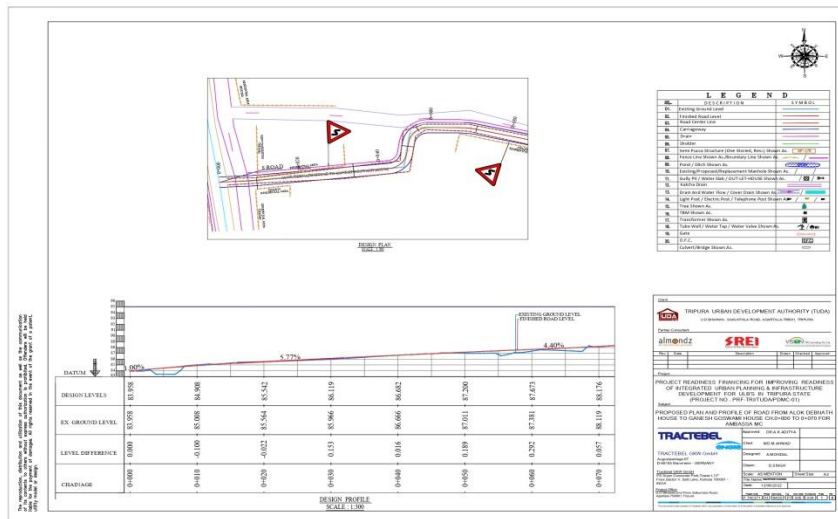


Figure 24: Proposed plan and Profile of the Roads- Ambassa

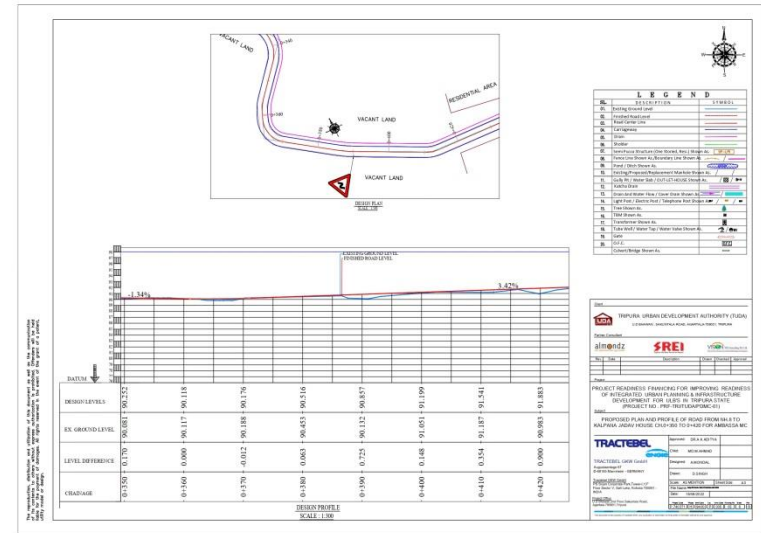
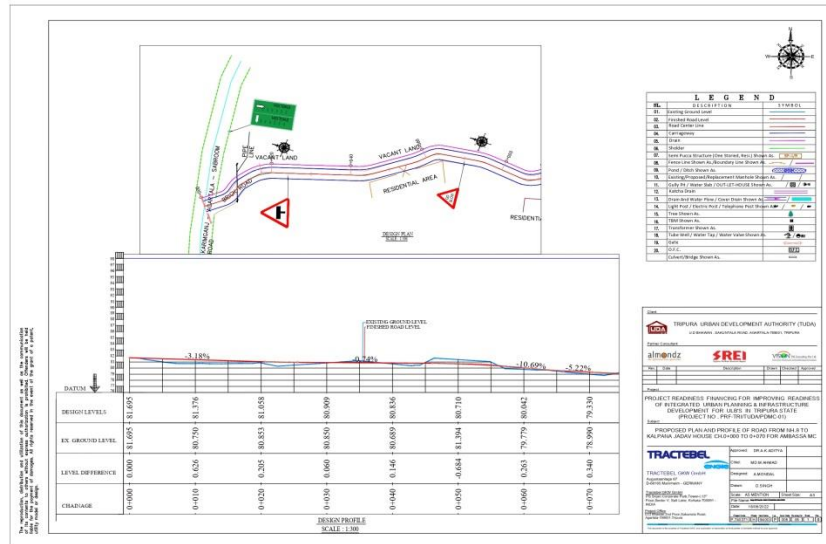




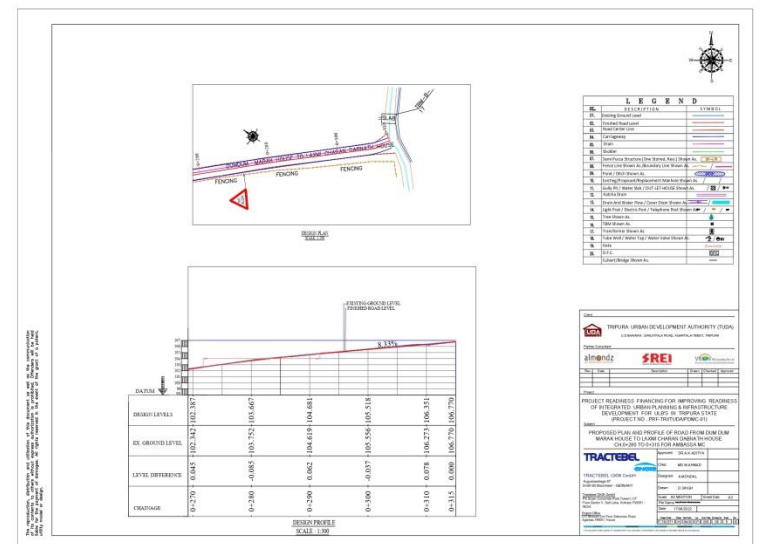
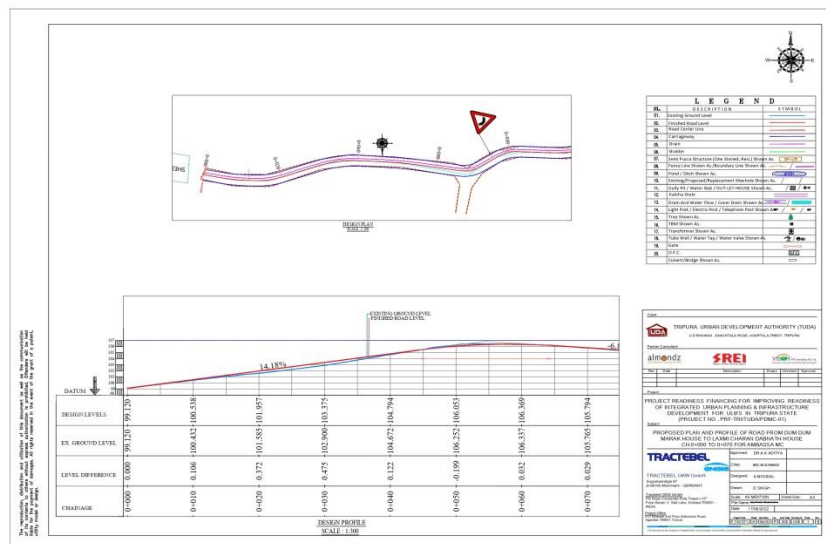
Chunilal Debnath house to Babulal pal house, Road No. 3



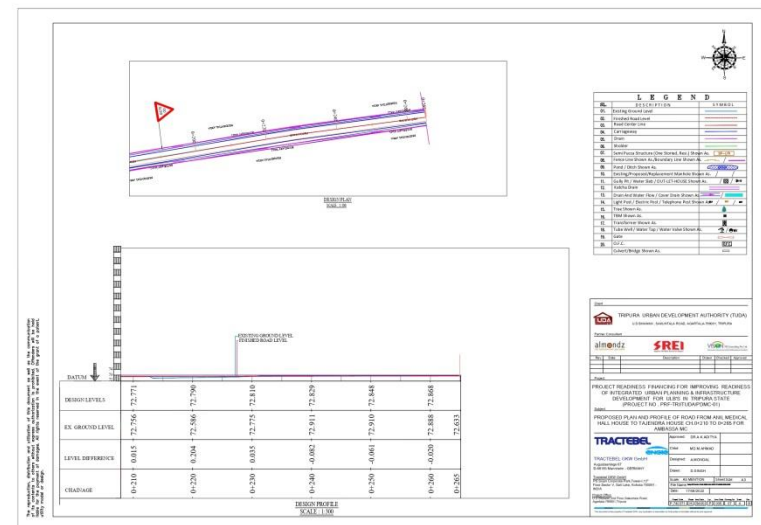
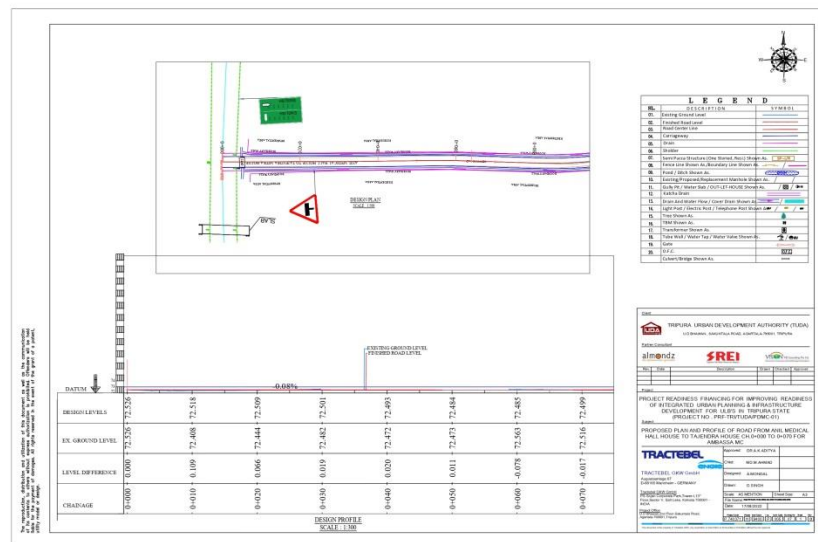
From Alok Debnath house to Ganesh Goswami house, Road No. 4



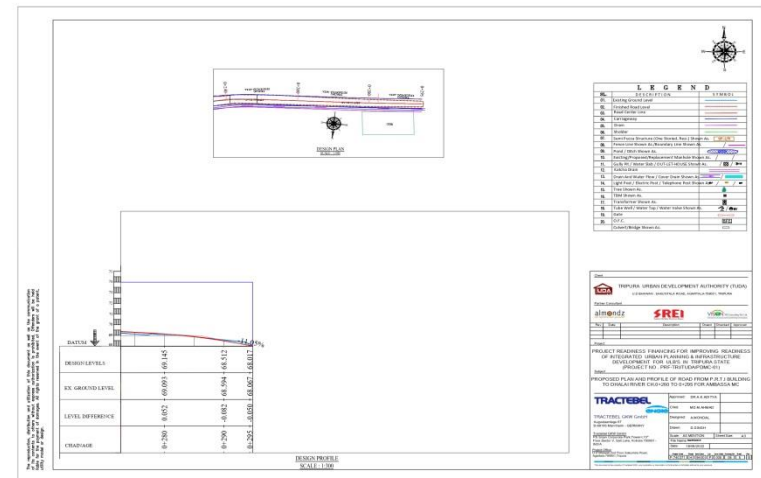
From NH-8 To Kalpana Jadav house, Road No.5



Dum Dum Marak house to Laxmi Charan Debnath house, Road No. 6



From Anil medical hall to Tejendra Mitra house, Road No. 7



From P.R.T.I. Building to Dhalai river, Road No. 8

Maps Showing existing and proposed AmbassaTown - Drain

Figure 25: Existing Drain in Ambassa town

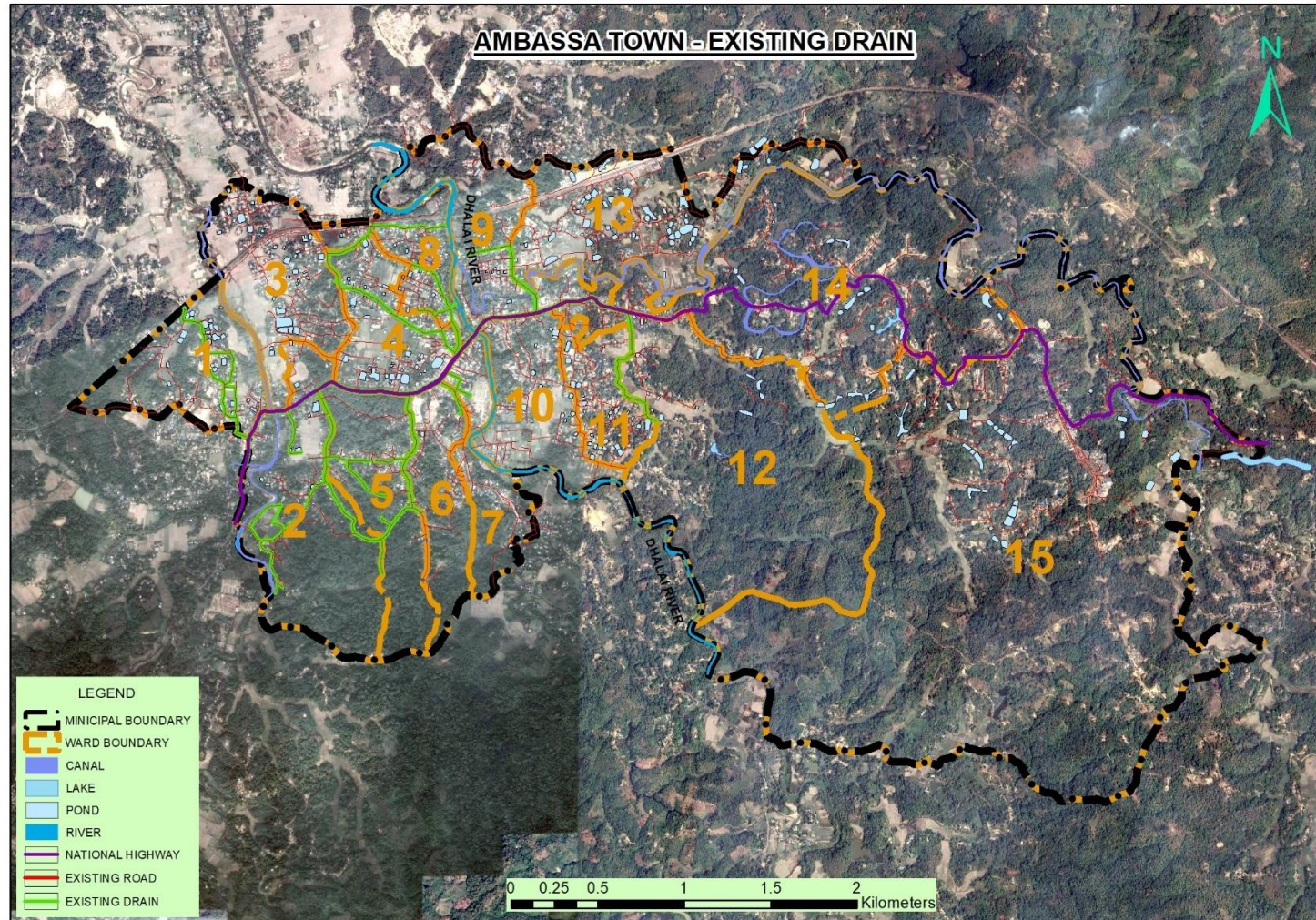


Figure 26: Proposed storm water drain, Ambassa

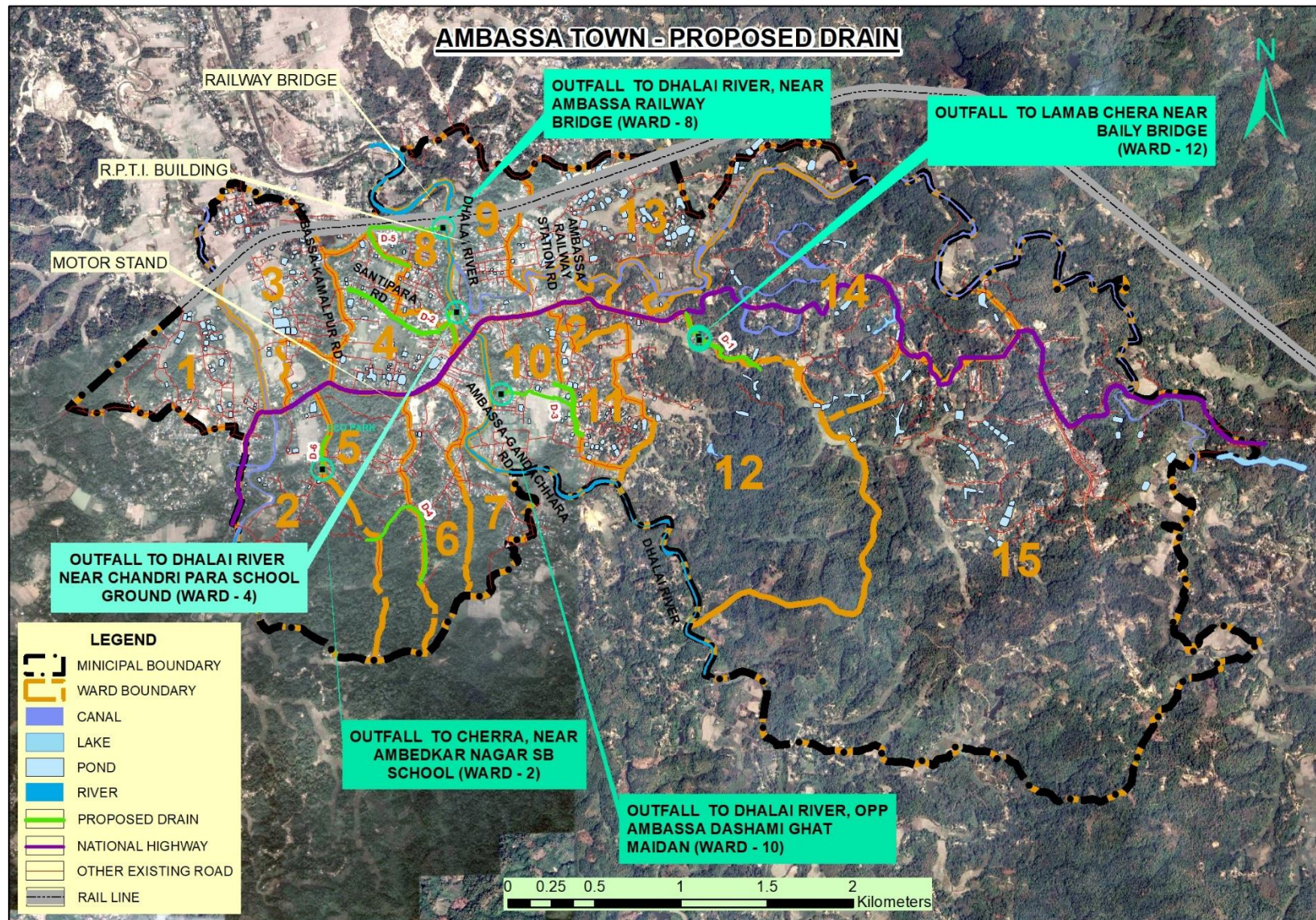


Figure 27: Catchment Area Delineation Map of Storm Water Drainage Scheme Under the Project Area at Ambassa

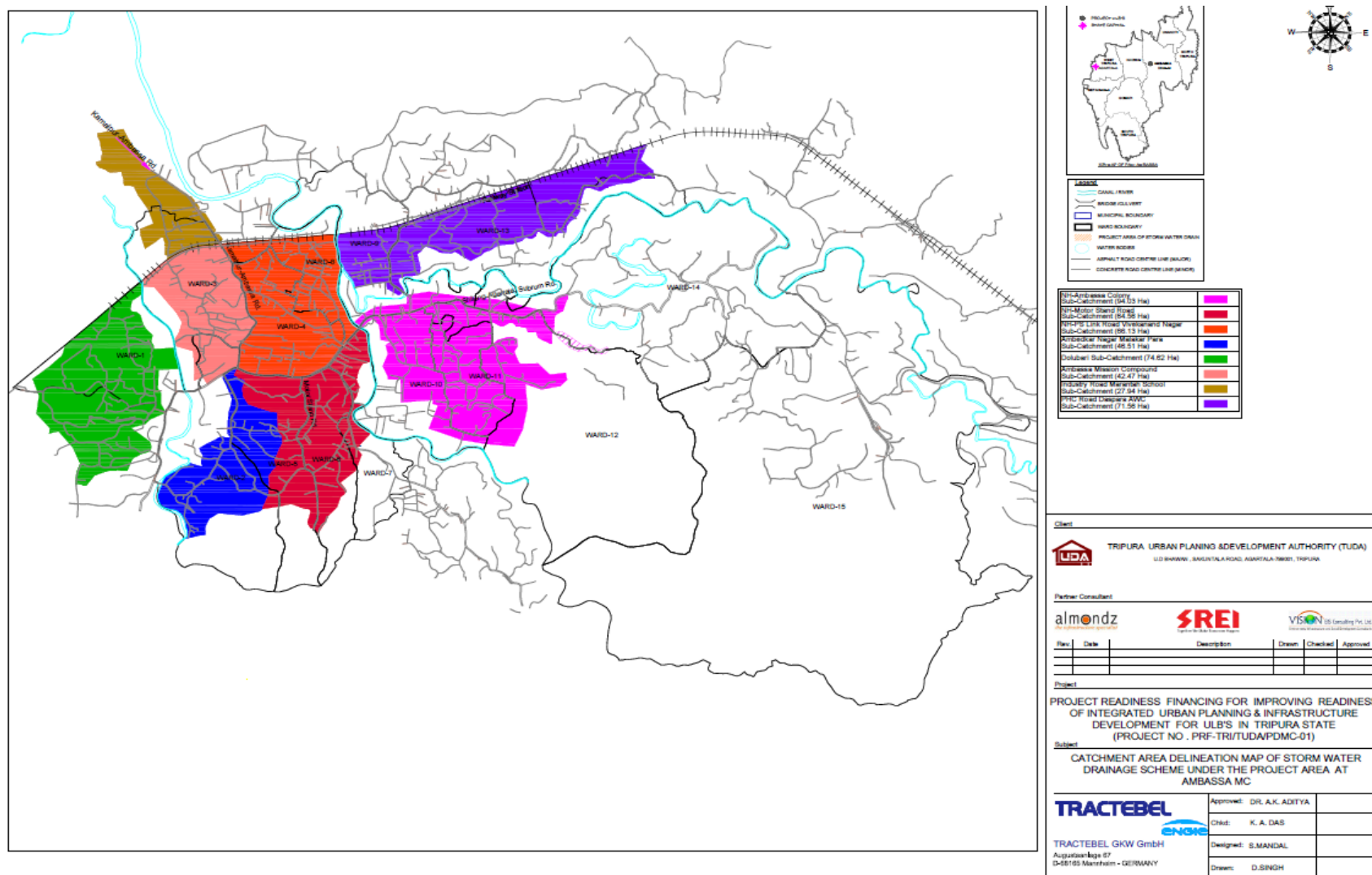


Figure 28: Proposed alignment of drain in NH- Ambassa Colony Catchment

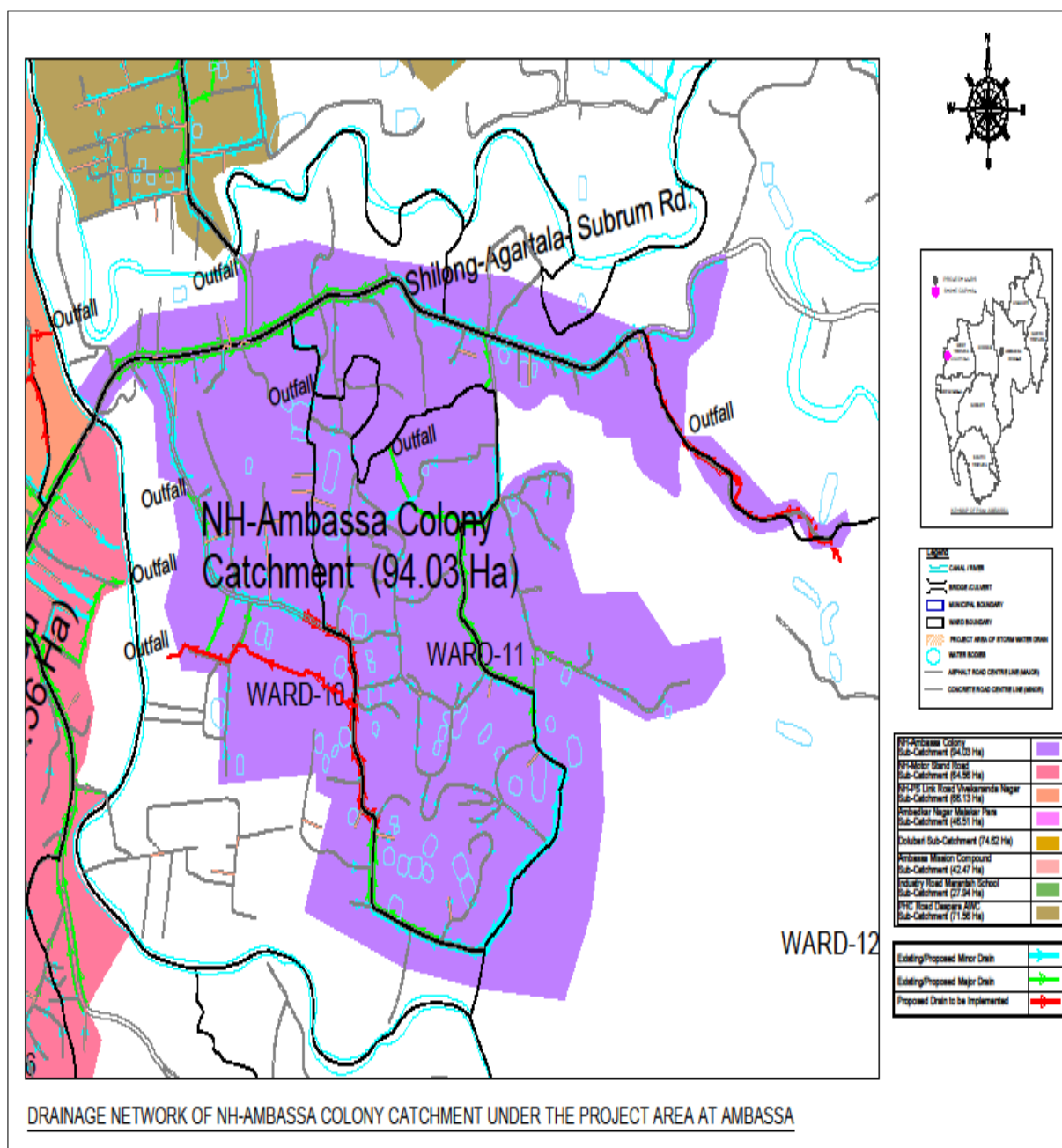


Figure 29: Proposed alignment of drain in NH-Motor Stand Road Catchment

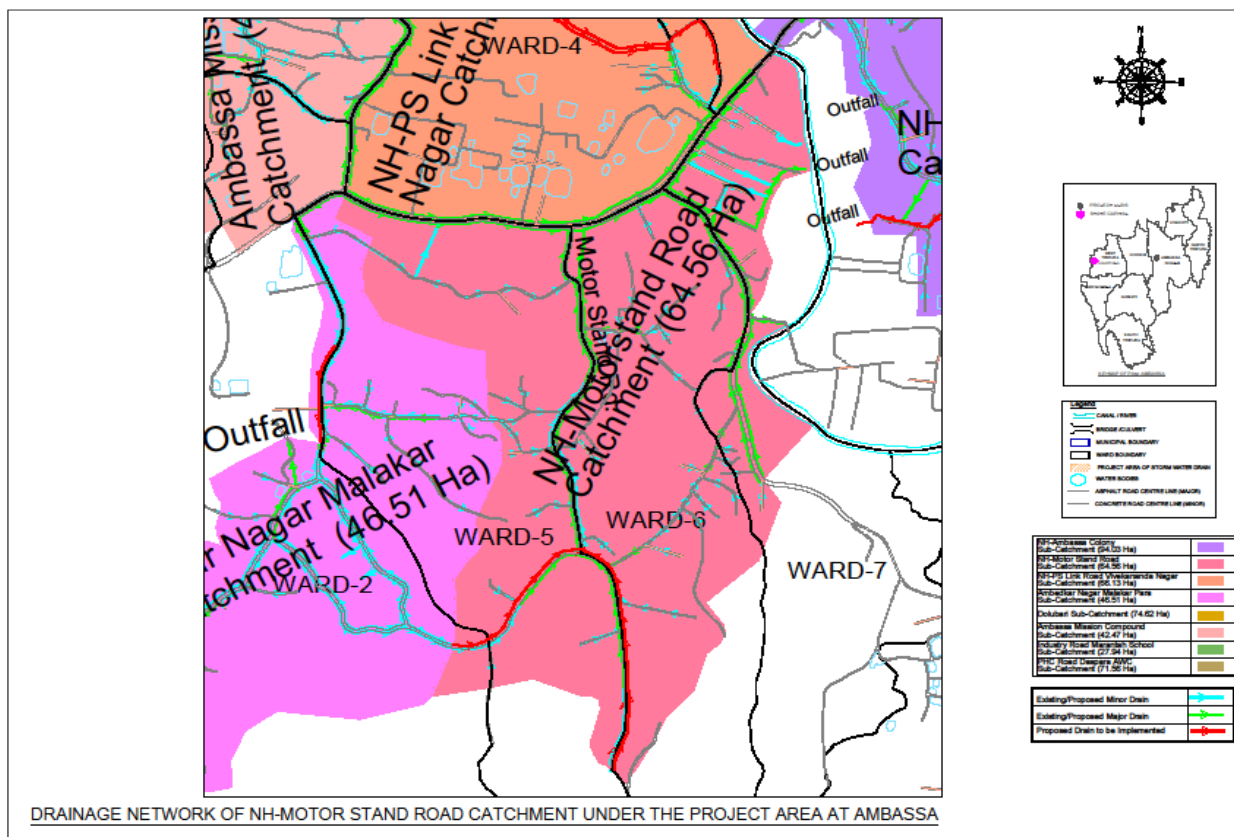


Figure 30: Proposed alignment of drain in NH- PS Link Road Vivekananda Nagar Catchment

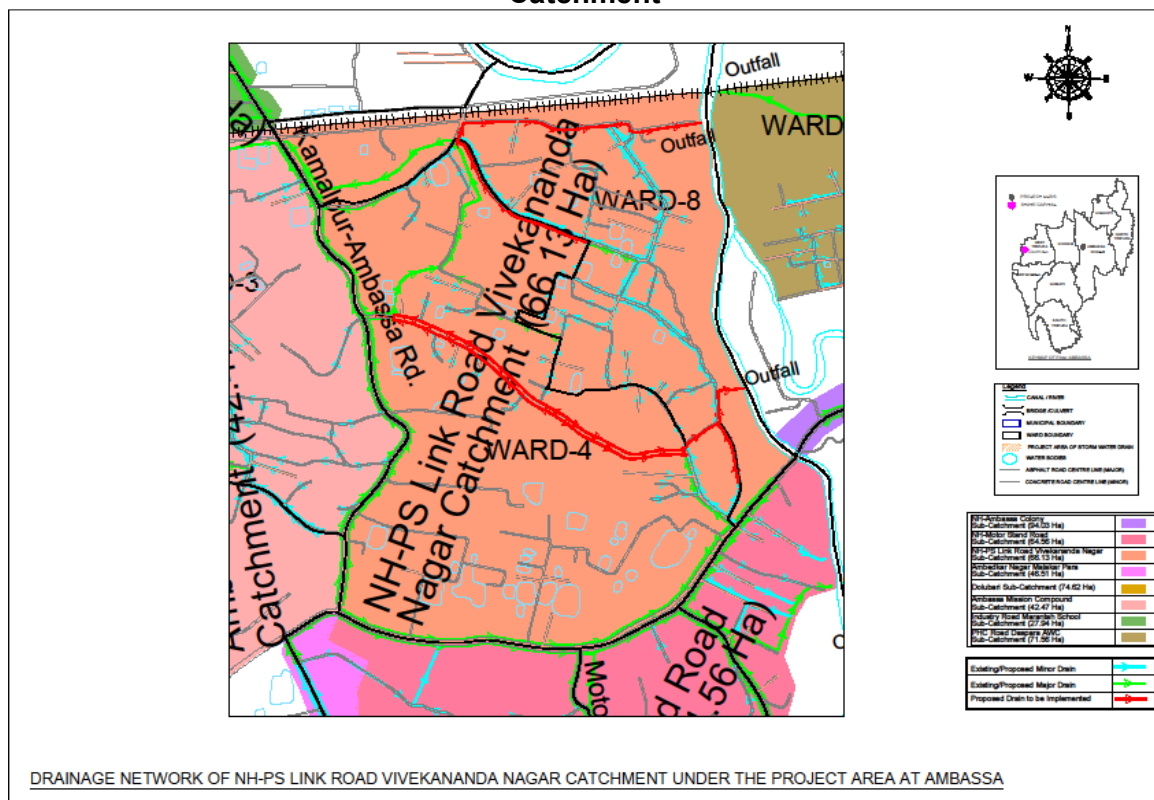
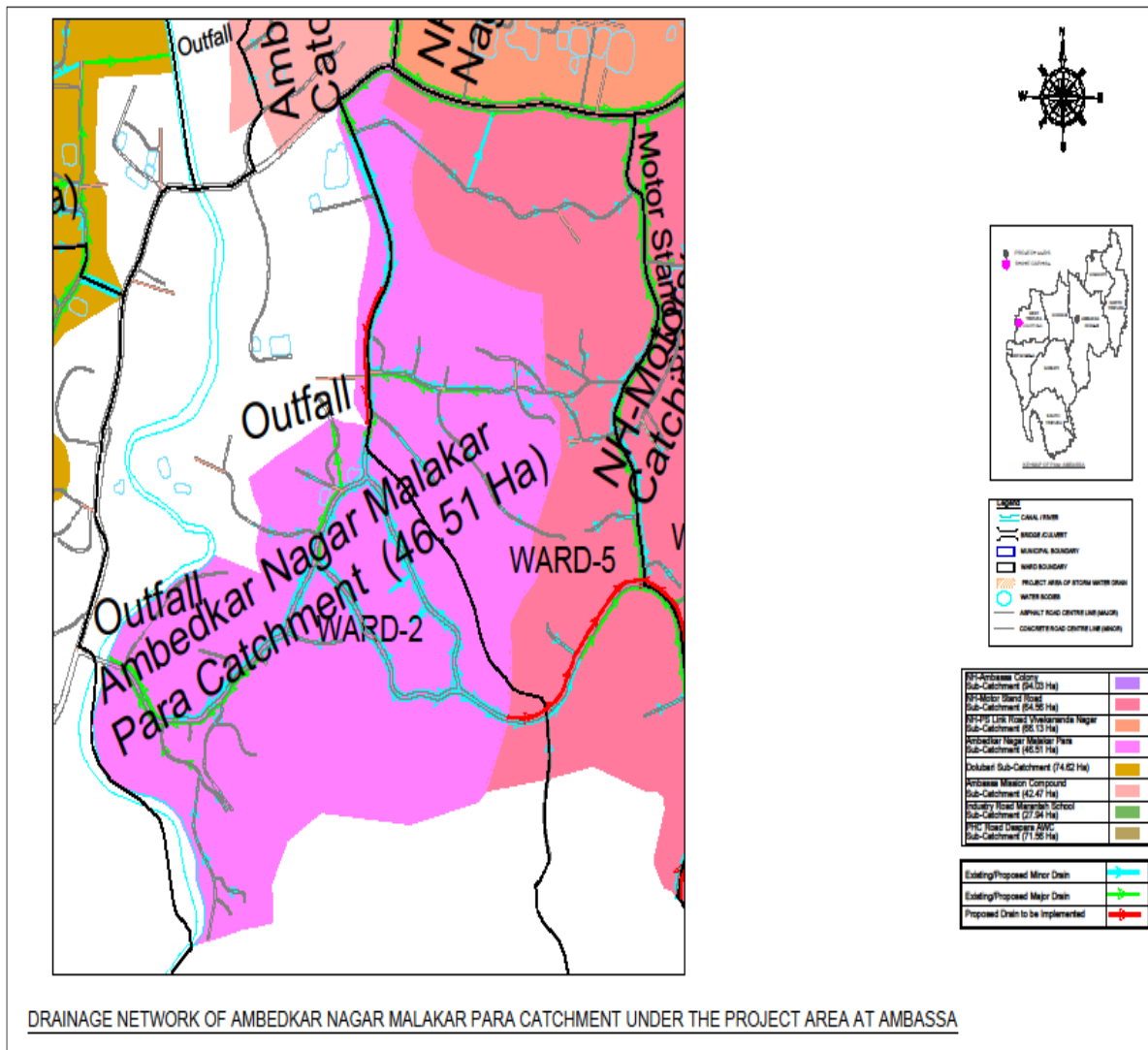


Figure 31: Proposed alignment of drain in Ambedkar Nagar Malakar Para Catchment



III. ANALYSIS OF ALTERNATIVES

41. In this project construction proposals are confined to the existing alignment of the unpaved tracks. The majority of these are foot/pathways traditionally used by the villagers and transformed into the present form of unpaved tracks/roads through minor construction works taken up by the communities, local bodies and State Government over the decades. There is no other option instead of the construction of the selected road. So, only 'With project' and 'without project' consider for the alternative analysis.

42. Practically in all the subproject components of road and drain in government land and only existing ROWs are considered and therefore displacement of any community will not arise. In the screening exercise, areas of concern - congested marketplace on the sides of the road, existence of sensitive area, extent of physical displacement if any, etc. was studied. The findings have been used as inputs for engineering design within the technical requirements and cost effectiveness. A Comparative analysis of "with project" and "without project" scenario is given in Table below.

Sl. no	Parameter	‘With-Project’ Scenario	‘Without-Project’ Scenario
For stormwater Drain			
1.	Water logging/flooding – extent and duration	Substantially reduced the water logging in the Kailashahar, Kumarghat, Dharmanagar and Ambassa town area.	No construction of storm water drains. This will result in periodic flooding in urbanized area shall results in property damages. Stagnation of water shall result in health-related problems including spread of vector borne diseases such as Dengue and Malaria.
2.	Maintenance of drainage system	Organized and better maintenance and therefore efficient operation of the created system	Without proper drainage system, maintenance of drainage system is not possible
3	Public health	Clean surroundings eliminating bad odour and mosquito breeding from open drains	Mosquito menace due to presence of open drains with low flow velocity
4	Roads	With the construction of cover stormwater drain roads will become wide	No effect. Roads are remained as it is.
5	Risks	Wide roads mean safe transport and pedestrian movement	No change (narrow roads) will continue to pose transport hazards and risk of accident to pedestrians
	Recommendation	Present level of drain service will improve after implementation of the project. No permanent impact on environmental parameters is envisaged in case of “with project” scenario, only short-term negative impact and long-term positive impact may result. Hence “With Project” scenario is much preferable than “Without Project” scenario.	
For Road Works			
1.	Road Quality	These urban roads improvement will promoting access to health, education facilities and as an avenue to increased economic opportunities, leading to increased agricultural income and productive employment opportunities.	Present roads are the unpaved tracks which is not motorable, without this project these roads are remains the same.
2.	Drainage	Drainage will be improved due to further development of	These issues remain unaddressed without the project

Sl. no	Parameter	'With-Project' Scenario	'Without-Project' Scenario
		culverts / bridges with adequate hydraulics.	
3.	Environmental Quality	Existing roads are earthen road/ brick road. Improvement of road with ICB pavement will reduce the dust pollution. Providing better level of service in terms of improved riding quality and smooth traffic flow which reduce the vehicular pollution.	Without project scenario, the project roads remain the same. Unpaved road will increase the dust pollution and vehicular pollution also.
4	Road Side Amenities	Appropriate road side amenities to be provided at various locations along the corridor.	Not adequate.
	Recommendation	"With" project scenario with positive/beneficial impacts will vastly improve the environment and enhance economic development of the region compared to the "Without" project scenario, which will further deteriorate the present environmental setup and quality of life.	

IV. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Policy

43. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires environmental assessment of all ADB investments.

44. **Screening and categorization.** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project; the sensitivity, scale, nature, and magnitude of its potential impacts; and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts, and are assigned to one of the following four categories:

- (i) **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.
- (ii) **Category B.** Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
- (iii) **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
- (iv) **Category FI.** Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all projects will result in insignificant impacts.

45. **Environmental Management Plan.** An environmental management plan (EMP), which addresses the potential impacts and risks identified by the environmental assessment, has been prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions are commensurate with the project's impact and risks.

46. **Environmental Audit of Existing Facilities.** ADB SPS, 2009 requires an environmental audit, if a subproject involves facilities and/or business activities that already

exist or are under construction, including an on-site assessment to identify past or present concerns related to impacts on the environment. The objective of this compliance audit is to determine whether actions were in accordance with ADB's safeguard principles and requirements for borrowers/clients, and to identify and plan appropriate measures to address outstanding compliance issues.

47. **Public Disclosure.** ADB posts the safeguard documents on its website as well as disclose relevant information in accessible manner in local communities:

- (i) for environmental category A projects, draft EIA report at least 120 days before Board consideration;
- (ii) final or updated EIA and/or IEE upon receipt; and
- (iii) environmental monitoring reports submitted by the implementing agency during project implementation upon receipt.

48. **Consultation and Participation.** ADB SPS require borrower to conduct meaningful consultation⁴ with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process and its results are to be documented and reflected in the environmental assessment report.

49. **Grievance Redress Mechanism.** ADB SPS requires borrowers to establish a mechanism to receive and facilitate resolution of affected people's concerns, complaints, and grievances about the subproject's performance. The grievance redress mechanism shall be scaled to the risks and adverse impacts of the subproject.

50. **Monitoring and Reporting.** The Borrower shall monitor, measure, and document the implementation progress of the EMP. If necessary, the borrower shall identify the necessary corrective actions, and reflect them in a corrective action plan. The Borrower shall prepare and submit to ADB semi-annual environmental monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. For subprojects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis until ADB issues a project completion report.

51. **Unanticipated Environmental Impacts.** Where unanticipated environmental impacts become apparent during subproject implementation, ADB SPS requires the borrower to update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

52. **Occupational Health and Safety.** ADB SPS requires the borrower⁵ to ensure that workers⁶ are provided with a safe and healthy working environment, taking into account risks inherent to the sector and specific classes of hazards in the subproject work areas, including physical, chemical, biological, and radiological hazards. Borrower shall take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work, including: (i) identifying and minimizing, so far as reasonably practicable, the causes of

⁴ As per ADB SPS, 2009, meaningful consultation means a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues

⁵ In case where responsibility is delegated to subproject contractors during construction phase, borrower shall ensure that the responsibilities on occupational health and safety are included in the contract documents.

⁶ Including nonemployee workers engaged by the borrower/client through contractors or other intermediaries to work on project sites or perform work directly related to the project's core functions.

potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

53. Community Health and Safety. ADB SPS requires the borrower to identify and assess risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the subproject, and shall establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts.

54. Physical Cultural Resources. The borrower is responsible for siting and designing the subproject to avoid significant damage to physical cultural resources. ADB SPS requires that such resources likely to be affected by the subproject are identified, and qualified and experienced experts assess the subproject's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. When the proposed location of a subproject component is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures included in the EMP.

55. ADB SPS International Best Practice Requirements. ADB SPS, 2009 requires that, during the design, construction, and operation of the project, the executing agency shall apply pollution prevention and control technologies and practices that are consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety (EHS) Guidelines. (IFC's General EHS Guidelines⁷ and Sector Specific [Water and Sanitation] Guidelines⁸). These standards contain performance levels and measures that are normally acceptable and applicable to projects. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When Government of India regulations differ from these levels and measures, the PMU and PIUs will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the PMU and PIUs will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS, 2009.

B. National Environmental Laws

56. The implementation of the subprojects will be governed by Government of India and State of Tripura and other applicable environmental acts, rules, regulations, and standards. These regulations impose restrictions on activities to minimize or mitigate likely impacts on the environment. It is the responsibility of the project executing and implementing agencies to ensure subprojects are consistent with the legal framework, whether applicable international, national, state, or municipal or local. Key standards include those related to drinking water quality, air quality, effluent discharge, and protected areas. Compliance is required in all stages of the subprojects including design, construction, and operation and maintenance.

⁷<https://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES>

⁸<https://www.ifc.org/wps/wcm/connect/e22c050048855ae0875cd76a6515bb18/Final%2B%2BWater%2Band%2BSanitation.pdf?MOD=AJPERES>

57. **Environmental Assessment.** The Government of India EIA Notification of 2006 replacing the EIA Notification of 1994, sets out the requirement for Environmental Assessment in India. This states that Environmental Clearance is required for specified activities / projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts. None of the components of subproject proposed for this Package falls under the ambit of the EIA Notification 2006, and therefore EIA Study or environmental clearance is not required for the subproject.

58. **Applicable Environmental Regulations.** Besides EIA Notification 2006, there are various other acts, rules, policies, and regulations currently in force in India that deal with environmental issues that could apply to infrastructure development. The specific regulatory compliance requirements of the subproject are shown in **Table 12**.

Table 12: Relevant Rules and regulations National and International

Sr. No.	Law	Description	Applicability in the project
1.	EIA Notification	The EIA Notification of 2006 set out the requirement for environmental assessment in India. Environmental Clearance is required for certain defined activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence.	No project road and drain components attract provisions of EIA notification 2006 and its amendment till date. Sand mining for construction works (if required), requires environment clearance under EIA act. (list of already approved sand mines in Tripura is available on TSPCB website ⁹) PIU/PMU has to ensure that contractor is procuring mining material from approved mines only or get EC for new mines.
2.	Water (Prevention and Control of Pollution) Act of 1974, Rules of 1975, and amendments (1987)	Act was enacted to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, by Central and State Pollution Control Boards and for conferring on and assigning to CPCB/SPCBs powers and functions relating to water pollution control. Such projects have to obtain Consent to Establish (CTE) under Section 25 of the Act from Tripura State Pollution Control Board (TSPCB) before starting implementation and Consent to Operate (CTO) before commissioning.	No project road and drain components attract provisions of Water act and not requiring CTE and CTO from TSPCB.
3.	Air (Prevention and Control of Pollution) Act of 1981, Rules of 1982 and amendments.	This Act was enacted to achieve prevention, control and abatement of air pollution activities by assigning regulatory powers to Central and State boards for all such functions. The Act also establishes ambient air quality standards.	Following will require CTE and CTO from TSPCB: Establishment of DG sets more than 1 MVA. Batching Plant, and Hot mix plants, if any If ready mix concrete and hot mix bitumen is procured from third party, contractor must ensure that the plants, from where material is being purchased is having valid CTE & CTO and copy should be collected from third party and submitted in PIU

⁹ <https://tspcb.tripura.gov.in/sand-mining-ec/>

Sr. No.	Law	Description	Applicability in the project
4.	Environment (Protection) Act, 1986 and CPCB Environmental Standards. (National Ambient Air Quality Standards 2009 and amendments)	Emissions and discharges from the facilities to be created or refurbished or augmented shall comply with the notified standards.	Ensure applicable standards for ambient air quality. Ensure Emission Limits standards for New DG Sets Ensure stack height standards Requirement for DG Sets. Appendix 2 provides applicable standards for ambient air quality. Error! Not a valid result for table. provides vehicular emission norms
5.	Noise Pollution (Regulation and Control) Rules, 2000 amended up to 2010.	Rule 3 of the Act specifies ambient air quality standards in respect of noise for different areas/zones.	Ensure applicable noise standards and noise limits for DG sets. Error! Reference source not found. provides applicable noise standards
6.	Central Motor Vehicle Act Central Motor Vehicle Rules and (Amendment) Rules (1988 and amendment thereafter)	Objective of this Act is to check vehicular air and noise pollution. Vehicles to be used for construction and other purposes need to meet the standards and certificates prescribed as per the Rules, 1989 to control noise, pollution, etc.	Ensure vehicle exhaust emission standards.
7.	Ancient Monuments and Archaeological Sites and Remains Act, 1958 and Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 Tripura Ancient Monuments and Archaeological Sites and Remains Act 1997	The Act designates areas within 100 meters (m) of the "protected monument/area" as "prohibited area" and beyond that up to 200 m as "regulated area" respectively. No "construction" is permitted in the "prohibited area" and any construction activity in the "regulated area" requires prior permission of the Archaeological Survey of India (ASI).	No ASI Monuments falls under impact area of any of the component of this package and no clearance from ASI is required.
8.	The Sexual Harassment of Women at workplace (Prevention, Prohibition and Redressal) Act, 2013	Whereas sexual harassment results in violation of the fundamental rights of a woman to equality under article 14 and 15 of the Constitution of India and her right to life and to live with dignity under article 21 of the Constitution and right to practice any profession or to carry on any occupation, trade or business which includes a right to safe environment free from sexual harassment	Applicable
9.	Labor Laws upto 2019	The contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The contractor shall base the employment relationship upon equal opportunity and fair treatment and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline. The contractor shall provide equal wages and benefits to men and women for work of equal value or type.	Applicable labor laws including amendments issued from time to time applicable to establishments engaged in construction of civil works. Appendix 5 provides applicable labor laws including amendments issued from time to time applicable to establishments engaged in construction of civil works.

Sr. No.	Law	Description	Applicability in the project
10	Biodiversity Act of 2002	The Biodiversity Act 2002 primarily addresses access to genetic resources and associated knowledge by foreign individuals, institutions or companies, to ensure equitable sharing of benefits arising out of the use of these resources and knowledge to the country and the people.	Not applicable
11	Wildlife Protection Act, 1972 amendment 1991	This overarching Act provides protection to wild animals, birds, plants and matters connected with habitat protection, processes to declare protected areas, regulation of wildlife trade, constitution of state and national board for wildlife, zoo authority, tiger conservation authority, penalty clauses and other important regulations.	None of the components of the subproject are located within the protected Area. Therefore, this act is not applicable.
12	The Indian Forest Act, 1927; Forest (Conservation) Act, 1980, amended 1988; Forest (Conservation) Rules, 1981 amended 1992 and 2003; and Guidelines for Diversion of Forest Lands for Non-Forest Purpose under the Forest (Conservation) Act, 1980	The Forest (Conservation) Act prevents the use of forest land for non-forest uses without the clearance from Ministry of Environment, Forests and Climate change (MoEFCC), Govt. of India For tree felling NOC will be required	Not applicable; none of the components of the subproject are located in the forest.
13	Wetlands (Conservation and Management) Rules, 2010 & 2017	The Rules specify activities which are harmful and prohibited in the wetlands such as industrialization, construction, dumping of untreated waste and effluents, and reclamation. The Central Government may permit any of the prohibited activities on the recommendation of Central Wetlands Regulatory Authority.	No sub project components will be planned nearby the designated wetland
14	Solid Waste Management Rules 2016	Rules to manage municipal solid waste generated; provides rules for segregation, storage, collection, processing, and disposal Responsibility of Solid Waste Generator: Segregate and store the waste generated in three separate streams namely bio- degradable, non-biodegradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorized waste pickers or waste collectors as per the direction or notification by the local authorities from time to time.	Solid waste to be generated at proposed facilities shall be managed and disposed in accordance with the MSWM Rules Contractor to follow all the rules during construction works.
15	Construction and Demolition Waste Management Rules, 2016	Rules to manage construction and to waste resulting from construction, remodeling, repair, and demolition of any civil structure. Rules define "construction waste" as waste comprising of building materials, debris resulting from construction, re-modeling, repair and demolition of any civil structure.	Construction and demolition waste generated from the project construction shall be managed and disposed as per the rules

Sr. No.	Law	Description	Applicability in the project
16	Hazardous Waste Rules 2016	The occupier of Hazardous waste shall be responsible for safe and environmentally sound management of hazardous and other wastes. As described in rules, including (a) prevention; (b) minimization; (c) reuse, (d) recycling; (e) recovery including co-processing; (f) safe and legal disposal.	Contractor to comply all the requirements of this Act during construction works.
17	The Child Labour (Prohibition and Regulation) Amendment Act, 2016	No child below 14 years of age will be employed or permitted to work in any of the occupations set forth in the Act's Part A of the Schedule or in any workshop wherein any of the processes set forth in Part B of the Schedule. Child can help his family or family enterprise, which is other than any hazardous occupations or processes set forth in the Schedule, after his school hours or during vacations	No children between the age of 14 to 18 years will be engaged in hazardous working conditions.
18	Notification from Ministry of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation), central ground water authority on 20 th September 2020. Guidelines to regulate and control groundwater extraction in the country	No Objection Certificates for ground water extraction to industries or infrastructure projects or Mining Projects etc.- All new/existing industries, industries seeking expansion, infrastructure projects and mining projects abstracting ground water, unless specifically exempted, will be required to seek No Objection Certificate from Central Ground Water Authority or, the concerned State/ UT Ground Water Authority as the case may be.	Not applicable
International treaties			
19.	Ramsar Convention, 1971	The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. India is one of the signatories to the treaty. The Ramsar convention made it mandatory for the signatory countries to include wetland conservation in their national land use plans.	No Ramsar protected area near proposed project towns
20.	Wetlands (Conservation and Management) Rules, 2017	The Rules specify activities which are harmful and prohibited in the wetlands such as industrialization, construction, dumping of untreated waste and effluents, and reclamation. The Central Government may permit any of the prohibited activities on the recommendation of Central Wetlands Regulatory Authority.	Not applicable as subprojects components of different sectors are not located within any designated wetland area.
21.	Montreal Protocol 1992	India is a signatory of this convention which aims for reduction in the consumption and production of ozone-depleting substances (ODS), while recognizing differences in a nation's responsibilities. Ozone depleting substances are divided in two groups Chlorofluorocarbons (CFCs) and Hydro chlorofluorocarbons (HCFCs).	Not applicable in this project as no ODS are involved in construction works.

Sr. No.	Law	Description	Applicability in the project
22.	Basel Convention on Trans-boundary Movement of Hazardous Wastes, 1989	India is a signatory of this convention which aims to reduce trans-boundary movement and creation of hazardous wastes.	Contractor to follow the provisions of Hazardous Waste Rules 2016 for storage, handling, transport and disposal of hazardous waste emerged during construction works.
23.	Convention on Migratory Species of Wild Animals (CMS), 1979 (Bonn convention)	CMS, also known as Bonn convention was adopted in 1979 and entered into force on 1 November 1983, which recognizes that states must be the protectors of migratory species that live within or pass through their national jurisdictions, and aims to conserve terrestrial, marine and avian migratory species throughout their ranges. CMS Parties strive towards strictly protecting these species, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them.	Not applicable to this project as no migratory species of wild animals are reported in the project areas.

Table 13: List of NOC Required for Safeguarding the Project

S. No	Construction Activity	Statute under which Clearance is Required	Implementation
1.	Land for project activity	Allotment and approval for specific land use	ULB
2.	Road cutting for drain construction works	Permission from ULB and PWD (where applicable)	PIU
3.	Establishment of construction camps	Allotment and approval for specific land use	Contractor
4.	NOC for disposal of excess Earth	Construction & Demolition Waste Management Rules, 2016	Contractor
5.	Tree Cutting	State forest department/Revenue	PIU
6.	Hot mix plants, Crushers, Batching plants and DG Set	Consent to establish and consent to operate under Air Act, 1981 from TSPCB	Contractor
7.	Storage, handling and transport of hazardous materials	Hazardous Wastes (Management and Handling) Rules, 2016 Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989 from TSPCB	Contractor
8.	New Sand mining, quarries and borrow areas	Environmental clearance under EIA Notification 2006	Contractor/ Third Party
9.	Use of vehicles and equipment	Pollution under control certificate (PUC) form RTO	Contractor
10.	Temporary traffic diversion measures	Temporary traffic diversion measure including use of alternate road from District traffic police	Contractor
11.	Use of highway ROW for construction area	National Highway Authority of India	PIU

PMU will be overall responsible for supervision in getting all clearances and provide details to ADB through semi-annual report. PMU will ensure availability of all necessary regulatory clearances and approvals are obtained prior to commencement of works. Respective PIUs, with support of project consultants and contractors, are responsible for obtaining the clearances/permits and ensuring conditions/specifications/provisions are incorporated in the subproject design, costs, and implementation. The PIUs shall report to PMU the status of compliance to clearances/permits as part of the regular progress reporting.

V. DESCRIPTION OF THE ENVIRONMENT

A. Methodology Used for Baseline Study

59. **Data Collection and Stakeholder Consultations.** Data for this report has been primarily collected through comprehensive literature survey, discussion with stakeholder agencies, and field visits to the proposed subproject sites.

60. The literature survey broadly covered the following:

- (i) Project details, reports, maps, and other documents prepared by the Govt. of Tripura
- (ii) Discussions with technical experts of the project team, municipal and Nagar Panchayat authorities, relevant government agencies like Tripura State Pollution Control Board (TSPCB) etc.
- (iii) Secondary data from previous project reports and published articles, and
- (iv) Literature on land use, soil, geology, hydrology, climate, socioeconomic profiles, and other planning documents collected from Government agencies and websites.

B. Physical Resources

61. **Tripura** is in the northeastern part of the subcontinent. It is bordered to the north, west, and south by Bangladesh, to the east by the state of Mizoram, and to the northeast by the state of Assam. It is among the smallest of India's states and is in an isolated hilly region of the country, with various indigenous peoples or tribes accounting for a significant portion of the population. The capital is Agartala. Baseline status of the 4 project towns is given below.

Table 14: Baseline Characteristic of project towns

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
Location	The Kailashahar lies between 24°19'36.52"N latitude and 92° 0'45.46"E longitude. Kailashahar is a municipal council town, the headquarters of the Unakoti district. It is located along the Bangladesh border. This sub-division is bounded by Bangladesh on the north & west, Dharmanagar Subdivision is located on the eastern side and Southern side is covered by Kumarghat. The town is situated on the bank of river Manu, the longest river of Tripura.	Kumarghat lies between 24.9° 9' 30" N latitude and 92° 1' 47" E longitude. Kumarghat is a town with Municipal council located in the Unakoti district, Tripura and headquarters of Kumarghat sub-division & Rural Development Block.	The Dharmanagar lies between 24° 22' 42.7" N latitude and 92°10' 41.9" E longitude. Dharmanagar is a town with a municipal council in the North Tripura district of Tripura. At present Dharmanagar is bound by Moulvibazar of Sylhet, Bangladesh in the North, Karimganj district of Assam in the East and Mizoram state in the South and Kailashahar subdivision of Unakoti district in the west.	Ambassa is located in between 23°55'10.8"N latitude and 91°50'42"E longitude. Ambassa is the head quarter of the Dhalai district of Tripura. Situated in rural region of Tripura, it is one among the 5 blocks of Dhalai district.
Area	The total area of the town approximately is 6.19 Sq. km. It is the fourth largest urban Centre of Tripura divided into 17 wards	The total Area of town is 8.23 km ² , divided into 15 wards.	The town covers an area of about 10.69 sq. km. Dharmanagar is the second largest urban body in the state of Tripura, divided into 25 wards after Agartala	It has a total area of 15.347 km ² and divided into 15 wards
Connectivity	Kailashahar is 140 km from Agartala. India NH-44 passes through the town, The nearest rail connection is in Kumarghat which is at a distance of around 25 Km & nearest airport is Agartala Airport although Kailashahar has also airport but it's not functional	Kumarghat is 120 km from Agartala. It is well connected by Road & Rail network. Since NH-44 passes through the town, it is well connected to Ambassa, Teliamura, Agartala, Panisagar, Dharmanagar. The nearest railway station is Kumarghat. The nearest airport is Agartala Airport.	Dharamnagar is 160 km from Agartala. It is well connected by the Road & Rail network. Since NH-208 A passes through the town,. The town has good train connectivity from Dharmanagar railway station. Daily multiple passenger trains run from Dharmanagar to Assam and state capital Agartala. The nearest airport from Dharmanagar is Silchar and airfield at Agartala.	Dharamnagar is 182 km from Agartala. It is well connected by Road & National Highway 8 passes through the town. Ambassa is also connected through railways. Ambassa district has broad gauge rail connectivity on the Lumding-Agartala line. The nearest airport is Maharaja Bir Bikram Airport in Agartala.

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
Topography	Kailashahar has highest elevation of 18 meter & lowest elevation as 16 meters approx. Most of the area of the town are plains. The valley / plain areas in the town consist mainly of Manu plain and partly of Deo plain. Much of these plain areas are under agricultural land due to its rich humus contents deposited by this river from the hills range.	The topography is mostly of rugged terrain with some undulating surface. About 75 percent of the geographical areas are characterized by hilly terrain covered with dense forests and only about 25 percent are plains. Kumarghat town has an average elevation of 36 meters.	Average elevation of Dharmanagar Town is 21 m above mean sea level. Undulating hilly terrain and uneven plains characterize the topography of the Sub- Division. The Kakri River passes through the heart of Dharmanagar	The Ambassa has an average elevation of 89 m. Ambassa is surrounded by hilly terrain from 3 sides. The river Dhalai passes from the north of Ambassa town. The area of Ambassa Municipal Council is mostly covered by undulating hilly land & Forest area, although there are some plain lands here and there.
Soil	In general Soil of the area is acidic having moderate to high absorptivity and low to moderate productivity. It shows low fertility of soil; however, the concentration of nitrogen is higher.	In general Soil of this district is acidic and pH varies from 4.6 – 6.9. having moderate to high absorptivity and low to moderate productivity. It shows low fertility of soil; however, the concentration of nitrogen is higher.	In general, soils of the area are acidic in nature. Nitrogen and phosphate are low, available potash is medium to high, calcium, magnesium and Sulfur are deficient in these soils. In the area lateritic soil is found in tilla (hilly / small mounds) area, younger soils or river valley soils are found along all major river courses. Clayey soils are found in paddy fields. Apart from these, sandy loam, clayey loam and loamy soils are also available.	The soil found in the hilly tracks of Ambassa in Dhalai district in particular ranges between red lateritic soil and sandy loam to silty clay soil.
Seismicity	Entire north-eastern region of India extending to the Himalayan arc in the north and Burmese arc to the east is among the most seismically active regions of the world. The whole of Tripura State falls under seismic zone V and is highly vulnerable to earthquakes. Hilly areas are highly vulnerable to earthquake. All the 4 towns are vulnerable to earthquake			
Vulnerability-landslides and flood prone area	Flood prone area of Kailashahar are - Jalai, Latiapura Rangautti, Durganagar and Kritantali Saiderpar	The flood prone areas of Kumarghat are Nidevi, Sonaimuri, Notingcherra, Mati Colony, Kumarghat MC Ward No-6, Ward No-3 Tarapur, Indira Colony, Krishnanagar, Radhanagar,	Flood prone areas of the Dharmanagar Municipal Council are identified and broadly grouped as follows, i) Kakri River Basin- Signal Basti, Ward-23; Back Side of Assam Oil Dipo, Ward-22;	Entire Dhalai district has identified flood prone. Flood Prone Zone of Ambassa area are Kulai Purba Nalichara, Paschim Balaram, Paschim, Lalchari, Vivekananda,

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
		Jagannathpur and Kanchanbari.	Jamirala, Ward-10; Dighalbank, Ward-03 ii) Juri River Basin - West Batarasi, Ward No.23; Mantala, Ward No.18; Padmapur River Side, Ward – 20; South Nayapara, Ward-12,13,14 iii) Sukna cherra Basin- Montala, Jail Road, Ward -18; Algapur, Ward -17; Shibbari Cherepar, Ward -7; Sukanta Sarani (Back side), Ward-6 Land slide prone areas of Dharamanagar - Jaithang in Bagbassa area & Balidum in Ananda Bazar area	Nagar, Shanti palli in Ambassa.
Climatic Conditions	The climate in Tripura displays characteristics that are typical of the hilly and mountainous region. Tripura records a low average temperature of 10 degree Celsius in the winter season which rises to a maximum average of 35 degree Celsius in the summer. The altitude of the state also influences the climatic conditions. January is the coldest while July is the hottest. Humidity is generally high throughout the year. In the summer season the relative humidity is varied from 50 percent to 74 percent whereas in the rainy season it is over 85 percent. Rainy season generally starts by about the end of May, but thundershowers usually occur from April to the break of the monsoon. The rainy season continues up to September. The maximum rainfall is usually recorded during the month of June – July. The months of October and November constitute the post monsoon season. Highest rainfall is recorded in between month of May & July. Most of the towns in Tripura has almost similar climatic conditions and rainfall. Average rainfall of Tripura is 2200 mm. Average rainfall of Kailashahar, Kumarghat, Dharmanagar and Ambassa are 2855 mm, 2090 mm, 1716 mm, and 2100 mm respectively. There is no weather station in Kumarghat and Ambassa. Kumarghat is adjacent town to Kailashahar and both towns have same weather conditions. For Ambassa average rainfall data of Dhalai district is used. Figure 32 below shows month wise rainfall and Figure 33 depicts the month of rainy days of the project towns.			
Surface water	The State of Tripura is well endowed with surface water resources. As many as ten major rivers are reported to generate an annual flow of 793 million m³ of water. All rivers are rain-fed and ephemeral in nature. All major rivers originate from hill ranges and show a typical drainage pattern called trellis except a few instances of dendrite pattern. Rivers in the project towns are described below. There are numerous small ponds and water bodies within the towns.			

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
	Manu River: Manu River plays major role in Tripura region with unique features starts from its origination in the mountainous regions to moving into the plains in India and Bangladesh thereafter. Length of river is 167 km. River has Northerly flow via Kailashahar to Bangladesh. Kailashahar & Kumarghat (India) and Moulvibazar (Bangladesh) are major cities near Manu River. During its course from northeastern India to neighboring country of Bangladesh, this river has a course with several tributaries until joining its course with Manumukh in Bangladesh based on Kushiya River in the Maulvi Bazar there. As a renowned trans-boundary river, it remains crucial in India as much as in Bangladesh where the course ends. Tributaries - Kushiya River in Maulvi Bazar region in Bangladesh remains the biggest of tributaries that merges with Manu River. Smaller ones are in the Indian regions while major ones lie in Bangladesh. Several big and small canals are connected with this prominent river that serves the important role of tributaries on various places of its course from India to Bangladesh Deo River: One of the important rivers of Tripura is Deo River. The length of this river is 132 Km Deo River originated from Jampui hill, northly flows through Kanchanpur valley and meets with Manu River. This perennial river is a part of Ba rak sub-basin which in turn forms a part of Meghna basin. Kakri/ Juri River: River Kakri/ Juri is the earlier name of River Juri after Kakri Bridge, Krishnapur. Earlier Kakri was a branch of Juri flowing from Krishnapur towards Bangladesh. But currently the Juri River after Krishnapur is almost dry and the water from Juri flows through Kakri. Presently the Kakri River has changed her name as Juri. The Juri River is a trans-boundary river in India and Bangladesh. It rises in the Jampui Hills of the Indian state of Tripura. It enters Kulaura Upazila of Maulvi Bazar District of Bangladesh. Later it joins Kushiya River. The Juri has a length of 79 km having catchment area of 482.46 Sq. km. The annual flow in the river Juri is 15709 thousand m³ which is 1.98 % of the total flow. The Juri River is a transboundary river in India and Bangladesh. Juri river passes through Dharamanagar town. Dhalai River: The Dhalai River (also known as Dhala River) a trans-boundary river in India and Bangladesh. It rises in the mountains of the Indian state of Tripura. It enters Kulaura Upazila of Maulvibazar District of Bangladesh. Later it joins Manu River in Rajnagar Upazila. The co-ordinates of Dhalai River at Ambassa are 23.55'128" N and 91.51'204" E in degrees minutes seconds (DMS). It originates from Atharamura Hill and is 117 km long. Some of the popular riverside townships of Dhalai River are the towns of Ambassa, Baralutma and Kamalpur Figure 34 depicts the entire watershed map of entire state of Tripura depicting major rivers while Figure 36.37 and 38 depicts the watershed map of Kailashahar, Kumarghat, Dharmanagar and Ambassa respectively. Water quality data – Raw and Treated Water: Testing results shows that treated water is exceeding the Indian standard permissible limits for Turbidity at Kailashahar, Dharamanagar and Ambassa. Residual chlorine is generally higher at treatment plant and eventually reduces while reaching consumer end. Test results is presented in Table 15.			
Groundwater	The State of Tripura is occupied by the rocks ranging in age from Upper Tertiary to Quaternary. Mobile trough geo-synclinal deposition of Barail group followed by flysch type of Surma & Tipam sediments, overlain by Dupitila formation, is noticed in the State. Most of the longitudinal synclinal valleys of the state are the basins of deposition of recent formation. Recent alluvium occurs along the streams and the flood plains of major rivers.			

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
	Ground water occurs under unconfined condition in Dupitila, Recent & Tipam formations. Besides, it also occurs under confined to semi-confined conditions in Tipam formation at considerable depth. Recharge areas for the deeper aquifer lies in the adjacent anticlinal hills. Wherever a good thickness of impermeable clay beds underlie & overlie the saturated granular zones, auto flow artesian conditions have been found in the valleys, which are the discharge area. The artesian flowing conditions occur in patches both at shallow depth and at deeper depth. The auto discharge of the flowing wells in the State ranges from 100 to 6000 lph. Ground water resources have been assessed block-wise for recharge worthy area. Total Annual Ground Water Recharge of the State has been assessed as 1.31bcm and Annual Extractable Ground Water Resource as 1.06bcm. The Annual Ground Water Extraction is 0.103bcm and Stage of Ground Water Extraction is 9.7 %. All the 59 assessment units have been categorized as 'Safe'. As compared to 2020 assessment, there is no significant change in ground water recharge and ground water extraction in the State. Groundwater Quality: Water Quality of groundwater is assessed by DWS. It can be seen from Table 16 that the except iron contained all tested parameters are within the limit of Indian standard and WHO acceptable standards. Overall, the ground water quality in the project areas in good except iron content.			
Air quality	There are no data on ambient air quality of Project towns, which is not subject of monitoring by the Tripura State Pollution Control Board (TSPCB) because there are no major industries located in and around. Other than traffic there is no significant source of pollution, so levels of oxides of Sulphur and nitrogen are likely to be well within the National Ambient Air Quality Standards (NAAQS). Baseline air quality will be established at specific project locations before start of the construction, this is included in the EMP.			
Noise levels	TSPCB conducted noise level monitoring at different location in town of Tripura. Noise level data for the months of December 2020 are presented in Table 17. Results indicate that at Kailashahar and Kumarghat noise level are already exceeding the permissible limits in Residential and silence zone, in Kumarghat along with residential and silence zone its exceeding in commercial zone also and at Industrial and silent zone at Dharmanagar for day time. For night time Noise level are exceeding Indian permissible limits and WHO guidelines at silent zone for Dharmanagar, Kailashahar and Kumarghat and Commercial zone for Kumarghat.			
Ecological Resources	Tripura a small state of North-east of India having rich content of floral and faunal diversity. Total area of the state is 10,491.69 sq km in which forest area is 6294.29 sq km. Among the forest area percentage of Protected Areas (Pas) in Tripura is about 9.59%. There are 6(six) PAs throughout state which includes 4(four) Wildlife Sanctuary and 2(two) National Parks. National Parks are located within the Wildlife Sanctuary. Rowa and Baramura Eco Park are nearest protected areas near project towns. There are no protected areas, wetlands, mangroves, or estuaries in or within the subproject towns. Forest map of Unakoti district, where Kailashahar, Kumarghat is located, provided in Figure 39. Figure 40 shows Forest map of North Tripura district which shows location of Dharmanagar town and Figure 41 shows Forest map of Dhalai district which shows location of Ambassa town. There is no forest area nearby Kailashahar, Kumarghat, Dharmanagar and Ambassa.			

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
	Rowa wildlife sanctuary (protected area) located 14 km east of Kailashahar; 20 km south west of Kumarghat; 9 km south of Dharmanagar and, 52 km south west of Ambassa. Baramura Eco Park, Teliamura, Khowai District is located 71 km south west of Kailashahar; 58 km south west of Kumarghat; 83 km south west of Dharmanagar and, 28 km south west of Ambassa The village Uttar Unakoti Reserve Forest (RF) and Eco park is located in Kailashahar C.D.Block of Unakoti District in the State of Tripura in India. It comes under Gournagar Community Development Block. The nearest town is Kailashahar, which is about 9 km away from Uttar Unakoti Reserve Forest and distance from Kumarghat is 15 km. The village Dakshin Unakoti Reserve Forest is located in Kumarghat C.D.Block of Unakoti District in the State of Tripura. It is governed by South Unakoti Gram Panchayat. Kumarghat, which is about 15 km away from Dakshin Unakoti Reserve Forest. Deo Reserve Forest village is in Kumarghat Tehsil of North Tripura district in Tripura, India. It is situated 8 km away from sub-district headquarter Kumarghat and 35 km away from district headquarter Kailashahar. Juri RF village is located about 20 km from Dharmanagar. Choraibari RF is located about 11 km from Dharmanagar. There are few reserves forest away from the Ambassa town. Nearest is Kulai Reserve Forest, which is located about 5.16 Km from Ambassa town. Flora: Nearby the project sites trees are mainly Rubber Tree (<i>Hevea brasiliensis</i>), Teak (<i>Tectona grandis</i>) and bamboo. Common species noted in and around Kailashahar Kumarghat and Dharamanagar towns are, Rubber Tree (<i>Hevea brasiliensis</i>), Teak (<i>Tectona grandis</i>), Palm (<i>Areca catechu</i>), Needle wood tree (<i>Schima wallichii</i>), Garjan (<i>Dipterocarpus turbinatus</i>), Mango (<i>Mangifera indica</i>), Coconut (<i>Cocos nucifera</i>), Breadfruit (<i>Artocarpus integrifolia</i>). Common species noted in and around Ambassa town, Teak (<i>Tectona grandis</i>), Sal (<i>Shorea robusta</i>), Gamar (<i>Gmelina arborea</i>), Chamal (<i>Artocarpus chaplasi</i>), Garjan (<i>Dipterocarpus turbinatus</i>), Koroï (<i>Albizia procera</i>), Sundi (<i>Michelia Montana</i>) and Rubber Tree (<i>Hevea brasiliensis</i>). The following trees are found at proposed roads and drains in the cluster IIIA are: <i>Mangifera Indica</i>, <i>Syzygium cumini</i>, <i>Cerbera odollam</i>, <i>Tectona grandis</i>, <i>Neolamarckia cadamba</i>, <i>Cerbera odollam</i>, <i>Bombax ceiba</i>, <i>Gmelina arborea</i>, <i>Morinda tinctoria</i>, <i>Ziziphus mauritiana</i>, <i>Ficus religiosa</i>, <i>Terminalia chebula</i>, <i>Artocarpus heterophyllus</i>, <i>Delonix regia</i>, <i>Tamarindus indica</i>, <i>Mimusops elengi</i> etc. Common Bamboo species recorded across all the subproject towns are Ba rak (<i>Bambusa balcooa</i>), Bari (<i>Bambusa polymorpha</i>), Mritinga (<i>Bambusa tulda</i>), Muli (<i>Melocanna baccifera</i>), Kai (<i>Bambusa nutans</i>), Paora (<i>Bambusa teres</i>), Rupai (<i>Dendrocalamus longispathus</i>), Dolu (<i>Neohuzaeua dullooa</i>), Makal (<i>Bambusa pallida</i>), Pecha (<i>Dendrocalamus hamiltonii</i>), Kailyai (<i>Oxytenanthera nigrociliata</i>), Kanak kaich (<i>Bambusa offinis</i>), Lanthi bans (<i>Dendrocalamus strictus</i>), Tetua (<i>Bambusa spp.</i>), Ish (<i>Bambusa spp.</i>), Jai (<i>Bambusa spp.</i>), Bombash (<i>Bambusa spp.</i>), Sairil/Wadu bamboo (<i>Melocalamus compactiflorus</i>), Bosai (<i>bambusa spp.</i>). Fauna: The subproject locations are plain agricultural and residential/commercial lands. Therefore, existence of wild fauna is not reported. Only domestic animals such as pigs, dogs, cows, buffalos, cats and goats are present in the subproject areas.			

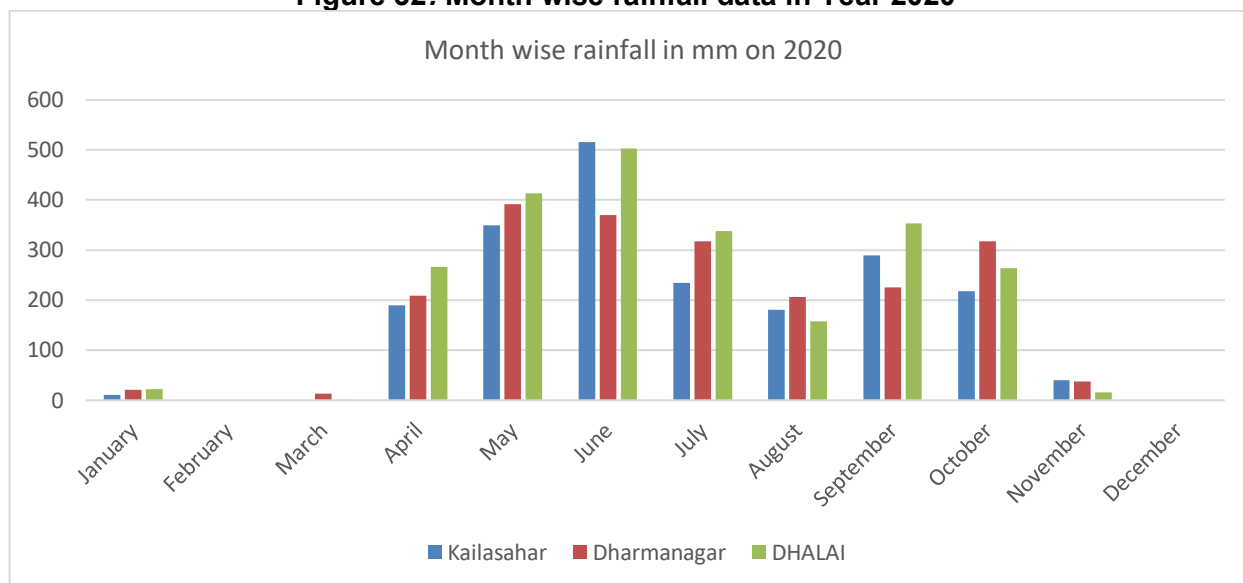
Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
	Fauna in and around forest area are, Palm civet cat (<i>Paradoxurus hermaphroditus</i>), Jungle cat (<i>Felis chaus</i>), Barking Deer (<i>Muntiacus muntjak</i>), Common langur (<i>Presbytis entellus</i>), Rhesus Macaque (<i>Macaca mulata</i>), Phayre's leaf Monkey (<i>Trachypithecus phayeri</i>), Spectacle Langur (<i>Tachypithecus obscurus phayrei</i>). List of some Fish Species found in Manu River is shown below. These are all LC (Least Concerned). <i>Psammogobius biocellatus</i>, <i>Glossogobius giuris</i>, <i>Chanda nama</i>, <i>Parambassis baculis</i>, <i>P. ranga</i>, <i>Securicula gora</i>, <i>A. morar</i>, <i>Rasbora daniconius</i>. Similarly, in Juri river all fishes of least concern category is reported, some of which are. <i>Puntius sophore</i>, <i>Puntius sarana</i>, <i>Puntius ticto</i>, <i>Puntius guganio</i>, <i>Labeo gonius</i>, <i>Labeo calbasu</i>, <i>Labeo bata</i>, <i>Labeo rohita</i>, <i>Labeo angra</i>, <i>Securicula gora</i>, <i>Salmostoma phulo</i>, <i>Salmostoma bacalia</i>, <i>Dvario devario</i>, <i>Amblypharyngodon mola</i>, <i>Osteobrama cotio</i>, <i>Esomus danricus</i>, <i>Cirrhinus reba</i>, <i>Cirrhinus cirrhosis</i>, <i>Cyprinus carpio</i>, <i>Catla catla</i>, <i>Mystus vittatus</i>, <i>Hemibagrus menoda</i>, <i>Sperata seenghala</i>, <i>Channa punctatus</i>, <i>Channa marulius</i>, <i>Anabas testudineus</i>, <i>Notopterus chitala</i>, <i>Notopterus notopterus</i>, <i>Lepidocephalichthys</i>, <i>Ailia coila</i>, <i>Silonia silondia</i>, <i>Macrobrachium rosenbergii</i>, <i>Macrobrachium lamarrei</i>, <i>Clarias batrachus</i>, <i>Oreochromis mossambicus</i>, <i>Tetraodon cutcutia</i> etc. Common fishes of Dhalai river are <i>Puntius sarana</i>, <i>Puntius ticto</i>, <i>Labeo gonius</i>, <i>Labeo calbasu</i>, <i>Labeo bata</i>, <i>Labeo rohita</i>, <i>Labeo angra</i>, <i>Securicula gora</i>, <i>Salmostoma phulo</i>, <i>Salmostoma bacalia</i>, <i>Amblypharyngodon mola</i>, <i>Esomus danricus</i>, <i>Cirrhinus reba</i>, <i>Cirrhinus cirrhosis</i>, <i>Cyprinus carpio</i>, <i>Catla catla</i>, <i>Mystus vittatus</i>, <i>Hemibagrus menoda</i>, <i>Channa punctatus</i>, <i>Channa marulius</i>, <i>Anabas testudineus</i>, <i>Notopterus chitala</i>, <i>Notopterus notopterus</i>, <i>Lepidocephalichthys</i>, <i>Ailia coila</i>, <i>Silonia silondia</i>, <i>Macrobrachium rosenbergii</i>, <i>Macrobrachium lamarrei</i>, <i>Clarias batrachus</i>, <i>Oreochromis mossambicus</i>, <i>Tetraodon cutcutia</i> etc. The Rowa wildlife sanctuary was notified in July ,1988 by the forest Department, Government of Tripura extending thereby special protection under the wildlife (protection act) 1972 over an area of 85.85 Hac. Of erstwhile protected forests (unclassified open Government Forest) in mouza Rowa of tehsil Panisagar under Dhamanagar subdivision. It is the only wildlife sanctuary in north Tripura particularly rich in birds and reptiles. Large flocks of migratory waterfowls congregate in the several water reservoirs developed in this protected area. This Sanctuary has a large wetland (approximately 20 % of the area), hygrophytes' association of ferns and water plants occur on the edges of the water bodies. Location of Rowa wildlife sanctuary- 14 km east of Kailasahar; 20 km south west of Kumarghat; 9 km south of Dharmanagar and, 52 km south west of Ambassa. Baramura Eco Park, Teliamura, Khowai District: Rolling hills of Baramura is characterized by thickly forested hill ridges varying in altitude between 90 m to 136 m and valleys with dense bamboo patched, herbs & shrubs is home to diverse ecological biodiversity. The Baramura eco-park, nestled in the verdant forest at the fringes of Baramura –Deotamura reserve forest where Baramura hill range meets the plains at about 37 km from Agartala on the NH-44, is a manifestation of this conservation need of the ecological biodiversity of Baramura hills. Location of Baramura Eco park: 71 km south west of Kailasahar; 58 km south west of Kumarghat; 83 km south west of Dharmanagar and, 28 km south west of Ambassa			
IBAT screening	There is a key biodiversity area within 7 Km radius to	No protected area or KBA is within the 10 km area from	No protected area or KBA is within the 10 km area from	No protected area or KBA is within the 10 km area from

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa																																											
	Kailashahar town, Raj kandi Reserved Forest which is situated in Bangladesh. Other than this there is 3 protected areas and 6 nos. KBA within 10 to 50 km radius of the subproject A total of 40 IUCN red list (CR and EN) species reported within 50km radius. Out of these 40 IUCN red list species, 14 species are classified as Critically Endangered (CR) and 26 species are Endangered (EN). Birds are common which includes 13 species (CR-7, EN-6), 14 reptile (CR- 6, EN-8), 11 mammals (CR- 1, EN-10). Key biodiversity area and Protected area within the 10 km area of Kailashahar town is shown in Figure 42	project site. 4 nos. of protected area and 7 nos. of key biodiversity area within the buffer of 10 to 50km radius of the subproject A total of 82 IUCN Red List (Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) species are reported within 50km radius. Out of these 82 IUCN Red listed species, 13 species are classified as Critically Endangered (CR) and 26 species are Endangered (EN) and 43 are Vulnerable species. Majorly Birds are common species which includes 25 species (CR-6, EN-6, and VU-13), 21 Reptiles (CR- 6, EN-7, and VU-8), 27 Mammals (CR- 1, EN-10, and VU-16). Key biodiversity area and Protected area within the 10 km area of Kumarghat town is shown in Figure 43.	project site.2 nos. of protected area and 8 nos. of key biodiversity area within the buffer of 10 to 50km radius of the subproject A total of 36 IUCN red list (CR and EN) species reported within 50km radius. Out of these 36 IUCN red list species, 12 species are classified as Critically Endangered (CR) and 24 species are Endangered (EN). Mammals are common species which includes 11 species (CR-1, EN-10), 11 reptile (CR- 4, EN-7), 13 birds (CR- 7, EN-6)). Key biodiversity area and Protected area within the 10 km area of Dharmanagar town is shown in Figure 44	project site. 4 nos. of protected area and 5 nos. of key biodiversity area within the buffer of 10 to 50km radius of the subproject A total of 80 IUCN red list (VU, CR and EN) species reported within 50 km radius. Out of these 80 IUCN red list species, 12 species are classified as Critically Endangered (CR) and 25 species are Endangered (EN). Mammals are common species which includes 11 species (CR-1, EN-10), 12 reptile (CR- 5, EN-7), 12 birds (CR- 5, EN-7)). Key biodiversity area and Protected area within the 10 km area of Ambassa town is shown in Figure 45																																											
Economic Development	<table><tr><th colspan="2">Land Use:</th><th colspan="4">Percentage</th></tr><tr><th>S. No</th><th>Land Use Category</th><th>Kailashahar</th><th>Kumarghat</th><th>Dharmanagar</th><th>Ambassa</th></tr><tr><td>1.</td><td>Residential</td><td>33</td><td>35</td><td>25.86</td><td>15.37</td></tr><tr><td>2.</td><td>Commercial</td><td>0.75</td><td>1</td><td>1.11</td><td>0.12</td></tr><tr><td>3.</td><td>Industrial</td><td>0.2</td><td>0</td><td>0.8</td><td>0</td></tr><tr><td>4.</td><td>Public and Semi-Public</td><td>0.24</td><td>3</td><td>32.63</td><td>0.48</td></tr><tr><td>5.</td><td>Mixed Use</td><td>1</td><td>1</td><td>20.11</td><td>0</td></tr></table>					Land Use:		Percentage				S. No	Land Use Category	Kailashahar	Kumarghat	Dharmanagar	Ambassa	1.	Residential	33	35	25.86	15.37	2.	Commercial	0.75	1	1.11	0.12	3.	Industrial	0.2	0	0.8	0	4.	Public and Semi-Public	0.24	3	32.63	0.48	5.	Mixed Use	1	1	20.11	0
Land Use:		Percentage																																													
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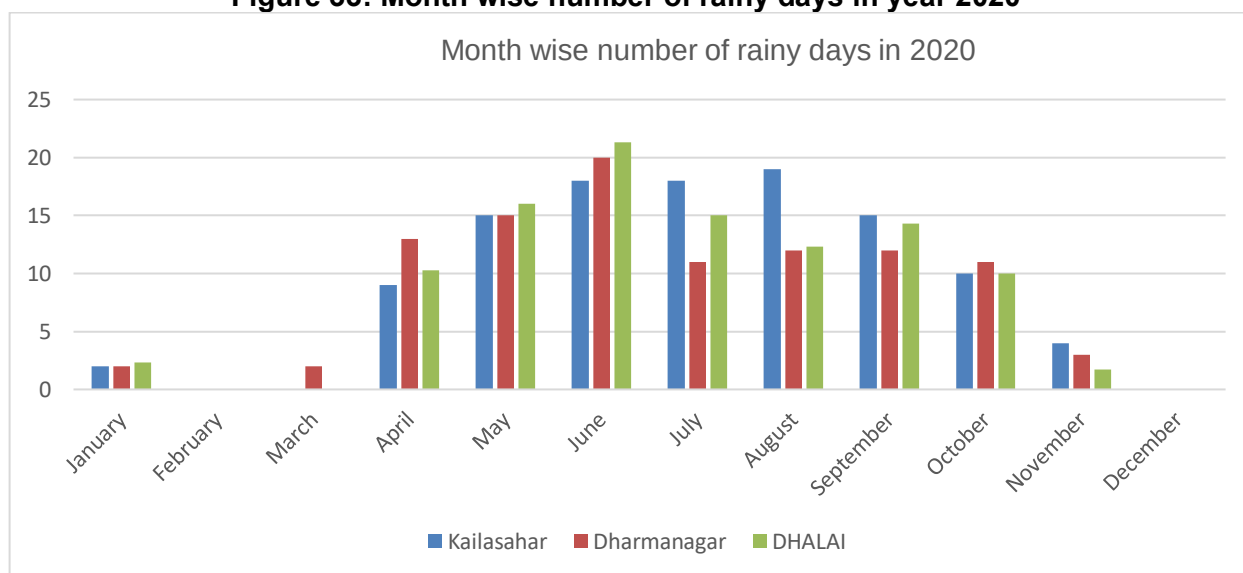
Baseline Characteristic	Kailashahar		Kumarghat		Dharmanagar		Ambassa	
	6.	Recreational	0.69	6	13.58	0.93		
	7.	Transportation and Communication	3.89	16	5.33	4.33		
	8.	Primary Activity	1.43	10	0.17	11.55		
	9.	Protective and Undevelopable Use Zone	8.88	21	0.02	54.29		
	10.	Others	49.92	7	0.4	12.94		
	11.	Total	100	100	100	100.		
Source: GIS base Master plans of towns Industries. Industrial development project towns are very limited. Table 18 lists, industries near project towns). Town Map showing land use pattern are presented in Figure 46-49								
Demographic Parameters	Parameter		Kailashahar	Kumarghat	Dharmanagar	Ambassa		
	House holds		5631	3214	9952	4062		
	Population		22405	13,054	40,595	16285		
	Male		11153	6,517	20,161	8523		
	Female		11252	6,537	20,434	7762		
	Children under the age of 0-6		2098	1422	3850	1867		
	No of Wards		15	13	25	15		
	Schedule Caste (% of total Population)		23.76 %	27.25 %	12.64	22.44 %		
	Schedule Tribe (% of total Population)		3.94 %	5.89 %	1.15	11.48 %		
	Hinduism (% of total Population)		(92.37%)	(96.19%),	92.37%),	95.92%),		
	Islam (% of total Population)		(6.88%).	(0.64%)	6.88%).	0.42%),		
	Others (Buddhism, Christianity, Sikhism and Jainism) (% of total Population)		Less than 1 %	Christianity (0.30%), Sikh (0.06%), Buddhist (2.64%), Jain (0.06%), Others (0.04), Not Stated (0.08%)	Less than 1 %	(2.75%), (Sikh (0.17%), Buddhist (0.70%), Jain (0.01%), others (0.01), Not Stated (0.03%)		

Baseline Characteristic	Kailashahar		Kumarghat		Dharmanagar		Ambassa	
	Sex ratio (female per 100 males)	1009	1003	1014	911			
	Total literacy rate	94.87%	93.61 %	95.12 %	84.87 %			
	Male literacy rate	95.98%	96.50 %	96.04 %	86.82 %			
	Female literacy rate	93.78%.	93.15 %.	94.21 %.	82.72 %.			
History and Tourism	Kailashahar was the ancient capital of the Tripuri kingdom. Its history is associated with Unakoti, noted for its 7th - 9th century AD stone and rock cut. A Shiva disciple who started the Tripurabda (Tripuri Calendar), prayed for Lord Shiva in Chhambulnagar village on the banks of the Manu River. It is speculated that Chhambulnagar, which is mentioned in Rajmala, was situated near Unakoti Hill. The prince prayed for Mahadeva in Unakoti. Kailashahar may be the legendary Chhambulnagar. Some believers thought that Har (Shiva) resides in Kailash. Therefore, the place was known as Kailash Har which was later on transformed to Kailashahar. Tripura king Adi-Dharmapha ruled there in the 7th century. He performed a yagna with pomp and gaiety. Apart from these there are few locations which are:		Kumarghat is dotted with temples, the most famous of which is the Bhabatarani temple. Sculptured hills of Unakoti have high potential tourism in the district. Every year a big fair popularly known as 'Ashokastami Mela' is held in the month of April which is visited by thousands of pilgrims. Temples like Kalibari, Hari mandir, Office Tilla Kalibari, Shib Bari, Ramakrishna Seba Samiti, Choto Kalibari also attract tourists. Founded in the year 1981, on Shivachaturdasi, Bhabatarini Temple is one of the revered temples in Kumarghat. Dedicated to Goddess Kali, Bhabatarini Temple witnesses large number of devotees during Shiva Chaturdashi and Kali Puja.		The beautiful water body in the Dharmanagar which is known by the name Kali Dighi. The lake is one of the major attractions of the town. It has fountains that lit up at night and is a spectacle to behold. It is a good place for taking a leisurely stroll in the evenings, enjoying the fresh air and the surrounding views. The iconic Kalibari is located in the heart of the city. Built hundreds of years back, the kalibari temple is the most revered religious spot in Dharmanagar where the presiding deity is Goddess Kali. The temple is situated on the banks of the Dighi and is thronged by visitors all year round. Located close to Kalibari is the Hari mandir, another important religious spot in Dharmanagar. The temple is situated on the banks of the Dighi and is a significant place of pilgrim spot for people of Dharmanagar.		Shyamsundar Ashram Tila - A brick-built Buddhist monastic complex, ASI protected area is situated in Jolaibari, South Tripura and which is about 81 km away from Ambassa town and also Chaturdasa Devata, ASI protected area is located about 53 km from Ambassa. Longtharai Mandir is the name of Lord Shiva in Kokborok language, according to the Tribal dialect of Tripura. This temple is one of the most popular tourist spots of the Dhalai District, about 7 km from Ambassa at Srinibash Para in Kathalbari VC. There is another Longtharai Mandir at Kumardhan Para of Balaram VC, on a hilltop at 1330 feet height, which can be reached after a short trek. The place offers a great view of the surrounding area. There is annual mela organized by the devotees at the temples on the occasion of Shiv Ratri.	

Baseline Characteristic	Kailashahar	Kumarghat	Dharmanagar	Ambassa
	Lakhmi Narayan Bari, Tirupati balaji Mandir: and Tea gardens			

Figure 32: Month wise rainfall data in Year 2020

(Source: https://www.agri.tripura.gov.in/sites/default/files/Station_wise.pdf)

Figure 33: Month wise number of rainy days in year 2020

(Source: https://www.agri.tripura.gov.in/sites/default/files/Station_wise.pdf)

Rivers of Project Town

Figure 34: Watershed Map of Tripura showing important rivers

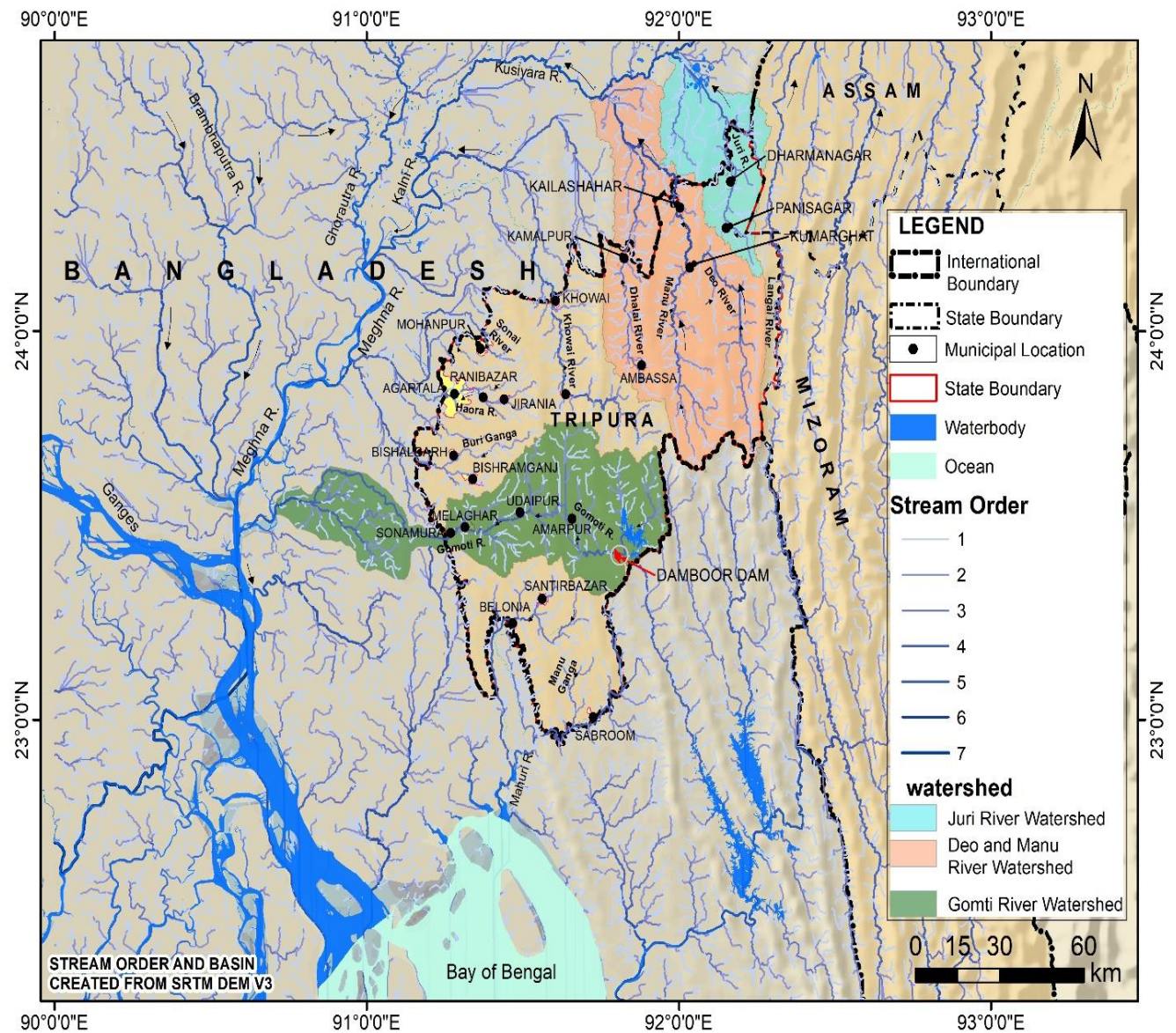


Figure 35: Waterbody Map of Kailashahar MC

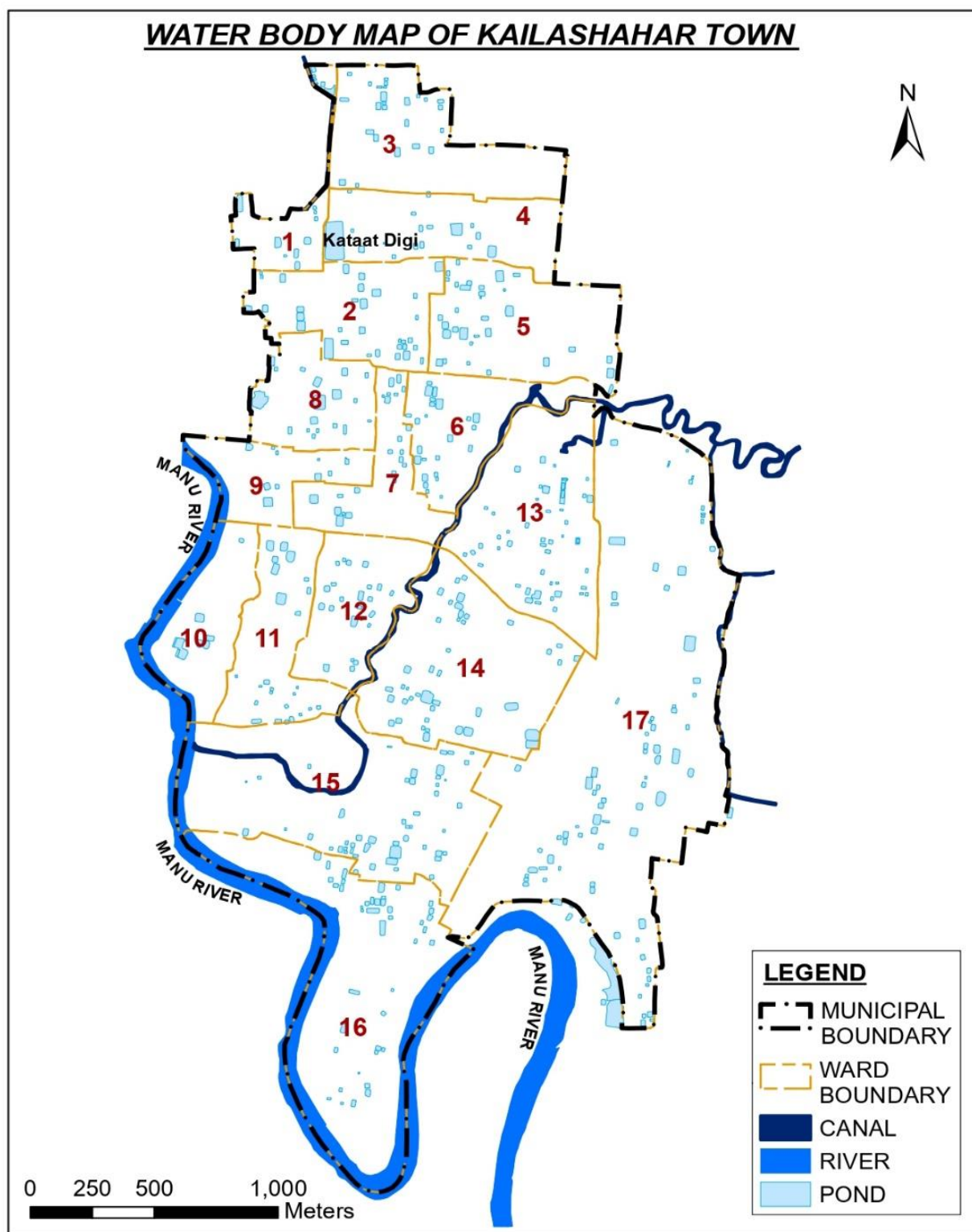


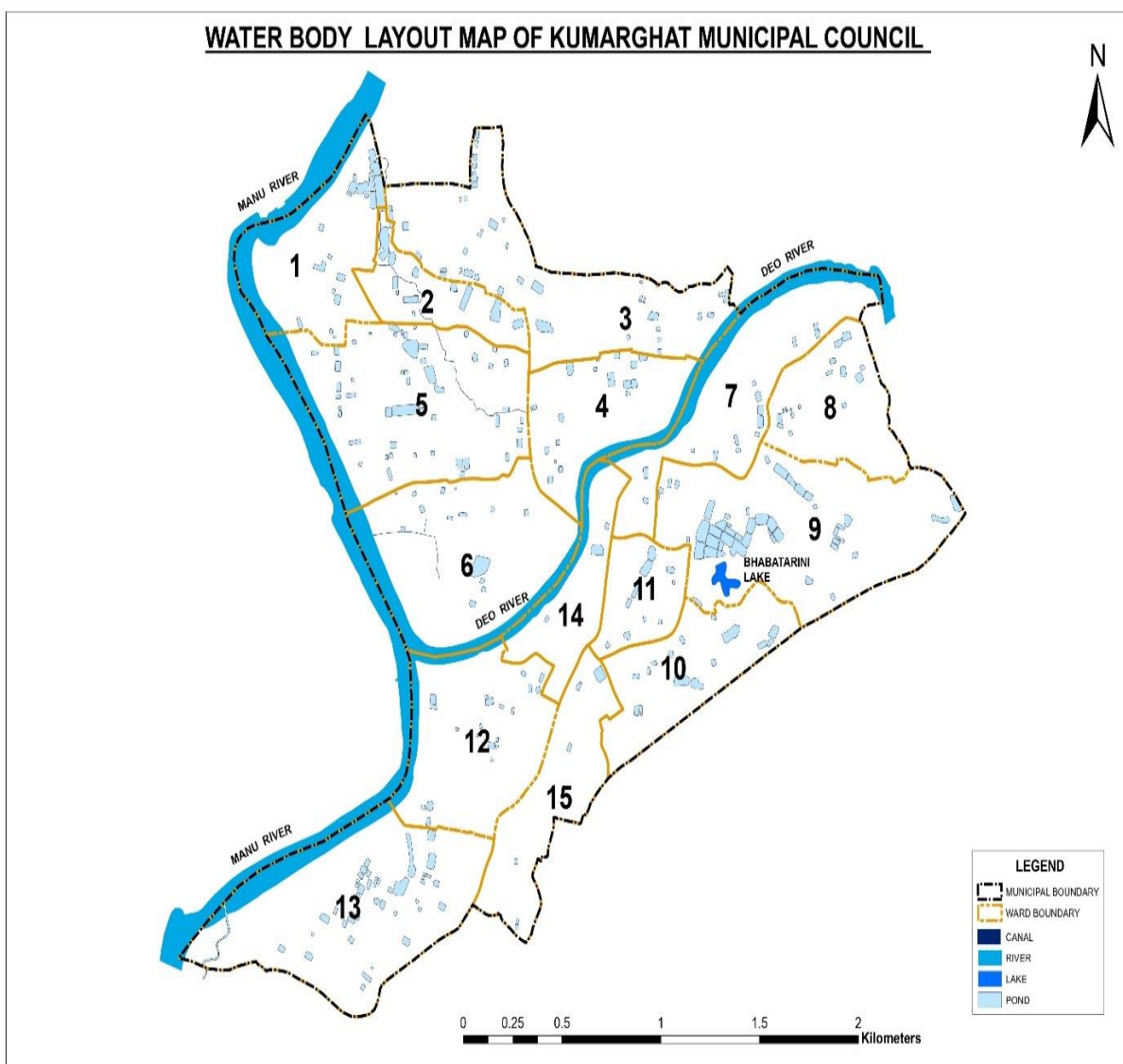
Figure 36: Waterbody Map of Kumarghat MC

Figure 37: Waterbody Map of Dharmanagar MC

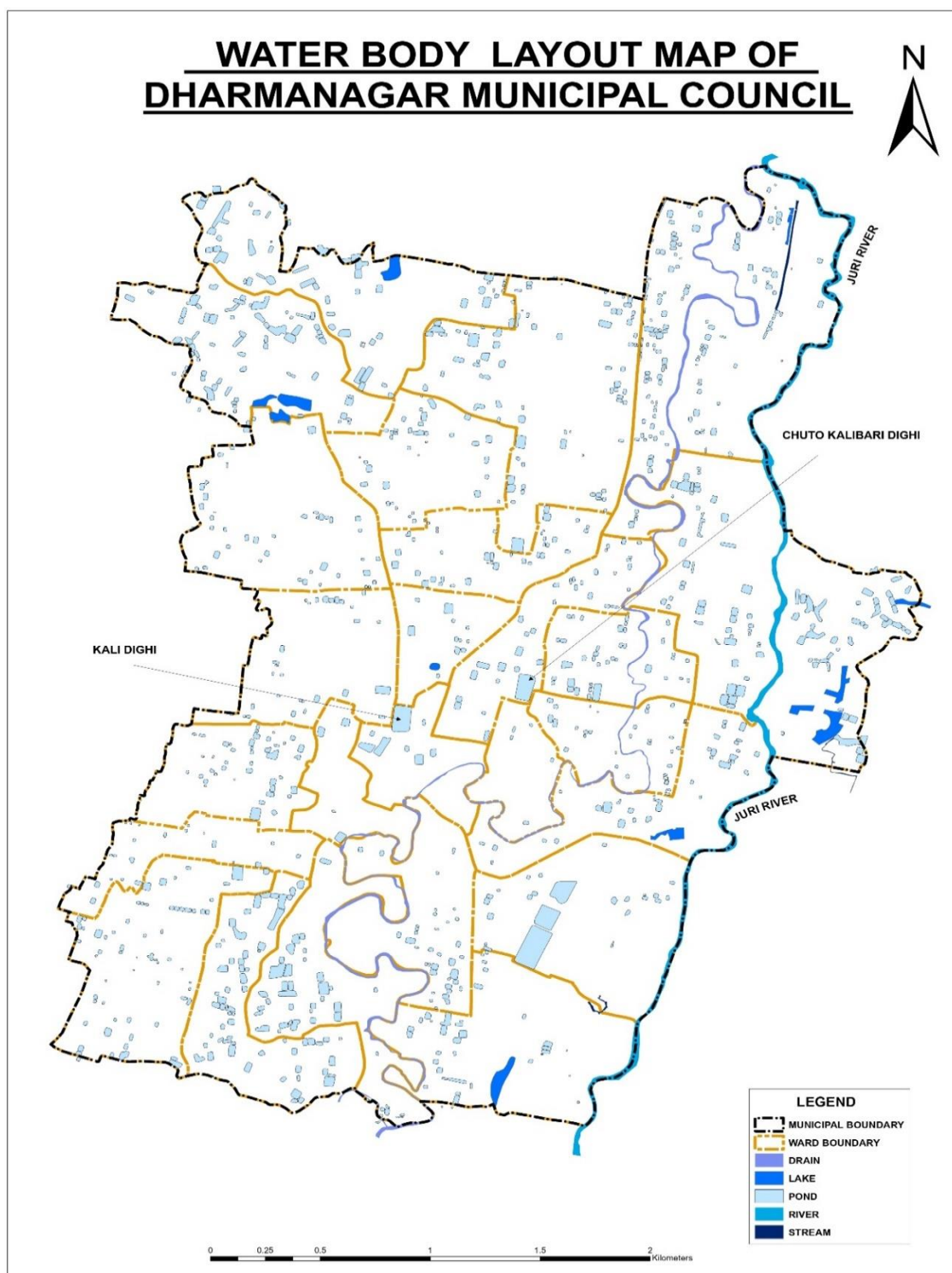


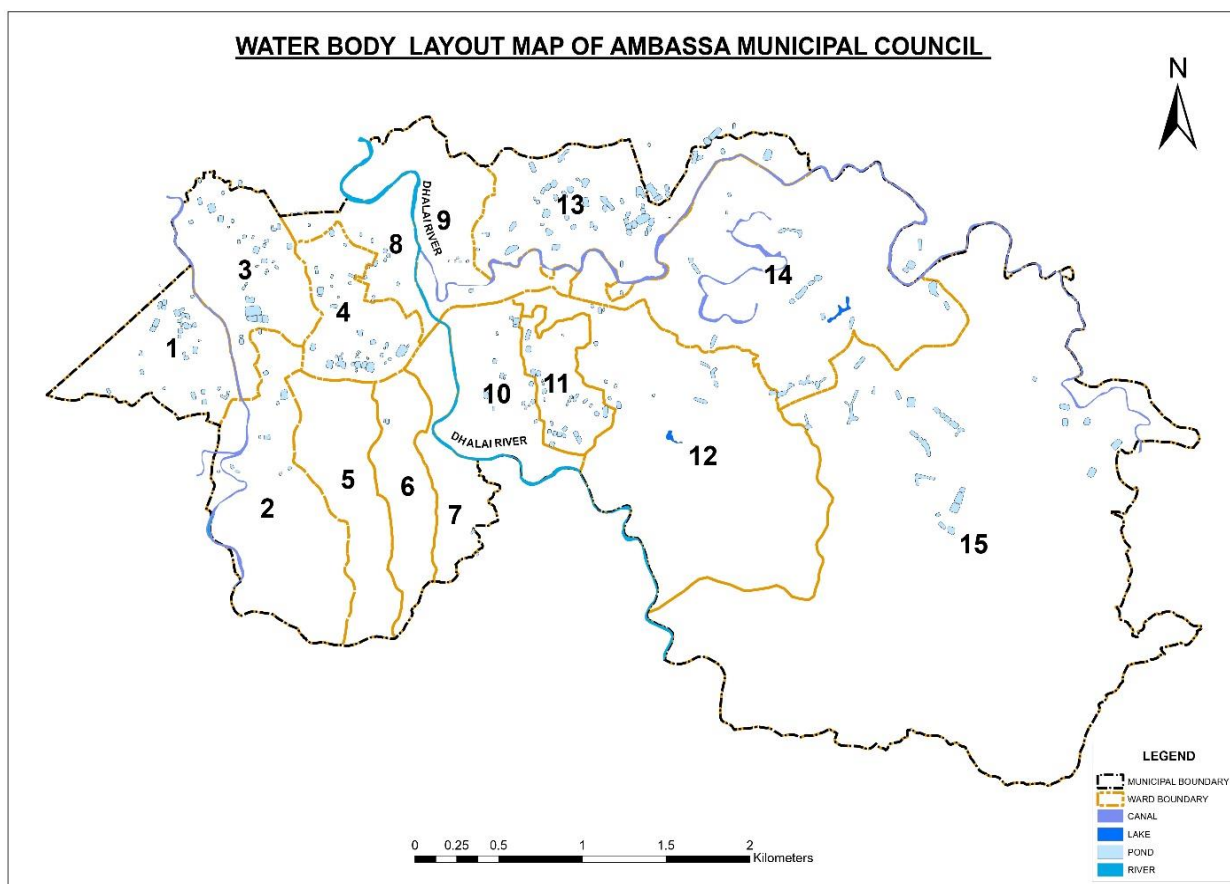
Figure 38: Waterbody map of Ambassa MC

Table 15: Analytical results of Water Quality Data of Raw water from Manu, Deo, Kakri, Dhalai Rivers

Date	Turbidity (NTU)	pH	Hardness (mg/l)	Total Iron (mg/l)	TDS (mg/l)	Alkalinity (mg/l)
Raw	Raw	Raw	Raw	Raw	Raw	Raw
Kailashahar - Raw water from Manu River						
21.12.2022	19.5	8.2	124	1.33		
22.12.2022	20.3	8	120	1.38		
23.12.2022	21.6	8	120	1.34		
26.12.2022	22.8	7.8	116	1.29		
27.12.2022	27.3	7.9	124	1.47		
Average	22.3	7.98	120.8	1.362		
Kumargaht - Raw water from Deo River						
2.12.2022	80.9	8.1	140	1.62		
5.12.2022	81.6	8.5	162	1.594		
7.12.2022	84.2	8.1	158	1.34		
12.12.2022	87.3	8	152	1.29		
16.12.2022	88.9	7.9	106	1.4		
Average	84.58	8.12	143.6	1.4488		
Dharamanagar – Raw water from Kakri River						
01.05.2021		6.8	138	0.764	128.27	132
03.05.2021	132.5	6.9	146	0.781	141.65	128
05.05.2021	136.2	6.8	120	0.784	133.56	108
25.05.2021	216.4	6.9	88	0.794	143.79	94
27.05.2021	203.7	6.8	92	0.789	141.64	100
28.05.2021	196.4	6.9	88	0.764	136.89	96
Ambassa – Raw water from river Dhalai						
May -21	14.8	6.88	90	0.9	164	

Source: DWS of respective towns; Source- DWS, Water Treatment Plant laboratory

Table 16: Groundwater quality results of project town

DWT at	Physical Appearance	Turbidity (NTU)	pH	Total Alkalinity (mg/l)	Total Hardness as CaCO ₃ (mg/l)	Calcium as Ca. (mg/l)	Magnesium as Mg. (mg/l)	TDS (mg/l)	Chloride as Cl (mg/l)	Total Iron (mg/l)	Fluoride (mg/l)	Residual Chlorine (mg/l)	Nitrate (NO ₃) (mg/l)	Total coliform	Fecal Coliform
Kailashahar - January 2023															
Jorapara, Chandipur Block	Clear	2.6	6.7	96	58	-	-	63.2	8.6	1.681	-	0		0	0
Shawtal para AWC	Clear	1.9	6.5	44	66	-	-	57.8	11.3	1.822		0		0	0
Zeelaparishad Office, Gournagar	Clear	2	7.3	122	86	-	-	97.8	4.9	2.081		0		0	0
Kumargaht- December 2022															
Masuali,	Hazy		6.5	56	140			97.24	8.6	2.766		0		0	0
Dharmanagar - May 2019															
Charubasa		0.58	5.61	87.1	60.6	16.4	6.22	132	15.7	2.28	0.06		0.22	<1.8	0.58
Tilthaibaza		1.57	5.07	25.9	40.4	8.38	3.04	92	8.36	0.15	0.06		0.13	<1.8	1.57
Ambassa (January 2023)															
Dasami Ghat	Clear	1.02	6.96		90			314		0.55					
Indian drinking water standards Acceptable limit and (Permissible limit)	Clear	5	6.5-8.5	200 (600)	200 (600)	75 (200)	30 (100)	500 (2000)	250 (1000)	<0.3	1 (1.5)	0.2		0	0
WHO Guidelines for Drinking-Water Quality, 4 th Edition, 2011 ^b											1.5	5		0	0

Source: DWS of respective town

Table 17: Noise level data of Project towns during December, 2020

Type of area	Location	Day time Measured value in dB			Day Time Standards		Night time Measured value in dB			Nighttime Standards		Activities around monitoring locations
		Lmin	Lmax	Leq	Indian	WHO Guidelines	Lmin	Lmax	Leq	Indian.	WHO Guidelines	
Kailashahar												
Commercial	Paiturbazar	56.94	60.92	59.06	65	70	42.48	42.6	42.57	55	55	-
Residential	Kacharghat	53.4	57.3	55.48	55	55	42.04	42.12	42.11	45	55	Public noise.
	Sonamukhi	54.34	58.8	56.6	55	55	41.2	41.5	41.35	45	45	Public noise.
Silent	District & Sessions judge Court	50.98	52.6	51.87	50	55	41.3	42.82	42.11	40	40	Vehicular movement, Public gathering.
Kumarghat												
Industrial	Kumarghat Industrial Estate	56.06	58.78	57.55	75	70	40.22	40.48	40.35	70	70	-
Commercial	Near TSCB Ltd.,	60.42	65.22	63.06	65	70	53.22	56.96	55.27	55	55	Vehicular movement,
Residential	Rabindra Palli	56.3	59.46	57.97	55	55	41.36	41.62	41.49	45	45	Public noise.
Silent	Kumarghat Rural Hospital	54.5	57.76	56.29	50	55	39.98	40.34	40.16	40	40	Public noise.
Dharamnagar												
Industrial	Kameswar Mission Tilla	55.94	60.92	58.49	75	70	49.80	54.60	52.65	70	70	-
Commercial	Old Motor Stand	57.60	62.62	60.22	65	70	48.56	54.04	51.68	55	55	-
Residential	Jamirala College Road	50.66	56.16	53.52	55	55	40.90	41.32	41.12	45	45	-
Silent	Dharmanagar District & Sessions Judge Court	53.56	57.48	55.66	50	55	41.00	41.50	41.26	40	40	Human Activity.
Ambassa												
Commercial	Ambassa Railway Station	48.48	51.2	50.36	65	70	36.28	37.8	37.19	55	55	-
	Kulai Market	50.64	55.26	53.1	65	70	36.06	38.04	37.06	55	55	-
	Ambassa Market	55.4	60.38	58.22	65	70	37.1	41.28	40.84	55	55	-
Residential	Jawahar Nagar DM Office Complex	48.52	52.06	50.34	55	55	35.72	37.42	36.69	45	45	-
	Chandraicherra	46.18	49.78	48.16	55	55	35.86	37.38	36.77	45	45	-
Silent	Dhalia District Hospital	46.58	48.1	47.46	50	55	35.9	37.2	36.69	40	40	-

Source: TSPCB Report

Figure 39: Forest map of Unakoti district

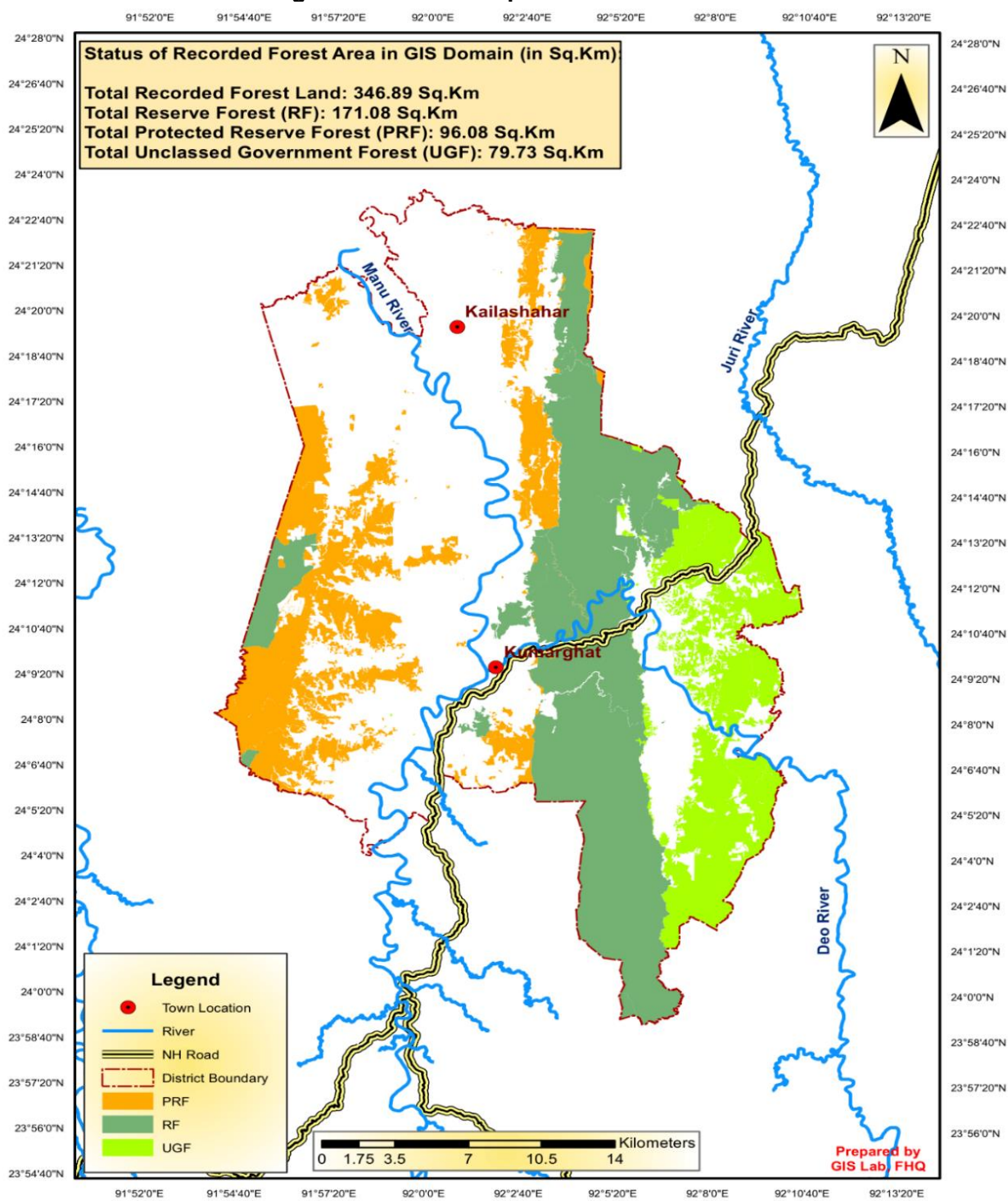


Figure 40: Forest map of North Tripura district

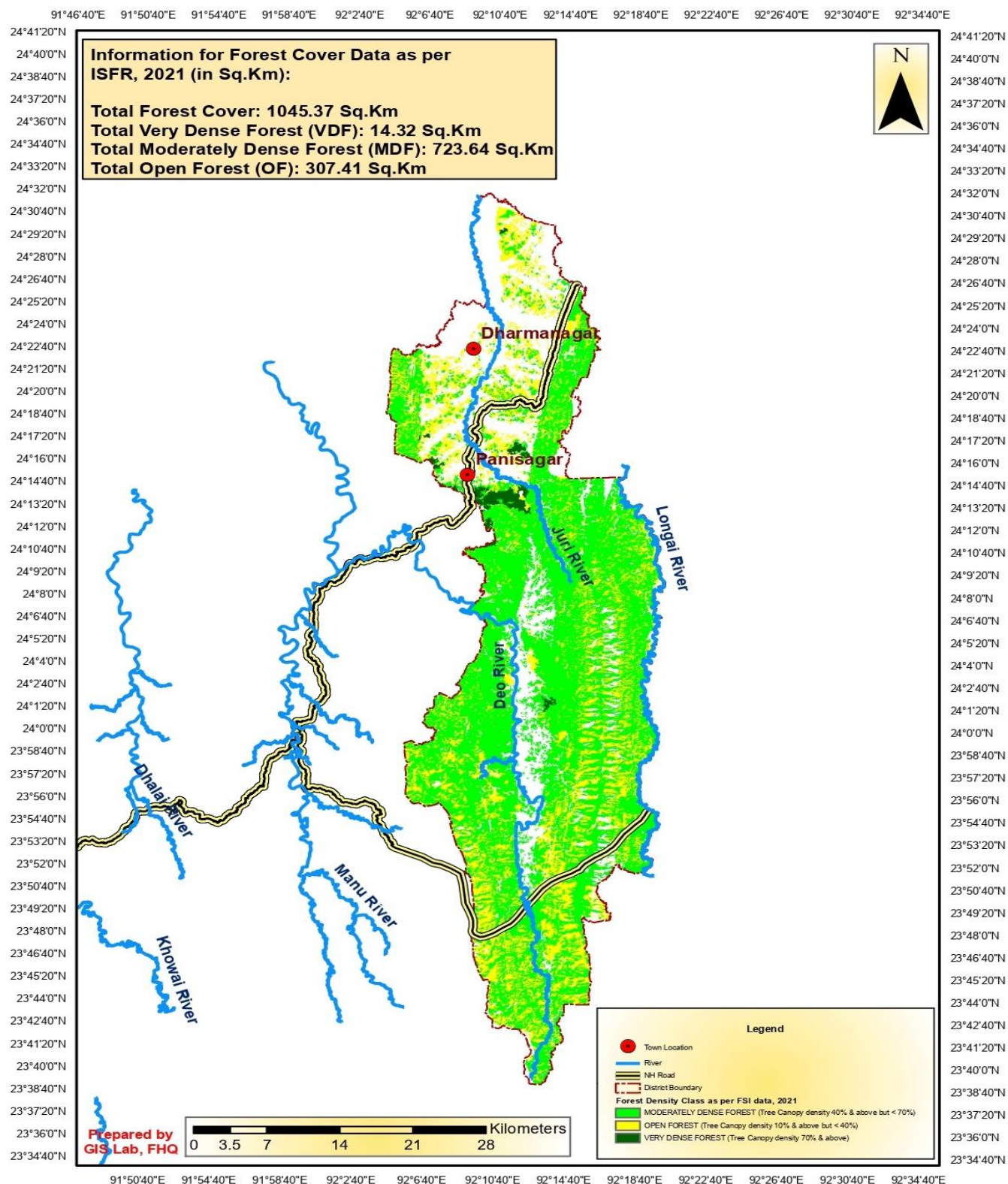


Figure 41: Forest map of Dhalai district

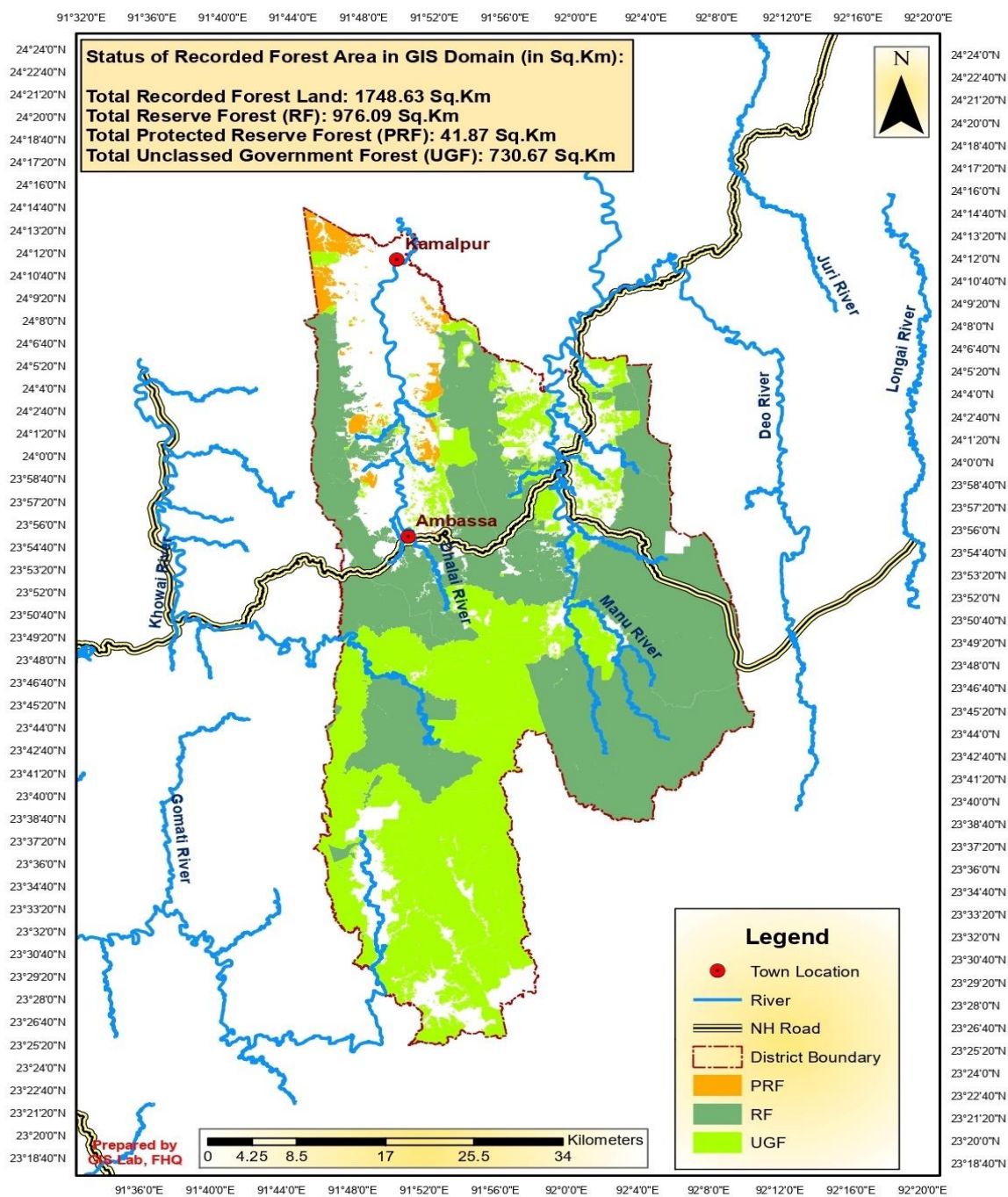
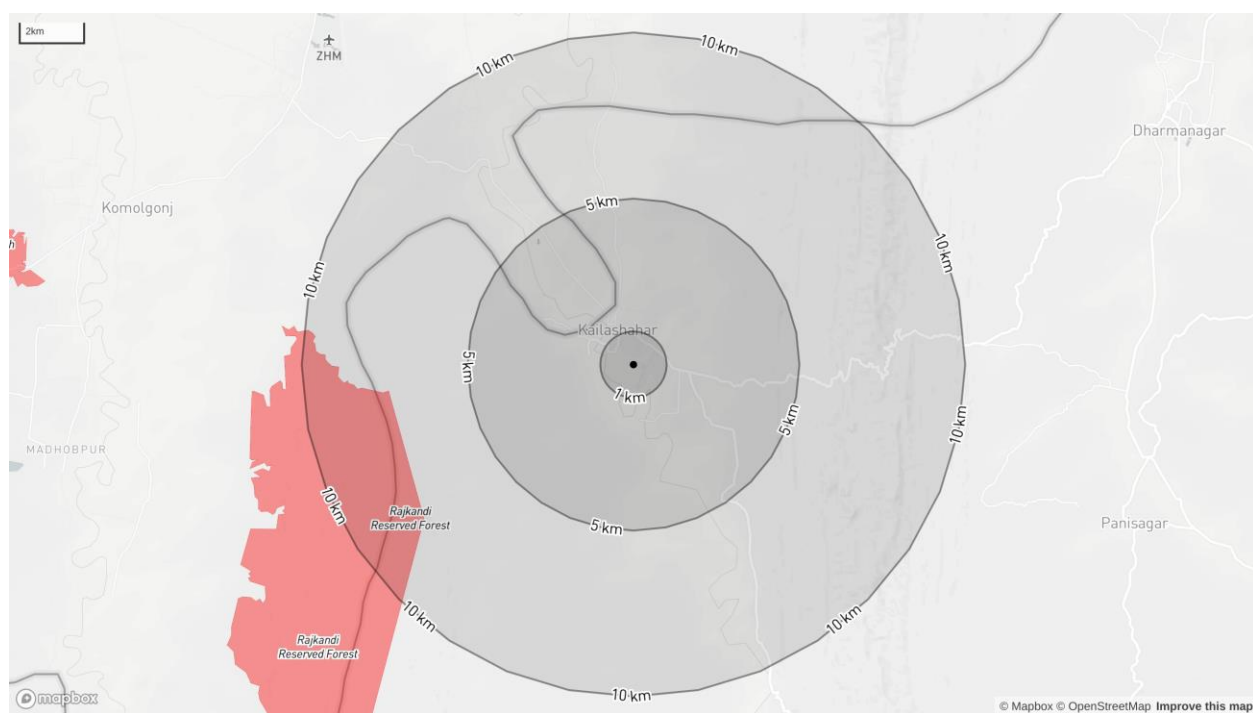
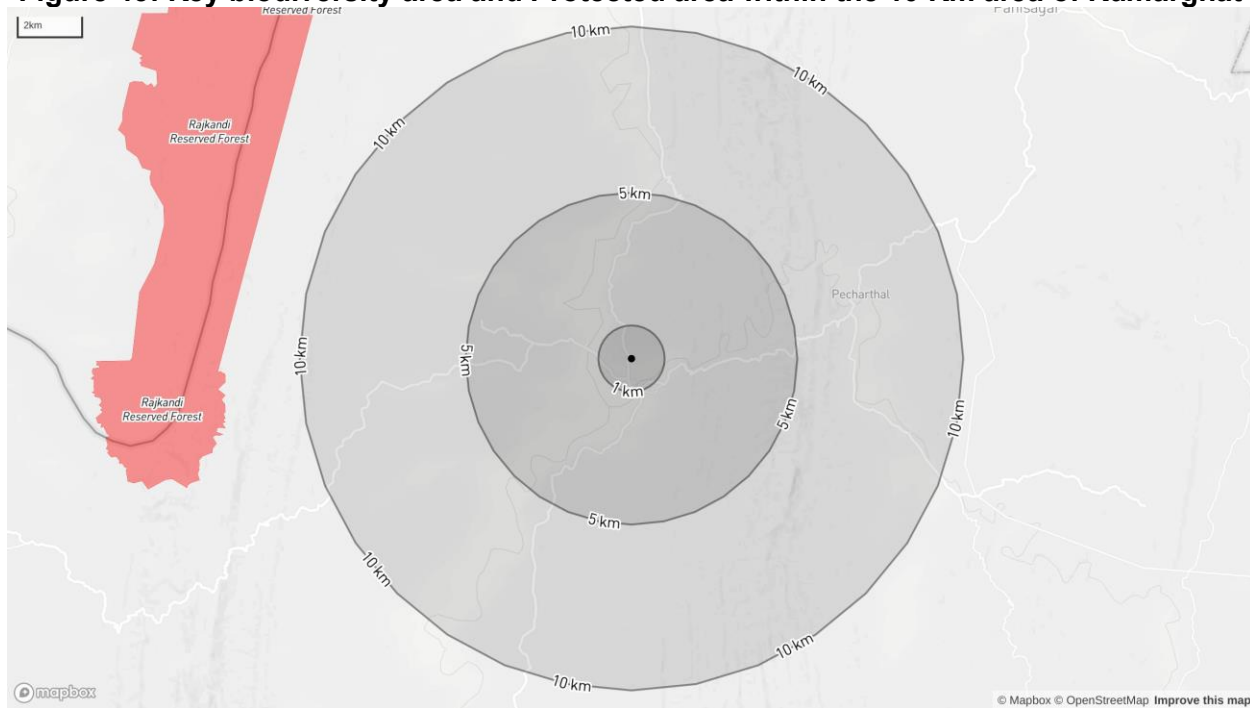


Figure 42: Key biodiversity area and Protected area within the 10 Km area of Kailashahar



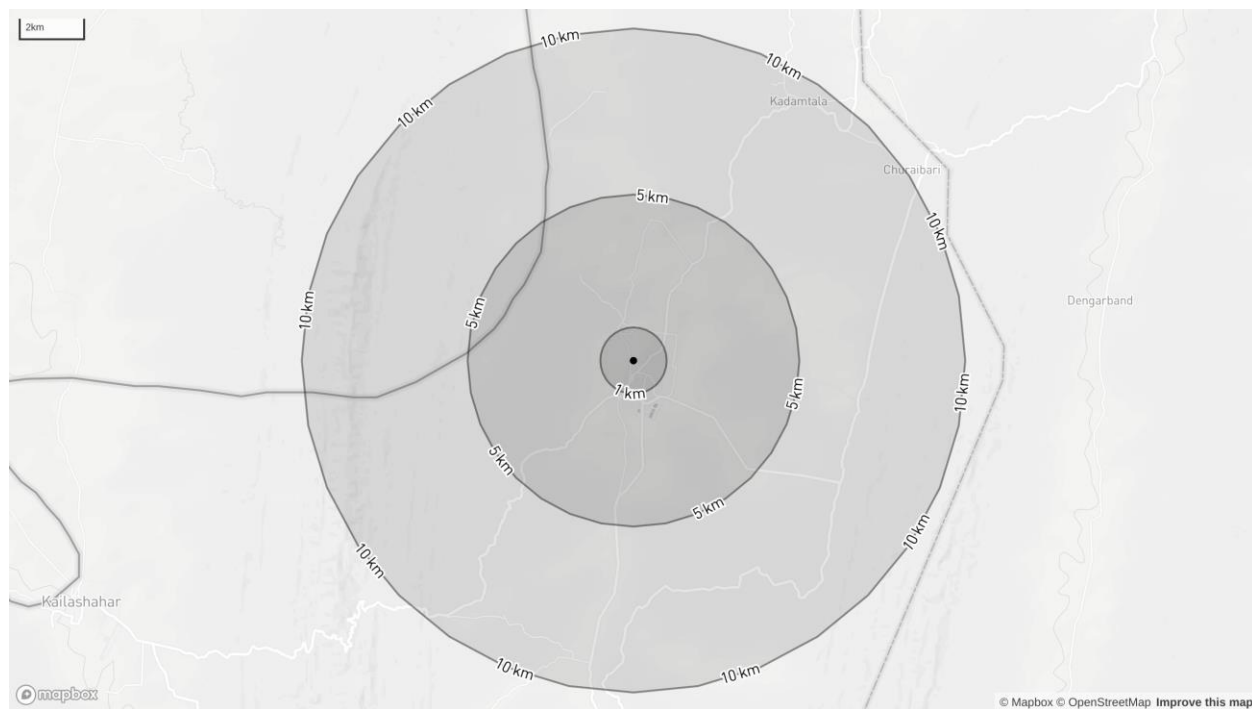
(Source IBAT)

Figure 43: Key biodiversity area and Protected area within the 10 Km area of Kumarghat



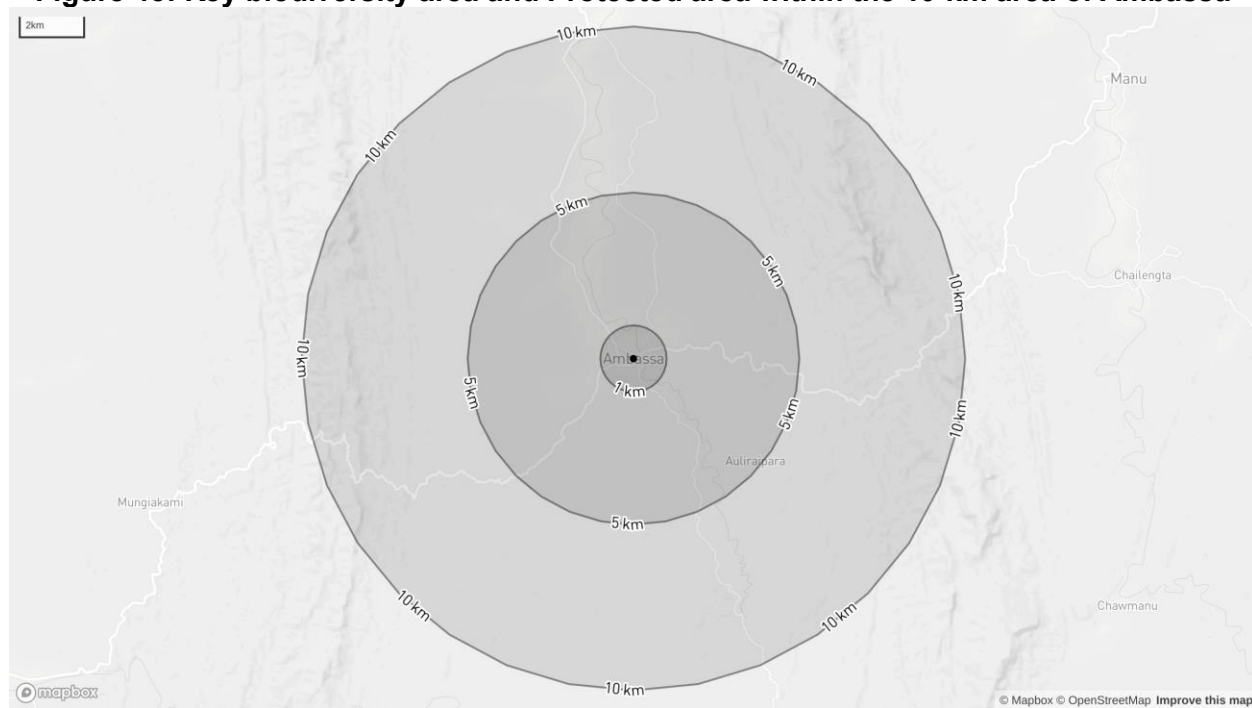
(Source IBAT)

Figure 44: Key biodiversity area and Protected area within the 10 Km area of Dharmanagar



(Source IBAT)

Figure 45: Key biodiversity area and Protected area within the 10 km area of Ambassa



(Source IBAT)

Figure 46: Land use map of Kailashahar Town

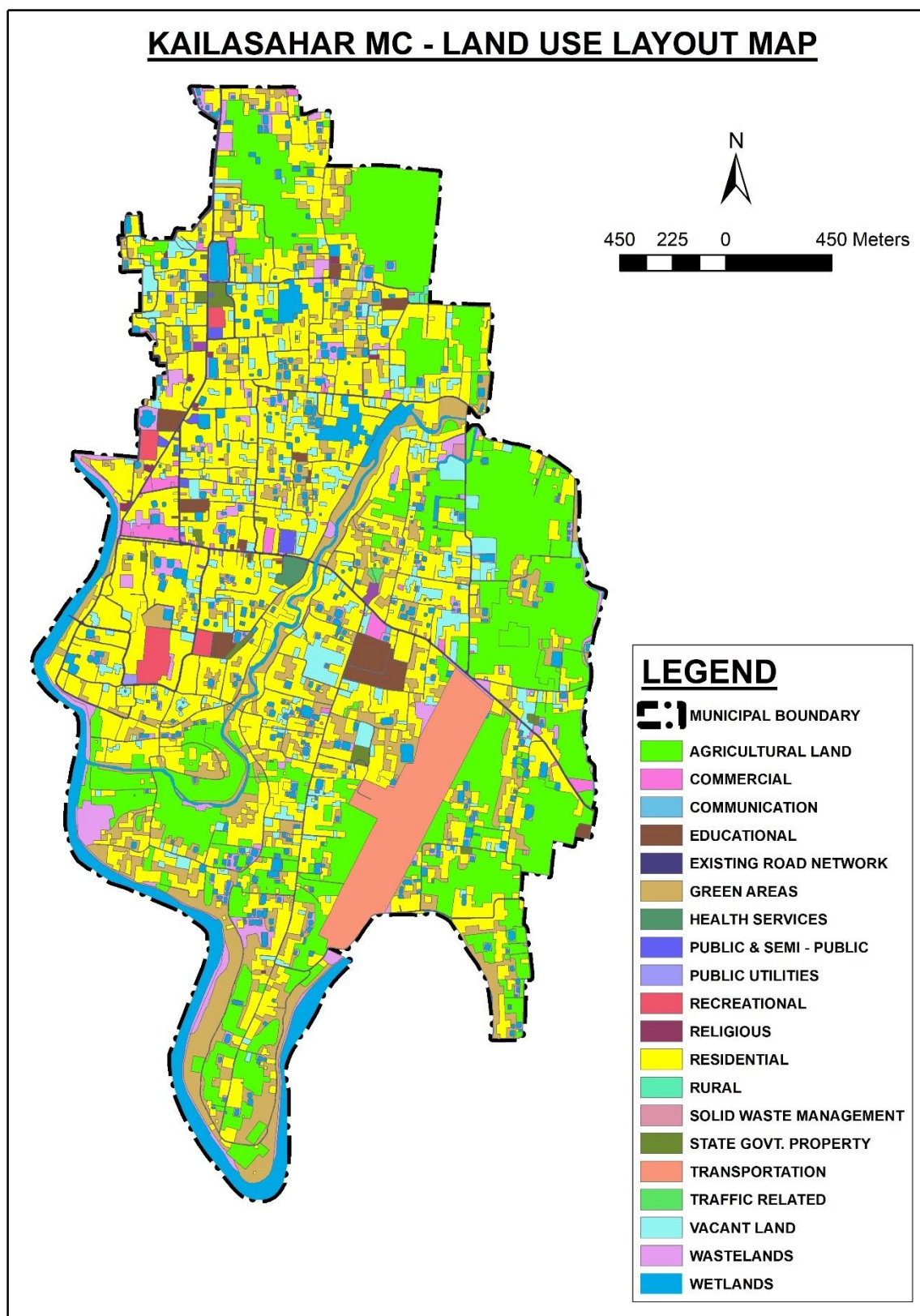


Figure 47: Land use map of Kumarghat Town

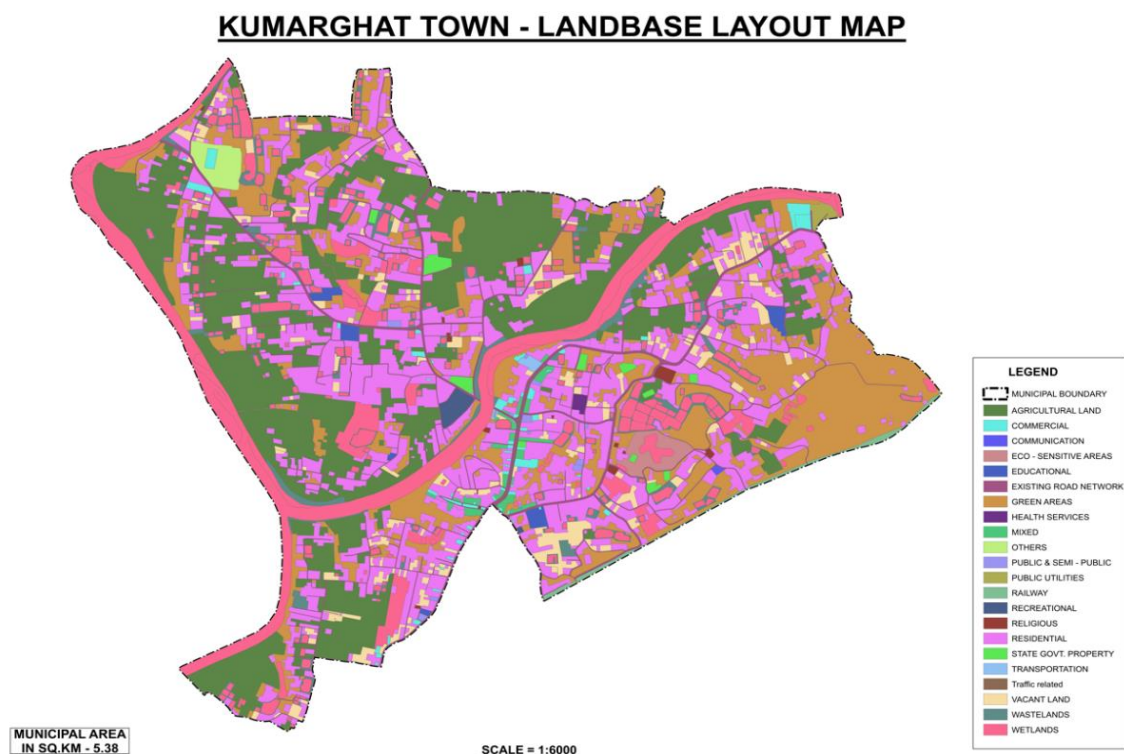


Figure 48: Land use map of Dharmanagar

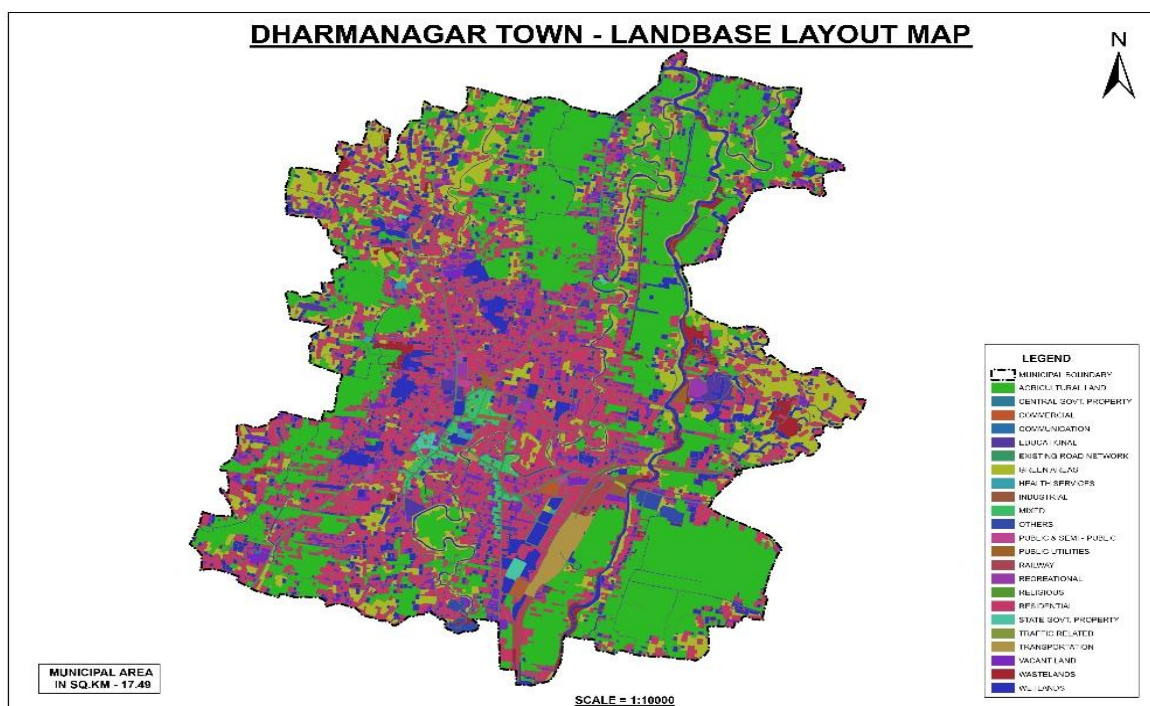


Figure 48: Land use Map of Ambassa

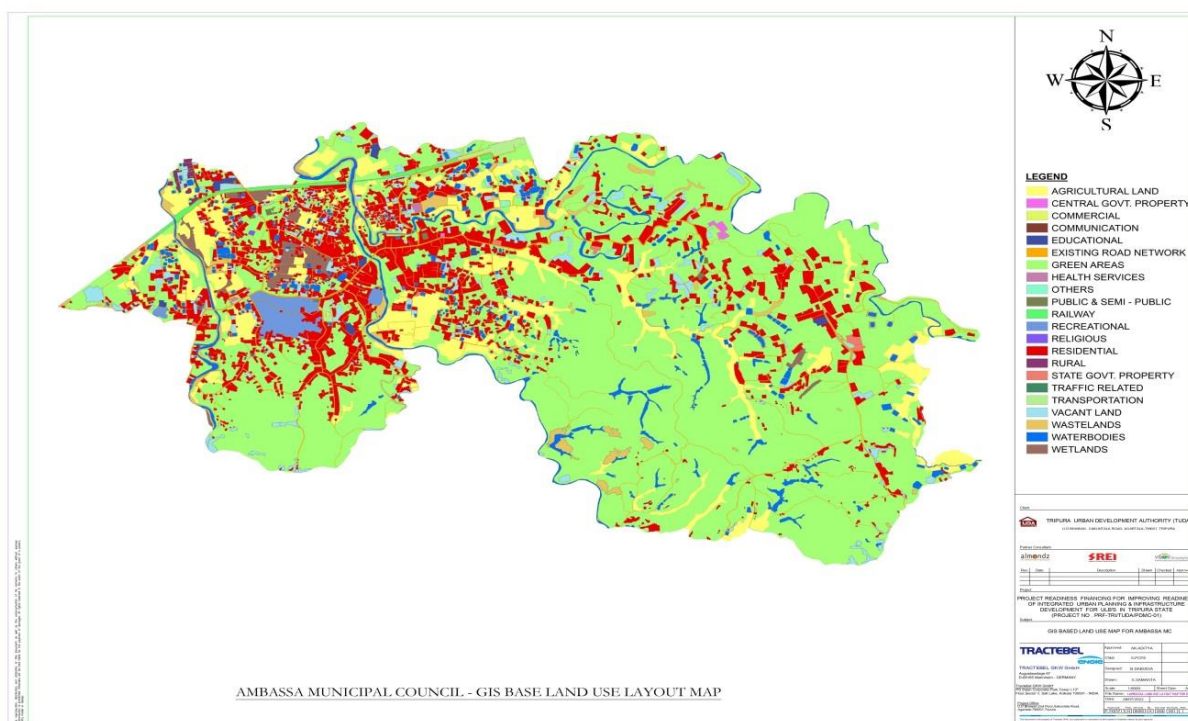


Table 18: List of major industries in and around project towns

Sr. No.	Type of Industry	Details
In and around Kailashahar		
1	Brickfield	No of units- 8
2	Tea Factory	5
3	Saw Mill/ Wood based	3
4	Engineering Factory	9
5	Printing Press	4
6	Food Processing / Ice	3
7	Water treatment / Drinking Water	1
8	Stone crushing / Paver block	1
In and around Kumarghat		
1	M/s Rani Engineering Works	Small scale industry
2	M/s Joy Spray Works	
3	M/s Bajarangbali Mechanical Works	
4	M/s Joy Guru Mechanical	
5	M/s Maa Welding Works	
6	Notingcherra Tea Estate.	
In and around Dharmanagar		
1.	Dharmanagar Industrial Estate	Types of Industries: Maruti Service Centre, Iron Fabrication & Steel Furniture, Rubber Industry, Flour Mill, Paper Plate & up, Drinking water Manufacturing unit.

Sr. No.	Type of Industry	Details
		Food Processing Unit, Mini Dairy Plant, etc.
2.	Bamboo Cluster Incense Stick	Rolled Agarbatti/ Bamboo stick
3.	Bamboo Cluster	Handicraft Items
4.	Bio-fertilizer production centre	Bio-fertilizer
5.	Rubber Plantation	Rubber
In and around Ambassa		
1.	IIDC Lalchhari	Tourism
2.	Bamboo Cluster Incense Stick	Bamboo stick (Ambassa) Bamboo stick (Manu)
3.	Bamboo Cluster	Bamboo Plantation(Ambassa) Bamboo Plantation(Salema)
4.	Bamboo Cluster	Handicraft Items(Salema) Handicraft Items(Ganganagar)
5.	Cold Storage (Potato, Fruits & Vegetable)	1000 MT capacity

C. Subproject Site Environmental Features

62. Features of the selected subproject sites are presented in the following table.

Table 19: Site Environmental Features of Urban Road – Kailashahar

SI no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
1	Unakoti lodge to Bimal Sinha house	271 m with 4 m RoW	The existing bituminous surface is not in good condition. This section of the alignment is an existing road in plain terrain. International border is only 130 m away from the 1st end point of the road. Proposed road passing through the residential area. There is no significant protected forest in and around project area. There is no waterbody near the proposed project road. A school and Anganwadi along subproject road within 10 meters from the edge of the existing road has been identified. A temple has been identified at the 2nd end point of the project road. Those are outside of impact zone. No tree felling is required for this project road. Few utilities shifting requires for this project road. There is no significant protected forest in and around project area, road is located within the urban area surrounded by open land and residential areas	  Anganwadi along the road

SI no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
				 Start point of the road- Unakoti Lodge at RHS
2	PWD road to Gopal Malakar house	456 m with 4 m RoW	Maximum portion of the existing road is foot/pathways traditionally used by the villagers. The existing road has very poor horizontal and vertical geometry. There is no waterbody near the proposed project road. No tree cutting will be required for the proposed project road. Utility shifting may be required for this proposed road. The alignment in this road passes through agricultural field. Land use around the site is residential, open & agricultural field. No demolition work requires to construct the proposed road. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.330243 Longitude: 92.001519 Elevation: 12.01±8 m Accuracy: 19.0 m Time: 13-04-2022 15:08 Note: road no 2

SI no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
				 
3.	Veterinary hospital to Naba Jagrata Club west side of Embankment	930 m with 4-6 m RoW	The existing bituminous surface is in good condition, presently. The existing road has good geometry and has available Right of Way. Land use around the site is residential. A Temple along subproject road within 10 meters from the edge of the existing road has been identified. No utility shifting is required as per site condition. No sensitive receptors are present in proximity of the proposed site. Two trees (<i>Morinda tinctoria</i>, <i>Ziziphus mauritiana</i>) felling may be required for construction of road.	

SI no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
			There is no major waterbody near the proposed road. No protected area and environmentally sensitive areas in or near the proposed alignment.	
				
4	Flood control office to Biswajit Bhattacharjee house	852 m with 4 m RoW	This project road section of the alignment is an existing road in plain terrain. The existing bituminous surface is in good condition. There is one number of big pond on the right side of the road at Chainage 630 m which is 5 m from the existing carriageway. A school (Chainage 540m on RHS) and Anganwadi (Chainage 210m on LHS) along subproject road within 10 meters from the edge of the existing road has been identified. No impact on those structures expected.	 Latitude: 24.318593 Longitude: 92.00296 Elevation: 29.28±7 m Accuracy: 7.4 m Time: 13-04-2022 15:30 (Note: road no 4 starting point)

SI no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
			No tree felling will be required for construction of road. Few utilities shifting may be required. No protected area and environmentally sensitive areas in or near the proposed alignment.	

Table 20: Site Environmental Features Drain – Kailashahar

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
1.	Construction of RCC covered drains left side/ right side of road near Ayush hospital, (veterinary hospital road), Sriniketan shopping complex Unakoti lodge and outfall near Noorpur (approx. length= 5.16 km) Start: Lat- 24.318158°/ long 92.003586° End: Lat 24.336800°/ Long 92.005565°	Proposed drain to be constructed along both side of road (Kumarghat – Kailasahar) and both sides drain end near Unakoti tourist lodge then the drain has been shifted one side of the road and outfall near Noorpur. Proposed drain most of the passing through commercial areas in ward number 01,02,03,04,06,07,08,09,11,12, only. Total length of the drain with different stretches 5.16 meters. The drain will be developed within the available existing RoW. No new land will be acquired from private sources. The drain has been shifted to the left and right of the road for proper other drain connection. Utility shifting, shifting of religious places, felling of 9 trees (<i>Terminalia chebula</i>, <i>Zizyphus xylopara</i>, <i>Magnifera Indica</i>, <i>Artocarpus heterophyllus</i>, <i>Delonix regia</i>, <i>Tamarindus indica</i>) may be required at few stretches for the construction activity and before start of construction NOC to be required from concerned department. There will be temporary impact during construction. The impacts are temporary access blockade in major market / commercial, sensitive areas like hospital, school etc. Existing drain of this area are choked up due to improper sections, slope etc. and improper maintenance. Lined side drains are proposed on both of the road in market areas/habitation to prevent waterlogging. Ayush Hospital is nearly 10 m away from the proposed drain on LHS. Commercial area/shops above the drain. Access needs to be found out before implementation of the project. Existing drain of near RGM hospital area, the drain is inside hospital gate.	 Start point of the drain   Drain near RGM hospital 

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
		No protected area and environmentally sensitive areas in or near the proposed alignment	   Outfall at Laxmi cherra- near bridge  

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
			 Mora cherra outfall , near Jamey Masjid–open area

Table 21: Site Environmental Features for Urban Road-Kumarghat

Sl no.	Road Name	Length of the road(m)	Starting and endpoint of the road	Environmental Features of the Site	Photograph
1	From Akhil Sinha to Santimoy Deb house	367.15 m with 3 m RoW	Starting point- Lat-24.166498° Long- 92.031081° End Point Lat- 24.168906° Long- 92.030879°	The existing road is brick built with an existing ROW of 3 m and, presently a section of the road is in a bad shape, its broken and in few places deep pits are formed, which causes serious problems during monsoon season. Betel nut trees were observed both side of the road, but those will be not impacted. Utility shifting may be required. There is one number of big ponds on the right side of the road at Chainage 330 m which is 11 m from the existing carriageway (outside impact zone). The road mainly passes through residential area. No tree felling will be required for construction of road. No protected area and environmentally sensitive areas in or near the proposed alignment.	 

SI no.	Road Name	Length of the road(m)	Starting and endpoint of the road	Environmental Features of the Site	Photograph
2	From Asram Palli ICDS to Samir Suklabaida House	254.33 m with 4.4 m RoW	Starting point- Lat- 24.174261° Long- 92.032025° End Point Lat- 24.172233° Long- 92.032093°	Maximum portion of the existing road is a brick road. Some portion of the road passing through the agricultural field. A school was noted at the starting point of the road which is adjacent to the proposed road. Land use around the site is residential. There is no significant protected forest in and around project area. There is no waterbody near the project road. Few utility shifting is required as per site visit. There is an open side drain parallel to the proposed road. Tree felling (<i>Bombax ceiba</i>, <i>Magnifera Indica</i>) will be required. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.174265 Longitude: 92.032044 Elevation: 26.71±6 m Accuracy: 10.0 m Time: 07-04-2022 16:40 Note: Road no2 starting point school Powered by NoteCam
3.	From S.E. Office to Nantulal Dey House	303.3 m with 4 m RoW	Starting point- Lat- 24.168557° Long- 92.033745° End Point Lat- 24.168405° Long- 92.036135°	Existing road is a foot track- brick and mud. Maximum portion of the existing road passing through the open land. There is a big pond adjacent to the existing road, outside impact zone. The existing road is earthen road with an existing ROW of 4m. There are a cross drainage structures in the existing road. Shifting of few electric posts may require as per site observation. No tree felling will be required. Land use around the site is residential, agricultural and open area. Few residences are also noted. No forest area nearby the road	 Latitude: 24.168628 Longitude: 92.036049 Elevation: 20.99±4 m Accuracy: 3.9 m Time: 07-04-2022 16:58 Note: Road no3 end point Powered by NoteCam

SI no.	Road Name	Length of the road(m)	Starting and endpoint of the road	Environmental Features of the Site	Photograph
				No protected area and environmentally sensitive areas in or near the proposed alignment.	
4	From Babul Barua house to Tanu Sinha House	304.7 m with 3 m of RoW	Starting point- Lat- 24.165901° Long- 92.029898° End Point Lat- 24.165880° Long- 92.027096°	The project road passes through the residential area. There is very little space for the construction of road. The existing condition of the road is non motorable. Horizontal curve is mostly insufficient in built-up areas. There is a waterbody near the project road, but outside the impact zone. Utility shifting is not required for construction this road. No tree felling is required. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.165955 Longitude: 92.028232 Elevation: 43.35±6 m Accuracy: 4.5 m Time: 07-04-2022 16:32 Note: Road 4 pond

Sl no.	Road Name	Length of the road(m)	Starting and endpoint of the road	Environmental Features of the Site	Photograph
5	From Ujjal Sharma House to Dilip Sinha House and From Shyamal Bhattacharya house to Nikrunja Das House	305.7 m with 3 m RoW	Starting point 1- Lat- 24.162956° Long- 92.033211° End Point 1 Lat- 24.161746° Long- 92.034047° Starting point 2- Lat- 24.161753° Long- 92.033496° End Point 2 Lat- 24.160991° Long- 92.033498°	The existing road passes along the rural settlement area. The designed RoW of the road is 3 m. 5 numbers betel nut trees (less than 30 cm girth) will be required to be cleared for the construction of the road. The current land use in the project site is Built-up area. There is one number of temple along the project road, outside the impact zone. Utility shifting may be required for construction this road. There is no waterbody near the project road. No significant forest area nearby the road. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.161724 Longitude: 92.033972 Elevation: 32.2±31 m Accuracy: 7.7 m Time: 07-04-2022 17:11 Note: Road no5 temple Powered by NoteCam
6.	NH-8 to Arati Nomo House	248 m with 2.5 m RoW	Starting point- Lat- 24.169157° Long- 92.047298° End Point Lat- 24.171333° Long- 92.046772°	The existing road passes along a rural settlement area. Existing road is a Brick Road. The designed RoW of the road is 2.5-3 m. The proposed project road connected with the NH-8. The project road end point is 45 m away from the Manu River. There is one number of pond and few low-lying areas along the project road. Utility shifting may be required for construction of this road. No tree felling is required. Few places have bushy shrubs and herbs which requires clearance. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.169768 Longitude: 92.047188 Elevation: 15.0±11.1 m Accuracy: 12.1 m Time: 07-04-2022 19:11 Note: Road6 low land area near existing point Powered by NoteCam

SI no.	Road Name	Length of the road(m)	Starting and endpoint of the road	Environmental Features of the Site	Photograph
7.	From Kalipada Roy house to Tarani Kr. Deb House	103.26 m with 3 m RoW	Starting point- Lat- 24.169478° Long- 92.050832° End Point Lat- 24.169367° Long- 92.049872°	The existing condition of the road is motorable with average carriageway width of 3 m. Existing Road is connected with the NH. Existing road is a brick road. Built-up area was observed both side of the road. Shifting of utility may be required. No tree felling will be required. No sensitive receptors are present in proximity of the proposed site. No as such specific environmental feature observed. There is no waterbody near the project road.	 Latitude: 24.169497 Longitude: 92.050804 Elevation: 31.72±5 m Accuracy: 9.3 m Time: 07-04-2022 13:00 Note: Starting point of Road7
8.	From Pandap Saha house to Jhantu Debnath House	130 m with 3.5 m RoW	Starting point- Lat- 24.163146° Long- 92.047120° End Point Lat- 24.162638° Long- 92.048201°	The existing condition of the road is motorable with average carriageway width of 3.5 m. Existing Road is a brick road. The road alignment passes through the Ward no.-9. Proposed road passing through residential, open and agricultural land. No tree cutting will be required as per design. Land use of this area is residential. There is no waterbody near the project road. Shifting of few electric posts may be required as per site observation. No significant forest area is nearby. No protected area and environmentally sensitive areas in or near the proposed alignment.	

SI no.	Road Name	Length of the road(m)	Starting and endpoint of the road	Environmental Features of the Site	Photograph
9	From Ranu Debnath to Kripamoy Das house	260 m with 3 m RoW	Starting point- Lat- 24.157316° Long- 92.038290° End Point Lat- 24.157765° Long- 92.040599°	The road alignment is existing earthen track of about 2.5 m width. The designed RoW of the road is 3 m. Maximum portion of the alignment passes through the open private land area. There is existing lined drain in right side of the road only upto Chainage 60m. No tree cutting and utility shifting will be required as per design. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.157359 Longitude: 92.038312 Elevation: 40.78±6 m Accuracy: 10.0 m Time: 07-04-2022 15:31 Note: Road 9 starting point
10.	From Agriculture office to Swapan Das House	139 m with 4 m RoW	Starting point- Lat- 24.165446° Long- 92.041774° End Point Lat- 24.164602° Long- 92.040906°	The existing condition of the road is motorable with average carriageway width of 3.5 m. Existing Road is a brick road. No tree cutting will be required as per design. Few utility shifting may be required. Land use of this area is residential and open. There is one waterbody near the project road, outside the impact zone. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.165027 Longitude: 92.041432 Elevation: 39.91±37 m Accuracy: 15.3 m Time: 07-04-2022 13:31 Note: Road10 pond near starting point

SI no.	Road Name	Length of the road(m)	Starting and endpoint of the road	Environmental Features of the Site	Photograph
11	From Bhusan Chandra Das House to Kakali Dhar Das House	140.2 m with 3 m RoW	Starting point- Lat- 24.154499° Long- 92.029621° End Point Lat- 24.154769° Long- 92.028260°	Existing road is a brick road. Existing road condition is fair to poor. The road alignment passes through the build-up area. Proposed project road end point is 20 m away from the Manu River. During the construction period soil erosion may be an issue. No as such specific environmental feature observed. There is no waterbody near the project road. Shifting of few electrical posts is required. No tree felling is required. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.154487 Longitude: 92.02962 Elevation: 38.28±6 m Accuracy: 12.8 m Time: 07-04-2022 15:47 Note: Road 11 starting point
12	From Kartik Dhar House to Pabichara fish Market	320 m with 4 m RoW	Starting point- Lat- 24.158346° Long- 92.033080° End Point Lat- 24.159536° Long- 92.034415°	There is no existing road between starting and end point. The proposed alignment passes through the social forest area. Minimum 7 numbers of teak trees (<i>Tectona grandis</i>) may be affected due to the construction of the project road. Tree can be saved partly through judicial design after confirmatory survey. Deo river is only 12 m away from the project road. Shifting of electrical post is required at few places. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 24.158695 Longitude: 92.033236 Elevation: 30.62±9 m Accuracy: 8.7 m Time: 07-04-2022 16:04 Note: Road 12 forest area middle of the road

Table 22: Site Environmental Features for Drain-Kumarghat

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
1	Kumarghat Railway station to existing underground drain nearby SP Mukherjee Lane. Deo River near 91 miles – different stretches Total approx. length 2.37 km with 6 stretches Start: Lat 24.152924°/ Long: 92.032112° End: Lat 24.170595°/ Long: 92.050076°	Proposed drain to be constructed along the road side of National Highway from Kumarghat Railway Station Road and outfall to Deo River near 91 miles. Proposed drain most of the passing through commercial areas in ward number 07,11,12,14,15 only. the Length of the Drain 2.37 km meters and available ROW 15 meter. The drain will be developed within the available existing RoW. No new land will be acquired from private sources. The drain has been shifted to the left and right of the road for proper other drain connection Near SDM office-there is no existing drain in this area. Abutting land use is predominantly commercial area. Lined side drains are proposed on LHS of the road in market areas/habitation to prevent waterlogging. Utility shifting may be required during the construction activity and before construction NOC to be required from concerned department. Few tree(<i>Magnifera Indica</i>, <i>Syzygium cumini</i>) felling will be also required. There will be temporary impact during construction. Proposed drain passing near the existing drinking water pipe line. During construction phase mitigation measures will be applied for protection of drinking water pipeline, The impacts are temporary access blockade in major market areas. There is a school near the proposed drain which is 15 m away from the proposed drain. No protected area and environmentally sensitive areas in or near the proposed drain alignment	 Latitude: 24.165796 Longitude: 92.040292 Elevation: 93.91331 m Accuracy: 6.2 m Time: 07-04-2022 12:24 Note: Drain near SDM office  Latitude: 24.167215 Longitude: 92.045688 Elevation: 93.22525 m Accuracy: 8.4 m Time: 07-04-2022 12:33 Note: Drain in North Pabla  Latitude: 24.170487 Longitude: 92.049332 Elevation: 13.4643 m Accuracy: 15.8 m Time: 07-04-2022 12:38 Note: Drain in North Pabla chora(RHS)  Latitude: 24.160903 Longitude: 92.037749 Elevation: 95.1913 m Accuracy: 28.4 m Time: 07-04-2022 13:49 Note: Drain LHS

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
2	Drainage outfall	Outfall lated - Cherra near Netaji pally (Dhar market)	
3	Drainage Outfall	Final discharge to existing drain at Jatindra Mohan Sengupta lane Residential and open area. Jungle needs to be removed before construction.	
4	Drainage outfall	Outfall point at Pabia cherra Residential and commercial area Solid waste needs to be removed from the drain	

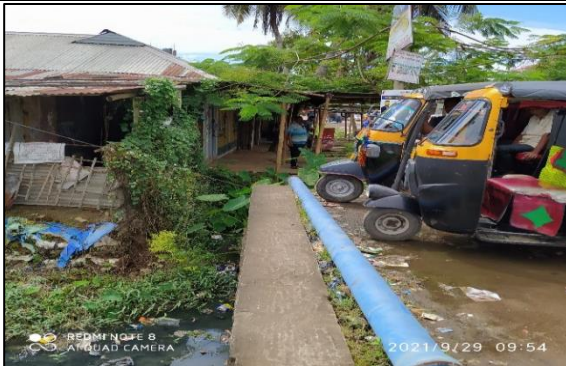
Typical site picture under different streach

1.	Drain near Pabia Chera School	There is one number of tree which will be cut likely during the construction. No sensitive receptor exists closer/within the proposed site. There is a school near the proposed drain which is 15 m away from the proposed drain.	 Latitude: 24.110903 Longitude: 92.037749 Elevation: 39.1913 m Accuracy: 28.4 m Time: 07-04-2022 13:49 Water Drain LHS Powered by MapCam
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Sl. no	Project Component and location	Environmental Features of the Site	Photograph
2	Near School	There is a school near the proposed drain which is 15 m away from the drain.	 Latitude: 24.155436 Longitude: 92.034544 Elevation: 35.2723 m Accuracy: 29.6 m Time: 07-04-2022 14:24 Note: School near proposed drain RHS Generated by DroneCam

Table 23: Site Environmental Features for Drain-Dharmanagar

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
1	RCC drain from Batarasi Tri-Junction to Kakri River (Length = 1.243 km with 9 stretches) Start : Lat 24.372955°/ Long 92.166661° End: Lat 24.380727°/ Long 92.175193°	About 1243 m of existing drainage is proposed to be developed, with covered RCC box type drain. Observations - Existing drains are filled with plastic, solid waste and aquatic weeds. Cleaning of these drains before start of construction along with proper disposal of removed waste to be ensured. - Drains are proposed in densely habited area, ensure safety consideration in designs. - Detailed of treatment of drain water before meeting to River Kakri/ Juri to be provided The site is situated in Dharmanagar where the Proposed drain to be constructed along the one side of road. Proposed drain mostly passing through commercial areas in ward number 13, 21, 22, 23, and adjoining of ward 23 of Dharmanagr Municipal Council. The drain will be developed within the available	  Latitude: 24.373096 Longitude: 92.166683 Elevation: 35.2349 m Accuracy: 30.2 m Time: 12-04-2022 12:20 Note: drain near gate Generated by DroneCam

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
		existing RoW. The existing drain is open drain and commercial area both sides. Maximum portion of existing drains of the area do not have side walls and there is no bottom lining. Existing drain of this area are choked up due to improper sections, slope etc. and improper maintenance. The presence of One tree of Ficus group is seen in the outfall location near the vicinity of Juri river. - Land Use: - Drains are proposed within existing drains width, along the road is BT road onside and commercial structures mainly shops other side. . - Topography: - Flat type with mild undulations - Soil Type: - Lateritic Soil can be found - Erosion Potential: - No as such if the RCC drain is constructed. - Flora and Fauna: drains are civered with aquatic weeds, Few trees are found like Gulmohar, Mango, neem, Coconut etc are planted as avenue tree along the road. - Tree Felling: As such no tree felling is required in the site except one tree at outfall location. - CPR: - There are few common properties like School, ISBT-Dharmanagar and few Mandir but these are not affected due to drain construction. - Utilities: - Since the drain of Kutchha type already exists in the	 REDMI NOTE 9 AI QUAD CAMERA 2021/9/29 09:54  Latitude: 24.375118 Longitude: 92.170488 Elevation: 27.42131 m Accuracy: 5.0 m Time: 12/04/2022 12:49 Note: drain durgapur w-13 Powered by NoteCam Drain near Durgapur  REDMI NOTE 9 AI QUAD CAMERA 2023/4/27 15:19 Kakri River outfall  Latitude: 24.395276 Longitude: 92.169115 Elevation: 55.1718 m Accuracy: 7.4 m Time: 22/04/2023 13:20 Note: Dharmanagar prop drain end point Outfall point for Dharmanagar Kakri River – Flap gate to be placed

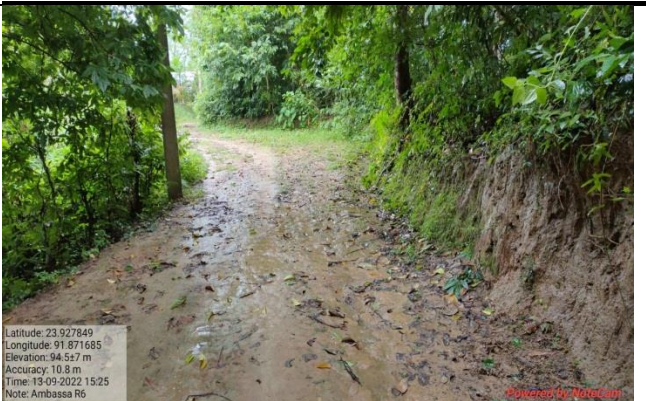
Sl. no	Project Component and location	Environmental Features of the Site	Photograph
		area thus the chance finds for utilities are minor and since the development is within RoW thus the re development does not affect utility. • Ground Water Depth: - 30ft BGL • GW Drinkable Depth: - 150 – 200 ft BGL • Potential Waterbodies: - No as such • Location wrt town: - The locations in the town are Batarshi tri junction, Railway Gate, Motor Stand Road, Outfall at Kakri river • Waste from drain is disposed at east Chanderpur waste management site • Blasting Need: No as such blasting is required for drain. Outfall: The storm water from the drain will be disposed into the Kakri river	
Typical site picture under different streach			
2	Drain on RHS near ITI college	Existing drain of this area are choked up due to improper maintenance. By rehabilitating the main drains, Rajbari school gate on the right side of the road will get affected. Potential temporary impacts of access disruption have been found in this area.	

Table 24: Site Environmental Features for Road-Ambassa

Sl no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
1	Adhir sikdar house to Sujit Das house via Partha raj Debbarman house	320 m with 3-4 m RoW	Maximum portion of the existing road is an earthen road. In some portion roads, there are no side drains along the sub-arterial roads. Few portions of the road side drain observed both side of the road. There is no proper traffic maneuver movement in this proposed road. Land use around the site is residential. There is no significant protected forest in and around project area. Few utility shifting is required as per site condition. One tree (<i>Syzygium cumini</i>) will be required to cut for this proposed road. There is no major waterbody near the proposed road. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 23.917766 Longitude: 91.847536 Elevation: 77.69±15 m Accuracy: 11.9 m Time: 13-09-2022 11:36 Note: Ambassa R1  Latitude: 23.917628 Longitude: 91.848299 Elevation: 77.69±14 m Accuracy: 8.7 m Time: 13-09-2022 11:35 Note: Ambassa R1
2	Motor stand south side to Susuma Modak house via Siburanjan Dey house and Haralal Pal house	329 m with 4 m RoW	Few portions of the existing road are a brick road and maximum portion of the road is a foot track. Some portion of the proposed road passing through the residential area. A pond was noted at the chainage 250m which is left hand side to the proposed road. Land use around the site is residential. There is no protected forest in and around project area. There is no tree felling is required for this road. Utilities like electric poles and	 Latitude: 23.917323 Longitude: 91.848968 Elevation: 76.39±36 m Accuracy: 15.0 m Time: 13-09-2022 11:52 Note: Ambassa R2 starting point

Sl no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
			wiring are observed which may require to shift. No protected area and environmentally sensitive areas in or near the proposed alignment.	
3.	Chunilal Debnath house to Babulal Pal house	46 m with 4 m RoW	Existing road is a foot road. passing through the residential land. Existing road is an earthen road. There are a side drainage structures observed on both side of the existing road. No waterbody and forest area nearby. No utility shifting and tree felling is required. No protected area and environmentally sensitive areas in or near the proposed alignment.	

Sl no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
4	Alok Debnath House to Ganesh Goswami house	162 m with 4 m of RoW	The project road passes though the residential area. There is very little space for the construction of road. The existing road is an earthen road and condition of the road is non motorable. Utility shifting may require as per site condition. There is no major waterbody near the proposed road. No tree felling is required. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 23.912102 Longitude: 91.849686 Elevation: 74.36±10 m Accuracy: 31.0 m Time: 13-09-2022 12:40 Note: Ambassa R4 start point Powered by NavSat
5	From NH-8 To Kalpana Jadav house	657 with 4 m RoW	Most of the existing road passes along the hilly area. Maximum portion of the road is landslide prone area. During the construction period soil erosion may be an issue. Protection wall be constructed at hilly area. The designed RoW of the road is 4 m. Few trees (<i>Cerbera odollam</i>, <i>Tectona grandis</i>, <i>Neolamarckia cadamba</i>, <i>Cerbera odollam</i>, <i>Bombax ceiba</i>, <i>Gmelina arborea</i>, <i>Syzygium cumini</i>) cutting may be required for construction of the road. The current land use in the project site is Built-up area. No	 Latitude: 23.921329 Longitude: 91.866336 Elevation: 81.59±5 m Accuracy: 12.6 m Time: 13-09-2022 15:52 Note: Ambassa R5 & D4 landslide prone Powered by NavSat

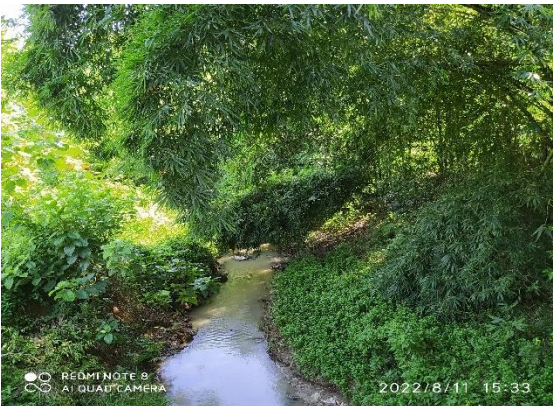
Sl no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
			significant forest area is nearby. There is one number of temple along the project road, but outside the impact zone. Few utility shifting is required as per site visit. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 23.92254 Longitude: 91.865113 Elevation: 67.78±13 m Accuracy: 10.9 m Time: 13-09-2022 16:06 Note: Ambassa R5 & D4 Powered by Navteq
6.	Dumdum Marak house to Laxmi Charan Debnath house	316 m with 3 m RoW	The existing road passes along a rural settlement area. This road is an existing road in plain terrain. The horizontal and vertical geometry is good. Road is earthen road. One tree (<i>Gmelina arborea</i>) will be required to cut for construction of the road. There is no major waterbody near the proposed road. Shifting of few electric poles may be required. No significant forest area is nearby. There was not much traffic observed during the site inspection. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 23.927849 Longitude: 91.871685 Elevation: 94.5±7 m Accuracy: 10.8 m Time: 13-09-2022 15:25 Note: Ambassa R6 Powered by Navteq

Sl no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
7.	From Anil medical hall to Tejendra Mitra house	265 m with 4 m RoW	The existing condition of the road is motorable with average carriageway width of 3 m. Existing Road is connected with the main bitumen road. There is drain on the both side of the existing road. No tree will require to cut for this proposed road. There is no major waterbody near the proposed road. Utility shifting is required as per site visit. No significant forest area is nearby. Built-up area was observed both side of the road. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 23.926283 Longitude: 91.854307 Elevation: 76.94±10 m Accuracy: 18.7 m Time: 13-09-2022 16:42 Note: Ambassa R7 starting point Processed by NasaCom
8.	From P.R.T.I. Building to Dhalai river	295 m with 4 m RoW	The existing condition of the road is motorable with average carriageway width of 3.5 m. Road is constructed with brick and murram. The road alignment passes through the Ward no.-9. The existing road is passing through the residential area. Few utility shifting may be required. No tree cutting will be required as per design. There is no major waterbody near the proposed road. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 23.926972 Longitude: 91.853671 Elevation: 93.95±10 m Accuracy: 27.0 m Time: 13-09-2022 16:53 Note: Ambassa R8 Processed by NasaCom

Sl no.	Road Name	Length of the road(m)	Environmental Features of the Site	Photograph
9	From NH-08 to Sudhangshu Dutta house to Laxmi Charan Debnath house	177 m with 4 m RoW	The road alignment is existing earthen track which is not motorable. Maximum portion of the alignment passes through the open area and not much habitation was observed on both side of the road. There is no existing lined drain along with the existing road. No tree cutting will be required as per design. No utility shifting is required. There is no major waterbody near the proposed road. No sensitive receptors are present in close proximity of the proposed site.	 Latitude: 23.920143 Longitude: 91.878048 Elevation: 102.53±5 m Accuracy: 8.4 m Time: 13-09-2022 15:38 Note: Ambassa R3
10.	From Narayan Debnath house to Biswajith Sarma house via Niorde Sadhu Asram	474 m with 4 m RoW	The existing condition of the road is motorable with average carriageway width. Existing Road is a brick road. No tree cutting will be required as per design. Few utility shifting will be required. Land use of this area is open area surrounded by few trees. There is no major waterbody near the proposed road. No protected area and environmentally sensitive areas in or near the proposed alignment.	 Latitude: 23.928244 Longitude: 91.846976 Elevation: 74.18±5 m Accuracy: 17.0 m Time: 13-09-2022 14:06 Note: Ambassa R10

Table 25: Site Environmental Features for Drain-Ambassa

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
1.	RCC Covered drain along both side from NH-08 to Kalpana Jadav house Approx length – 1.042 km Start- Lat- 24.923592°, Long- 91.864438° End - Lat- 24.920639°, Long- 92.868720°	The Drain is proposed from NH-8 to Kalpana Jadav house via Bailey Bridge over the Lamba Cherra. Proposed drain is situated northern side of NH-8 covering ward no 9, 13, 14 and southern side of NH-8, covers portion of ward 10,12 and full of ward 11. The drain will be developed within the available existing RoW. At present in maximum portion there is no drain available. No new land will be acquired from private sources. The drain has been shifted to the left and right of the road for proper other drain connection Utility shifting may be required `during the construction activity and before construction NOC to be required for concerned department. There will be temporary impact during construction. Few tree (<i>Artocarpus heterophyllus</i>, <i>Magnifera Indica</i> <i>Delonix regia</i>) felling may be required. No forest is nearby. The land use of the area is mostly open with patches of habitations nearby, and the proposed drain is present between main road and open/ residential land. Few spots contain herbs which needs clearance. No protected area and environmentally sensitive areas in or near the proposed drain alignment.	   

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
			 Lamba Cherra outfall
2.	RCC Covered drain along both side from P.S. link road to Chandrai Para school ground. Approx. length- 1.527 km Start- Lat- 24.924729°, Long- 91.845214° End- Lat- 24.923524°, Long-92.851425°	The Drain is proposed from P.S. link road to Chandrai Para school ground both side of the road. Existing drain is clogged due to the inadequate maintenance. Due the construction of new drain both side of the road, few trees are located nearby the drain, but likely to be saved. Utility shifting may be required. One number of school and one temple is only 5m away from the drain. During the construction precaution should be taken as per environment management plan. There is no waterbody near the proposed drain. The Land use of the area is dominantly residential. No protected area and environmentally sensitive areas in or near the proposed drain alignment.	 
3	RCC Covered drain along both side from NH-8 to Zila Parisad office via Ramkrishna Ashram. Approx. length- 1.300 km Start- Lat- 24.919875°, Long- 91.856959° End- Lat- 24.919247°, Long-92.853972°	The proposed drain is aligned within the open land from Ambassa colony and outfalls to the Dhalai river. Both side RCC box drain along the side of road and conversion of major kutchra drain to RCC Box drain which is aligned along the open land at Ambassa Colony area are proposed to be implemented under this project to minimize the waterlogging issue of Ambassa Colony area. Gravity Outfall is proposed at the drain	

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
		outfall points to Dhalai River. At present access not available at outfall point. Few utility shifting and tree (<i>Zizyphus xylopara</i>, <i>Neolamarckia cadamba</i>, <i>Cerbera odolla</i>) felling will be required. No forest area is nearby. No protected area and environmentally sensitive areas in or near the proposed drain alignment.	
4	RCC covered drain along both side from Ambassa motor stand to Arun Debnath house at TRTC para. Approx. length- 825 m Start - Lat- 24.911577°, Long- 91.846391° End- Lat- 24.909306°, Long- 92.849475°	RCC covered drain is proposed to be constructed at the upstream of existing main drain by replacing the existing kutchra drain along one side of road from TRTC Para (near house of Arun Debnath) to an existing open drain at Motor Stand Road and near house of Parendra Debnath to an existing open drain at Motor Stand Road. Proposed drain is passing through the residential area. Few utility shifting will be required. No waterbody near the proposed drain. Although there is an Angonwadi and temple exist within the 5 m of the proposed drain, outside the impact zone. No protected area and environmentally sensitive areas in or near the proposed drain alignment.	 Latitude: 23.90886 Longitude: 91.84963 Elevation: 86.3547 m Accuracy: 14.8 m Time: 13-09-2022 12:25 Note: Ambassa D4 starting  Latitude: 23.911705 Longitude: 91.849726 Elevation: 47.9416 m Accuracy: 10.6 m Time: 13-09-2022 12:38 Note: Ambassa D4
5	RCC Covered drain along one side from Tripura Garmin Bank to Ambassa P.S. & Bankumari Bazar via Naresh Sharma house at V.K. Nagar. Approx. length- 803 m Start - Lat- 24.925917°, Long- 91.848691° End- Lat- 24.927947°, Long- 92.850622°	RCC covered drain is proposed to be constructed along the one side of Vivekananda Nagar Road and outfalls to Dhalai River near Railway Bridge. The Drain is proposed from Tripura Garmin Bank to Ambassa P.S. & Bankumari Bazar via Naresh Sharma house at V.K. Nagar. Land use of this area is residential. No waterbody near the proposed drain. One utility shifting will be required. No tree felling will be required.	 Latitude: 23.92802 Longitude: 91.847825 Elevation: 78.4449 m Accuracy: 15.3 m Time: 13-09-2022 13:56 Note: Ambassa D5

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
		The existing drain is choked due to irregular maintenance. No protected area and environmentally sensitive areas in or near the proposed drain alignment.	
6	RCC covered drain along both side from Parendra Debnath house to NH-8 via Ambedkar Nagar J.B. School Approx. length- 199.8 m Start- Lat- 24.916978°, Long- 91.844116° End - Lat- 24.915244°, Long- 92.843851°	RCC covered drain is proposed to be constructed by replacing the existing kutcha drain along one side of road near Ambedkar Nagar School and outfall to the existing cherra near Ambedkar Nagar school which outfalls to Kulai River. There is a temple on chainage 76.50 m which is adjacent to the existing drain. Religious place will be saved through final judicial design after confirmatory survey. No utility shifting and tree felling is required. No protected area and environmentally sensitive areas in or near the proposed drain alignment.	 Latitude: 23.916211 Longitude: 91.844217 Elevation: 63.19±6 m Accuracy: 5.9 m Time: 13/09/2022 13:07 Note: Ambassa D6 endpoint Powered by NoteCam
7	Drainage Outfall	Located at Ambassa colony Open area and shrub noted at outfall site.	 REDMI NOTE 8 AI QUAD CAMERA 2021/11/6 12:18  REDMI NOTE 8 AI QUAD CAMERA 2021/11/6 12:18 Outfall at Ambassa colony nallaha

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
8	Drainage Outfall	Located at Ambedkar nagar Vegetation mainly jungle and shrub noted at outfall site. Which needs to be cleared before construction	
9	Drainage Outfall	Located at Motor stand road Residential area nearby. All mitigation measures will be applied for community safety.	

Sl. no	Project Component and location	Environmental Features of the Site	Photograph
			 A photograph showing a dirt path or drainage area with dense green vegetation on the left and a corrugated metal fence on the right. The path appears to be under construction or recently cleared. A watermark 'REDMINOTER AI QUAD CAMERA' and the date '2022/8/11 12:12' are visible at the bottom.
10	Drainage Outfall	Located at Santipara Chandraipara Before construction jungle needs to be cleared.	 A photograph of a drainage outfall structure partially obscured by dense jungle vegetation. The structure is made of concrete or stone. A watermark 'REDMINOTER AI QUAD CAMERA' and the date '2022/8/10 15:08' are visible at the bottom.
11	Drainage Outfall	Located at V K Nagar and final discharge to Dhalai river Open area. Scrub needs to be cleared before construction.	 A photograph showing a drainage outfall structure in an open area with scrub vegetation. The structure is made of concrete or stone. A watermark 'REDMINOTER AI QUAD CAMERA' and the date '2022/8/10 13:56' are visible at the bottom.  A photograph of a drainage outfall structure surrounded by dense jungle vegetation. The structure is made of concrete or stone. A watermark 'REDMINOTER AI QUAD CAMERA' and the date '2022/8/10 13:57' are visible at the bottom.

Table 26: Sensitive Receptors in the Project Influence area - Kailashahar

Sl. no	Name of structure	Location	Approximate Distance from construction activity site	Photographs
1.	Angonwadi (Road no 1)	Near Bimol Sinha House	Within 2 meters from the edge of the road	 Latitude: 24.330141 Longitude: 91.998417 Elevation: 17.33+10 m Accuracy: 10.1 m Time: 13-04-2022 14:56 Note: end point of road no 1 Angonwadi
2.	Hospital (Drain Starting point Near Integrated Ayush Hospital)	Starting point of the drain	Within 10 meters	
3.	Hospital	Near RGM hospital	Inside the hospital gate	
4.	ITI college	Near ITI college	Drain adjacent to the college	 Latitude: 24.318732 Longitude: 92.000182 Elevation: 30.08+5 m Accuracy: 15.6 m Time: 13-04-2022 16:29 Note: drain lies to college

Sl. no	Name of structure	Location	Approximate Distance from construction activity site	Photographs
5	Temple	Near Soni Temple	Existing drain is adjacent to drain	

Table 27: Sensitive Receptors in the Project Influence area – Kumarghat

Sl no	Road/ Drain Name	Features and Distance	Photo
1.	Drain From Kumarghat Railway Station Road to Deo River near 91 miles	High School -15 m from RHS	
2.	Road from Asram Palli ICDS to Samir Suklabaida House	School- Adjacent to the road	
3.	Road from Ujjal Sharma House to Dilip Sinha House and from Shyamal Bhattacharya house to Nikrunja Das House	Temple- Adjacent to the proposed road	

Table 28: Sensitive Receptors in the Project Influence area - Ambassa

Sl . n o	Name of structure	Location	Approximate Distance from construction activity site	Photographs
1	Angonwadi and temple	Near Drain -4 at chainage 250m	Less than 10m	

Sl . n o	Name of structure	Location	Approximate Distance from construction activity site	Photographs
2	Temple	Near Drain - 6 at chainage 76.5 m	Adjacent to the existing drain	 Latitude: 23.915856 Longitude: 91.643989 Elevation: 36.8547 m Accuracy: 8.7 m Time: 13-09-2022 13:05 Note: Ambassa D6 temple Powered by NoteCam
3	School	Near Drain 2 in Kanchanpur	Adjacent to the existing drain	 Latitude: 23.922477 Longitude: 91.650117 Elevation: 69.654 m Accuracy: 4.4 m Time: 13-09-2022 13:36 Note: Ambassa P2 school Powered by NoteCam

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Introduction

63. Potential environmental impacts of the proposed infrastructure components are presented in this section. Mitigation measures to minimize/mitigate negative impacts, if any, are recommended along with the agency responsible for implementation. Monitoring actions to be conducted during the implementation phase is also recommended to reduce the impact.

64. Screening of potential environmental impacts are categorized into four categories considering subproject phases: location impacts and design impacts (pre-construction phase), construction phase impacts and operations and maintenance phase impacts.

- (i) **Location impacts** include impacts associated with site selection and include loss of on-site biophysical array and encroachment either directly or indirectly on adjacent environments. It also includes impacts on people who will lose their livelihood or any other structures by the development of that site.
- (ii) **Design impacts** include impacts arising from Investment Program design, including technology used, scale of operation/throughout, waste production, discharge specifications, pollution sources and ancillary services.
- (iii) **Pre-construction impacts** include impacts which are anticipated during construction works but planning is required for proposed mitigation measures

before start of construction works such as taking consents from various departments, planning for construction and workers camps, deployment of safety officer, arrangement of required barricades and caution boards etc.

- (iv) **Construction impacts** include impacts caused by site clearing, earthworks, machinery, vehicles and workers. Construction site impacts include erosion, dust, noise, traffic congestion and waste production.
- (v) **O&M impacts** include impacts arising from the operation and maintenance activities of the infrastructure facility. These include routine management of operational waste streams, and occupational health and safety issues.

65. Screening of environmental impacts has been based on the impact magnitude (negligible/moderate/severe - in the order of increasing degree) and impact duration (temporary/permanent).

66. This section of the IEE reviews possible project-related impacts, in order to identify issues requiring further attention and screen out issues of no relevance. ADB SPS (2009) requires that impacts and risks will be analysed during pre-construction, construction, and operational stages in the context of the project's area of influence. The ADB Rapid Environmental Assessment Checklist (**Appendix 1**) has been used to screen the project for environmental impacts and to determine the scope of the IEE.

67. In the case of this project (i) most of the individual elements involve straightforward construction and operation, so impacts are mainly localized and not greatly significant; (ii) most of the predicted impacts are associated with the civil construction process, and are produced because that process is invasive, involving excavation and earth, material movements, disposal of drainage silt/sludge/garbage and (iii) being mostly located in an urban area, will not cause direct impact on biodiversity values. The project has been in properties held by the local government and access to the project location is through public rights-of-way and existing roads hence, land acquisition and encroachment on private property will not occur.

A. Design and Location Impacts

68. **Integration of EMP in bidding documents and contracts.** Lack of awareness by contractors on ADB SPS requirements may result in insufficient budget and non-implementation of EMP.

69. To ensure that EMP will be provided with sufficient budget and implemented:

- (i) Once the Contractor is selected, the PIU with support from PMSC will inform contractors on their responsibilities in EMP implementation, in compliance with ADB and government requirements, self-monitoring and reporting procedures.
- (ii) The PMU will incorporate the costs of implementing OHS and the EMP as well as specific provisions requiring contractors to comply with all other conditions required by ADB into the bidding and contract document.

70. **Updating of IEE.** The PMU shall update the IEE in case of change in design/ location during design verification prior to start of construction. and during construction, if needed and submit the same for review and clearance of ADB.

71. **Design of the Proposed Components.** The proposed design for the subproject includes construction of roads and drains. The subproject road involves construction of trenches for

drainage lines, water supply lines, and electricity and telecommunication cables. The IRC: 98-1997, Guidelines on accommodation of utility services on roads in urban areas is followed. Various design features that will improve the existing condition of the roads are as follows:

- (i) Storm water drain is provided at the extreme edge of the right of way;
- (ii) Water supply lines carrying water at high pressure may cause damage to the road pavement, so they are provided on one side of the road;
- (iii) There is safe distance between water supply line and drainage line to avoid any intermixing in case of any leakage or pipe burst.
- (iv) Footpaths are provided cater the needs of elderly and persons with disability.
- (v) Electric cables are kept away from water supply lines to avoid short circuit;
- (vi) The cables are away from tree line to avoid possible entrapment of the cable by tree roots.

72. **Utilities.** Telephone lines and wires within the proximity to proposed subproject locations may require to be shifted in few cases, exact number of utilities require shifting it will be confirmed after confirmatory survey by contractor. To mitigate the adverse impacts due to relocation of the utilities, contractor will (i) identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase; (ii) provide prior notice (at least one week in advance) to affected areas and (iii) require construction contractors to prepare and implement a contingency plan to include actions to be done in case of unintentional interruption of services. Survey along road and drains in different towns have been carried out. Following Table show the impacted utilities and tree felling requirement in 4 towns. Further confirmatory survey will be carried out by concerned contractor before finalization of list of utilities which required shifting and trees to be felled. Chainage wise strip plan is attached as **Appendix 6**.

Table 29: Summary of utility with proximity to proposed project components

Sr No	Total Impacted/ Shifting Required in no.							Tree felling requiremen t*
	Electric post	Telepho ne post	Light post	Transform er	Tube well/ water tap	Optica l Fiber Cable	Traffic Signal	
Kailashahar Roads								
	23	5	0	1	0	0	0	2
Kailashahar Drains								
	18	10	14	1	0	0	1	9
Kumarghat Roads								
	38	0	0	0	0	0	0	9
Kumarghat Drains								
	10	1	0	0	0	0	0	2
Dharmanagar Drains								
	10	4	1	1	0	0	0	0
Ambassa Roads								
	20	0	0	0	0	0	0	9
Ambassa Drains								
	16	3	0	0	2	0	0	6
Total	135	23	15	3	2	0	1	37

*Local tree species commonly used for avenue plantation like *Magnifera Indica*, *Syzygium cumini*, *Cerbera odollam*, *Tectona grandis*, *Neolamarckia cadamba*, *Cerbera odollam*, *Bombax ceiba*, *Gmelina arborea*, *Morinda tinctoria*, *Ziziphus mauritiana*, *Ficus religiosa*, *Terminalia chebula*, *Artocarpus heterophyllus*, *Delonix regia*, *Tamarindus indica*, *Mimusops elengi* etc may require felling

73. Social and Cultural Resources – Chance Finds. Any work involving ground disturbance can uncover and damage archaeological and historical remains. For this project, excavation will occur in project sites for construction of roads and drains. PIU and the contractor will follow chance find protocol to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved:

- (i) Create awareness among the workers, supervisors and engineers about the chance finds during excavation work
- (ii) Stop work immediately to allow further investigation if any finds are suspected;
- (iii) Inform Archaeological Department if a find is suspected, and taking any
- (iv) action they require to ensure its removal or protection in situ.

74. Works near common properties, physical cultural resources other religious, cultural and other sensitive places. Damage to private and common properties (such as temples, religious trees, boundary walls, houses). Construction works may also disturb / inconvenience community and visitors. Measures are required to minimize the impact. Following measures shall be implemented: -

- (i) Prior to commencement of construction, consult with concerned religious authorities of these temples, nearby people and devotees and explain the work method and duration of proposed works, take their suggestions and comments in scheduling and conducting the works
- (ii) Do not use equipment that generate heavy noise, ground vibration, dust etc., (such as pneumatic drills, dozers etc., within 50 m of these structures
- (iii) Put in place proper dust and noise control measures
- (iv) Adjacent to religious/social buildings, undertake excavation and construction work in such a way that no structural damage is caused to the structures
- (v) Observe the local rituals and important dates of festivals, weekly/monthly/annual religious occasions in the religious places and do not make any disturbance/hindrances/obstacles during such time to the religious places
- (vi) Cutting of any religious trees may be avoided, if possible, change alignment to protect old and religious trees.
- (vii) Provide proper signage, barricades etc. to protect public and devotees from dangers of construction works.
- (viii) Ensure proper traffic management planning to minimize the disruption to the normal traffic flow in the area and ensure the safety of the people.
- (ix) Clear the work site of unnecessary material, equipment and debris / surplus soil; do not stock material / soil at the sites
- (x) Conduct continuous consultations with the local people during the works

75. Impacts on local surface drainage: Project towns face problems of water logging after heavy rains across the towns, but mainly in the low-lying areas. Improvement of roads will raise the level and may act as barrier for free movement of surface runoff, leading to water logging. Surface improvement of roads will also increase the runoff volume. This may impact the overall drainage system, if road improvements are not combined with appropriate improvements in drainage system. Under this subproject, improvement of roads is being undertaken along with provision of side lateral drains, and cross drainage structures like culverts where required to collect

and convey surface runoff. Therefore, no adverse impacts envisaged on the local drainage due to the proposed subproject. Subproject also includes construction / improvement of existing drains in various places to collect and convey runoff into nearby streams / *charras* / rivers to mitigate the problem of water logging.

76. **Water pollution due to discharge of wastewater into drains.** At present there is no sewerage system in the subproject towns, and households mainly depend on septic tanks for disposal of sewage, and sullage (from kitchen and bath) is discharged into open drains, local streams or on to vacant lands. In some cases, outflow of septic tanks is also connected to open drains. Improvement of drains under the subproject will facilitate the surface drains, however, at the same time, it will also collect and discharge the wastewater that is discharged into drains from the town areas into streams and rivers through outfalls. The discharge of untreated wastewater, especially during the dry season, will degrade the receiving water bodies, impacting both the uses and aquatic life. To mitigate this, the Government of Tripura, has proposed to develop an interception, diversion and treatment system under the AMRUT/ similar govt. scheme. This subproject also included fecal sludge management system, under which septage from septic tanks will be collected, conveyed to a treatment facility for treatment and disposal.

77. The proposal under the AMRUT/ other govt. scheme include interception of major drains in the core town areas, and the collection and conveyance of the intercepted wastewater to sewage treatment plant (STP) for treatment and disposal or reuse. Fecal sludge management system includes mobile tankers for collection of septage from septic tanks, and conveyance to STP for treatment and disposal. This project is presently under tendering stage and will be completed in about 2 – 3 years.

78. **Site selection of construction work camps, stockpile areas, storage areas, and disposal areas.** Priority is to locate these near the subproject location. However, if it is deemed necessary to locate elsewhere, sites to be considered will not promote instability and result in destruction of property, vegetation and drinking water supply systems. Thickly populated residential areas shall not be considered for setting up camps to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust, and noise, and to prevent social conflicts, shortages of amenities, and crime). Extreme care needs to be taken to prevent disposals near water bodies or in areas which are inconvenience the community.

79. **Site selection for equipment lay-down and storage area.** Improper selection will affect local environment and inconvenience to public. Possible mitigation measures are:

- (i) Choice of location for equipment lay-down and storage areas must consider distances to adjacent land uses, general onsite topography and water erosion potential of the soil. Impervious surfaces must be provided where necessary.
- (ii) Storage areas shall be secure to minimize the risk of crime. They shall also be safe from access by children or animals etc.
- (iii) Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area.
- (iv) Equipment lay-down and storage areas must be designated, demarcated, and fenced if necessary.
- (v) Fire prevention facilities must be present at all storage facilities.
- (vi) Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage areas.

- (vii) These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources.
- (viii) Fuel tanks must meet relevant specifications and be elevated so that leaks may be easily detected.
- (ix) Staff dealing with these materials or substances must be aware of their potential impacts and follow the appropriate safety measures.

80. **Site selection of sources of materials.** The material used for the construction of subproject components are mainly sand, coarse aggregate fine aggregate and gravel for construction works. Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.

81. The natural raw materials like sand, gravel and soil shall be procured/ sourced from the authorized mines listed by Tripura Government as specified in the website http://trpenvis.nic.in/test/natural_resources.html.

82. Aggregates will be collected from Churaibari at North Tripura district, near Assam boarder. Sand will be collected from local river Deo River, Juri River and Manu River and local approved vendors. Contractor will verify all sources for legal compliances and will obtain prior approval of PIU for sourcing materials from any source.

83. Water for construction purpose is available from Deo River, Juri River and Manu River, within and nearby the town. In case of use of ground water, NOC needs to be obtained from concerned authority.

84. **Mitigation Measures.** Contractor should procure these materials only from the quarries permitted/ licensed by Mines and Geology Department, Government of Tripura;

- (i) Contractor should, to the maximum extent possible, procure material from existing authorized quarries;
- (ii) The contractor shall try to procure/ source the material from the nearest possible authorized mines.
- (iii) It will be the construction contractor's responsibility to verify the suitability of all material sources and to obtain the approval of Department of Mines & Geology and local revenue administration
- (iv) Contractor should submit the details of sources and copies of approvals, permissions to Kailashahar MC, Kumarghat MC, Dharmanagar MC and Ambassa MC, and should start procurement only after the respective source is approved by Kailashahar MC, Kumarghat MC, Dharmanagar MC and Ambassa MC
- (v) The transportation of raw material should be done in covered vehicles.

85. **Tree cutting.** Cutting of trees require a tree cutting permit from the local forest department. All trees cut under a project must be compensated by compensatory afforestation as required by the State Forest Department. Road and drain wise tree felling requirement surveyed for 4 towns. Details chainage wise information is attached in **Appendix 6** under strip plan and summary is given in **Table 29**. About 37 trees of Local tree species commonly used for avenue plantation like *Magnifera Indica*, *Syzygium cumini*, *Cerbera odollam*, *Tectona grandis*, *Neolamarckia cadamba*, *Cerbera odollam*, *Bombax ceiba*, *Gmelina arborea*, *Morinda tinctoria*, *Ziziphus mauritiana*, *Ficus religiosa*, *Terminalia chebula*, *Artocarpus heterophyllus*, *Delonix regia*, *Tamarindus indica*,

Mimusops elengi etc. likely to be felled for construction of road and rehabilitation of drain. List will be finalized after confirmatory survey by contractor. Girth wise tree species, which likely to be impacted is also shown in **Appendix 6**.

86. Mitigation includes:

- (i) Minimize tree cutting as much as possible during joint verification with the contractor; where possible, amend the alignment of drains locally to avoid tree cutting.
- (ii) As per compensatory afforestation requirement, the tree plantation will be done five times of tree cutting (1:5 of tree cutting).
- (iii) No trees shall be removed for setting up construction facilities / ancillary sites.

87. **Maintaining Core Labor Standard.** The Contractor and PMU/PIU are responsible for ensuring that international CLS¹⁰ as reflected in national labor laws and regulations are adhered to. PIU is ultimately responsible for monitoring compliance with national labor laws and regulations, provided that these national laws are consistent with CLS. ADB will carry out due diligence – during loan review missions - to ensure that executing and implementing agencies and contractors comply with applicable (national) core labor standards and labor laws. PMU or PIU will ensure that bidding and contract documents include specific provisions requiring contractors to comply with all: (i) applicable labor laws and core labor standards on: (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity or caste; and (c) elimination of forced labor; and (ii) the requirement to disseminate information on sexually transmitted diseases including HIV/AIDS to employees and local communities surrounding the project sites. These will be monitored as part of the project's safeguards reporting requirements.

88. **Debris and Silt disposal.** The provision has been made in cost estimate to use the roadway excavated materials as necessary for the construction of road, which are as follows:

- (i) For all types of soil, such as ordinary rock, hard rock and
- (ii) Excavation from drain and foundation of other structures.

89. As per above description, the Contractor will use the excavated roadside material for construction of road. The rest unsuitable material will be disposed suitably. The lead and lift have been considered in cost estimates. Proper disposal plan will be prepared by the Contractor to dispose the unsuitable material generated from road excavation.

90. **Drinking water quality.** Drinking water supply for workers will be likely sourced from Department of water supply (DWS) provided sources. Groundwater in project towns has high iron levels.

91. To avoid any health risks from the drinking water supply:

- (i) Contractor will ensure that drinking water supply in compliance with the Indian National drinking water quality standards
- (ii) The Contractor will undertake water quality testing via accredited laboratory to confirm quality in compliance with y standards. If the groundwater quality does not

¹⁰ Core Labor Standards (CLSs) are a set of four internationally recognized basic rights and principles at work: (i) freedom of association and the right to collective bargaining; (ii) elimination of all forms of forced or compulsory labor; (iii) effective abolition of child labor; and (iv) elimination of discrimination in respect of employment and occupation.

comply with the standards, the contractor will source potable water from an alternative source or provide a potable onsite treatment facility with own costs and after approval from PIU/PMU

92. **EMP Implementation Training.** If the contractors and construction supervision engineers are not aware about the requirements of this EMP, the project may not proceed and comply with ADB and GoI and GoT environmental policies.

93. The PMU, PIU and contractors will be required to undergo training on EMP implementation. Methodology of capacity and training activities are discussed in next sections. The capacity building program will be participatory to the extent possible to make it more effective, with learning by doing, role playing, group exercises, on-the job training, etc. Pre- and post-training assessment will be conducted to measure the effectiveness of the program.

94. **Preparation of H&S Plan for Pandemic like COVID- 19.** With the existing EHS guidelines contracture has to prepare a site specific EHS plan including COVID -19 guidelines based on following principles and it get approved from PMU before staring of construction, the Contractor shall abide by the most stringent procedure available.

- (i) Consistently practice social distancing.
- (ii) Cover coughs and sneezes.
- (iii) Maintain hand hygiene.
- (iv) Clean surfaces frequently.

95. **Community awareness on project activities and impacts.** Lack of community awareness on project activities may result in potential community health and safety concerns and complaints.

96. Before the start of project construction, a meaningful consultation with the affected communities will be conducted. This meaningful consultation will aim to engage community stakeholders, listen to their views, and try to come to a common understanding about the need for an improved drainage system and the sacrifices that need to be made to achieve it. To aid in the consultation process, it is important that the community should be made aware of the details of project activities. Important information to be disseminated to the people are, among others, the following:

- (i) Overview and objectives of the proposed project;
- (ii) Preliminary and/or final detailed design of proposed project components;
- (iii) Potential environmental and social impacts (positive and negative) of the project, and the proposed mitigation measures for the perceived negative impacts; and
- (iv) Grievance redress mechanism and contact details of the project.

B. Construction Impacts

97. **Construction Planning.** Inadequate planning could lead to non-implementation of EMP during the construction phase and result in significant environmental impacts leading to non-compliance with ADB's environmental safeguard requirements.

98. To ensure that EMP will be implemented during the construction phase, the contractor should, prior to start of construction activities:

- (i) Designate an Environmental Health and Safety Officer (EHSO).
- (ii) Conduct training on the rationale for and implementation of the SEMP and EMP to enhance general understanding and clarify responsibilities regarding

- implementation, including monitoring and reporting, must also be provided to relevant staff of contractors (including EHS Officer)
- (iii) The Contractor will be required to submit to PMU, for review and approval, a SEMP including (a) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes, (b) specific mitigation measures following the approved EMP; (c) monitoring program as per EMP; and (d) budget for SEMP implementation. No works can commence prior to approval of SEMP. The SEMP shall include, but not limited to the following:
 - (a) Traffic management plan;
 - (b) Construction health and safety plan (including COVID-19 H&S guidance);
 - (c) Construction waste and debris management Plan

99. **Excavation, soil erosion and sediment mobilization.** Excavation during construction will generate loose soil which can be carried through surface run-off during a rainfall.

100. The Contractor shall implement the measures at all times to control soil erosion that shall include, but not be limited to the followings:

- (i) The Contractor shall plan his works to minimize surface excavation works during the rainy season where practicable.
- (ii) Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms shall be developed by the Contractor.
- (iii) The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.
- (iv) Channels, earth bunds, netting, tarpaulin and or sandbag barriers shall be used on site to manage surface water runoff and minimize erosion.
- (v) The overall slope of the works areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows.
- (vi) Monitor groundwater quality that could exist close to the working areas to ensure compliance.

101. **Sources of Materials.** Since the construction work is not heavy, moderate amount of sand and coarse aggregate will be required for this sub-project. Quarries inevitably cause few physical changes; as construction materials are excavated from the ground, leaving large cavities, or levelling hillsides, etc. The physical damage caused by quarries is controlled by allowing them to operate within specific limited areas only, so the damage is restricted in extent and not allowed to spread indiscriminately. Contractor should avoid new borrow pits/quarries as far as possible, if necessary, all the permissions, including conduct of environmental assessment, and environmental clearance as necessary shall be obtained prior to start of quarrying activity. The contractor should also make a concerted effort to re-use as much excavated material from this sub-project as possible. The construction contractor will be required to:

- (i) Obtain construction materials only from government approved quarries with prior approval of Cluster-PIU;
- (ii) Cluster-PIU to review, and ensure that proposed quarry sources have all necessary clearances/ permissions in place prior to approval;
- (iii) Contractor to submit to Cluster-PIU on a monthly basis documentation on material obtained from each source (quarry/ borrow pit);
- (iv) Avoid creation of new borrow areas, quarries etc., for the project; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance prior to approval by Cluster- PIU.

102. **Impact on Air Quality.** There will be two main sources of air emissions, i.e., mobile sources and fixed sources during construction phase. Mobile sources are mostly associated with vehicles involved in construction activities. On the other hand, air pollution from fixed sources is mainly from generator sets, bitumen/concrete mixing plants, other construction equipment (e.g., compressors) and excavation/ grading activities.

103. Dust and gaseous emissions will be generated by the construction machinery. Pollutants of primary concern include particulate matter. However, suspended dust particles are coarse and settle within a short distance of the construction area. Therefore, the impact will be direct but temporary, and will be restricted to areas in close vicinity of the construction activities only.

104. Construction work also involves breaking up, digging, transporting, and dumping large quantities of dry material. The particulate matter from these can cause health impacts, i.e., respiratory problems, irritation in eyes and reduction in visibility.

105. In the conduct of construction activities and the operation of equipment, contractors shall utilize all practical methods to control, prevent and otherwise minimize atmospheric emissions, specifically:

- (i) Take every precaution to reduce the levels of dust at construction sites
- (ii) Fit all heavy equipment and machinery with air pollution control devices that are operating correctly.
- (iii) Asphalt / bitumen, and concrete mixing plants should be operated within the permissible emission standards, and should be located away from settlements (up wind)
- (iv) Vehicles travelling to and from the construction site must adhere to speed limits to avoid producing excessive dust.
- (v) Reduce dust by spraying stockpiled soil, excavated materials, and spoils.
- (vi) Cover with tarpaulin vehicles transporting soil and sand.
- (vii) Cover stockpiled construction materials with tarpaulin or plastic sheets.
- (viii) Heavy equipment and transport vehicles shall move only in designated areas and roads.
- (ix) Water spraying to access roads, camp sites and work sites to reduce dust emissions.
- (x) Machines and vehicles must be regularly examined and maintained to comply with requirements of technical specifications.
- (xi) All vehicles, equipment, and machinery used for construction will be regularly maintained to ensure that pollution emission levels comply with the relevant standards. Copies of conformance will be submitted regularly to the PIU.
- (xii) Repair and maintain access roads, as necessary.
- (xiii) Monitor air quality according to the environmental monitoring plan.
- (xiv) clean wheels and undercarriage of vehicles prior to leaving construction site;
- (xv) prohibit burning firewood in work and labor camps (promote liquified petroleum gas for cooking purposes and electric heater for heating purposes);
- (xvi) use vehicles that have government-issued permits and registrations; and
- (xvii) prohibit open burning of solid waste.

106. **Noise and Vibration Levels.** Proposed road and drain are in urban areas where there are houses, religious places, noise sensitive area (academic institutions, religious places, court and hospital) and businesses. The sensitive receptors are the general population in these areas. Increase in noise level may be caused by excavation, particularly breaking of cement concrete or

bitumen roads for drain and road construction works, operation of construction equipment like asphalt, concrete mixers, and the transportation of equipment, materials, and people. Vibration generated from construction activity may have impact on nearby buildings. This impact is negative but short-term, and reversible by mitigation measures. The construction contractor will be required to:

- (i) Plan activities in consultation with Cluster-PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance;
- (ii) Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimize sound impact to surrounding sensitive receptor;
- (iii) Construction work shall be limited to day light hours (8 AM to 6 PM) for all the works located within the town
- (iv) Adapt low noise producing work methods, and provide additional noise control measures (such as temporary barriers / enclosures) near sensitive receptors as mentioned above;
- (v) Noise level not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s;
- (vi) Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; and
- (vii) Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.

107. **Surface water pollution.** Silt-laden run-off from stockpiled materials, solid wastes and domestic wastewater from the construction camp, and leaks from chemical storage areas and machineries may contaminate or result in water pollution if disposed or discharged to nearby receiving bodies of water. Untreated sewage from the worker camps, construction facilities etc., could enter surface water if not properly, treated and disposed. Periods of high rainfall could lead to the overflow of the septic tanks and overland flow. Raw sewage can potentially impact surface water quality by promoting the growth of algae and delivering pathogens may be harmful to human and ecological receptors. Solvents and vehicle maintenance fluid (oil, coolant) and diesel fuel may contaminate surface and groundwater if these are disposed of directly into the ground or washed into the streams. Human waste from construction workers may also contaminate surface water and groundwater if there are no adequate sanitary facilities. The proposed works invariably include cleaning and desilting of drains. In the existing situation, drains are carrying wastewater, and indiscriminate disposal of solid waste into drains is also prevalent. The drains have been choked and water accumulated at many stretches of drain. The proposed works therefore include dewatering of drains by pumping out of accumulated wastewater, and desilting.

108. To mitigate these impacts, the contractor will be required to:

- (i) Disposal of drain sludge/silt in solid waste disposal sites with prior permission from municipal council and/or TSPCB
- (ii) Provision of temporary sedimentation canal along construction areas, particularly alignments that are adjacent to receiving bodies of water or canals.
- (iii) Works of culvert construction shall be planned in lean or dry / lean flow season only
- (iv) establish safety procedures against flash floods and other hazards associated with working in or near water during the construction of culverts on rivers
- (v) The measures to address soil erosion at the proposed facilities will consist of measures as per design, or as directed by the construction supervision

consultant/PIU to control soil erosion, sedimentation, and water pollution. All temporary sedimentation, pollution control works, and maintenance thereof will be deemed incidental to the earthwork or other items of work.

- (vi) All temporary discharge points shall be located, designed, and constructed in a manner that will minimize erosion in the receiving channels.
- (vii) Ensure proper compaction of refilled soil and there shall not be any loose soil particles on the top; the material shall be refilled in layers and compacted properly layer by layer.
- (viii) Use surplus soil for beneficial purposes such as in any other construction activities, or to raise the level of low-lying areas.
- (ix) Avoid scheduling of excavation work during the monsoon season. Earthworks during dry season.
- (x) Confine construction area including the material storage (sand and aggregate) so that runoff will not enter the site.
- (xi) Ensure that drains are not blocked with excavated soil
- (xii) Stockyards, storage of fuel and lubricants at least 50 meters (m) away from watercourses.
- (xiii) Fuel and other petroleum products stored at storage areas away from water drainage and protected by impermeable lining and bunded 110%.
- (xiv) Daily control of machinery and vehicles for leakages
- (xv) No obstruction in flowing water.
- (xvi) For effluents from workplace, camps, and offices, provide treatment arrangements such as retention ponds and septic tanks which should be incorporated in the facility designs. A sewage management plan must be prepared by the contractor and agreed with the PMSC.
- (xvii) Monitor water quality according to the environmental monitoring plan.

109. For management and final disposal of solid wastes following mitigation, contractor will be required to apply the follow-up measures such as:

- (i) collection of recyclable solid wastes and supply to scrap vendors;
- (ii) ensure all the camp wastes and construction wastes are placed in the designated waste collection pits away from receiving water;
- (iii) establishment of separate bunded and lined areas with 110% volume for the storage of all the toxic material wastes, including batteries, oil filters, mobile, burnt oils, etc. at the construction site; and
- (iv) consultation with PIU on the proper disposal of all residual wastes.

110. **Groundwater Quality.** Another physical impact that is often associated with excavation is the effect on drainage and the local water table if groundwater and surface water collect in the voids. In the sub-project area, groundwater depth is shallow, there are few water bodies and ponds, and it also receives high rainfall during the monsoon. Conducting excavation works during non-monsoon season will certainly help, but due to high water table, water may collect in pits as they are excavated. The water collected in excavated pits will contain silt and disposal of this in drainage channels lead to silting. To avoid this the contractor needs to be implement the following measures:

- (i) Create a temporary drainage channel around the work area to arrest the entry of runoff from upper areas into the work area
- (ii) Pump out the water collected in the pits / excavations to a temporary sedimentation pond; dispose of only clarified water into drainage channels/streams after sedimentation in the temporary ponds
- (iii) Consider safety aspects related to pit collapse due to accumulation of water

111. It is necessary that arrangement for safe drinking water is made prior to start of work. Water will be supplied for consumption only after adequate analysis and requisite treatment. The workers may also be trained on the need for judicious use of freshwater resources. The contractors will use water in consideration to its value as a resource. All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned.

112. **Generation of Construction Wastes.** Solid wastes to be generated from the construction activities are excess excavated earth (spoils) during road and side drain construction, drain silt/sludge, discarded construction materials, cement bags, wood, steel, oils, fuels and other similar items. Domestic solid wastes may also be generated from the workers' camp. Improper waste management could cause odor and vermin problems, pollution and flow obstruction of nearby watercourses and could negatively impact the landscape. The following mitigation measures to minimize impacts from waste generation shall be implemented by the contractor:

- (i) Prepare and implement a Construction Waste Management Plan;
- (ii) As far as possible utilize the debris and excess soil in construction purpose,
- (iii) Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed at approved designated areas immediately;
- (iv) If disposal is required, the site shall be selected preferably from barren, infertile lands; site should be located away from residential areas, few water bodies and any other sensitive land uses;
- (v) Domestic solid wastes should be properly segregated in biodegradable and non-biodegradable for collection and disposal to designated solid waste disposal site; create a compost pit at workers' camp sites for disposal of biodegradable waste; non-biodegradable / recyclable material shall be collected separately and sold in the local recycling material market;
- (vi) Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposed of in disposal sites approved by TSPCB;
- (vii) Prohibit burning of construction and/or domestic waste;
- (viii) Ensure that wastes are not haphazardly thrown in and around the project site, provide proper collection bins, and create awareness to use the dust bins;
- (ix) Conduct site clearance and restoration to original condition after the completion of construction work; Cluster-PIU to ensure that site is properly restored prior to issuing of construction completion certificate.

113. Waste can be disposed at Sonamukhi dumping ground which is 10 Km and 12 Km from Kailashahar and Kumarghat town respectively, Kalachari dumping ground which is about 30 km from Ambassa town. In all the cases necessary prior permission shall be obtained from the concerned authority, and waste shall be disposed following construction waste management rules.

114. **Disturbance to terrestrial flora and fauna.** The subproject area is a built-up area, hence, the impacts to flora and fauna will be insignificant. For trees found at the site, the design will ensure that these trees will not be cut, or if tree cutting is necessary, mitigation measure should be strictly followed.

- (i) Conduct final confirmatory tree cutting and bird nest survey before start of construction.
- (ii) No trees will be removed without prior approval of concerned government agency/foresee department.
- (iii) Restrict vegetation removal to within ROW / actual work site.
- (iv) Tree cutting is avoided to maximum possible, transplant trees, where feasible
- (v) For any tree cut, conduct replacement planting at a ratio of 1(cut):5 (new planting)
- (vi) Before any tree cutting activity takes place, a thorough inspection of the tree must

be conducted to check for any active bird nests. If an active nest is found, the tree cutting activity must be postponed until the young birds have flown off from their nests and are no longer dependent on them. This measure ensures that young birds are not harmed and that their habitats are protected.

- (vii) The contractor will not use or permit the use of wood as a fuel for the execution of any part of the works, including but not limited to the extent practicable shall ensure that fuels other than wood are used for cooking.
- (viii) Within RoWs, minimize land cover removals, and install protective physical barriers around trees.
- (ix) All ROW to be re-vegetated and landscaped after construction completed.
- (x) Prior to tree cutting, placard/s shall be installed in conspicuous places to inform the public that the tree cutting is authorized
- (xi) Protect giant trees and locally important trees (for religious reasons), if any is identified at the site during implementation
- (xii) Prohibit employers and workers from poaching animals and cutting of trees for firewood in the vicinity of the site.

115. **Impacts on aquatic ecology.** Some of the subproject alignments are near or adjacent to ponds, canals and rivers. The construction of the subproject may affect these ponds and rivers due to siltation and chemical spills, and improper waste disposal, and therefore may impact the quality of the water and any thriving aquatic species.

116. To mitigate this impact, contractor will be required to:

- (i) Provide temporary protection at sections near the river/ponds to avoid sliding of soils;
- (ii) Store spoils away from the side of the river/pond;
- (iii) Implement proper storage/disposal of materials, chemicals, and waste
- (iv) Implement mitigation measures for excavation, soil erosion and sediment mobilization, surface water pollution, and construction waste generation.

117. **Drainage Congestion.** Construction material getting into surface runoff or uncontrolled disposal may cause drainage congestion. The impact of these on hydrology is expected to be more pronounced during post monsoon period with rapid movement of rainwater through existing drainage structures, which if blocked by construction waste and debris may cause flooding or waterlogging in neighboring areas.

118. Wastes and construction debris will not be disposed in a manner that these would end up in drainage channels. The on-site storage of excessive quantities of unwanted spoil and aggregate materials should be avoided. Where storage is necessary, the Contractor shall ensure heaps and stockpiles are located at sites that they do not permit direct runoff into watercourses and are on land sloping at less than 1.5%. All heaps shall be of a size and stability that will ensure the risk of mass movement during period of heavy rainfall is minimized.

119. **Management Plan for Night works** (if required). Following requirements should be fulfilled for construction works at night hours-

- (i) Night works should be avoided at construction sites specially in residential areas and should be performed only when day works are not possible due to excessive traffic/public/pedestrian movement, site of cultural or religious importance, where there is huge crowd during day hours or any other unavoidable circumstances;
- (ii) Contractor should plan for night works only after directions from PMU/PIU/project consultants

- (iii) Contractor should submit plan for night works for approval from PIU;
- (iv) PIU should ensure that prior written information should be given to local authorities such as district administration, Police/traffic police, line agencies concerned, resident's welfare association/business association/vyapar of the affected areas and their consents/permissions should be taken prior to start of night works;
- (v) PIU/PMSC engineers should check and ensure that all the preparation as per management plan is done by contractor and contractor is having all the necessary equipment and materials for night works;
- (vi) Contractor is required to have following equipment/arrangements for night works;
- (vii) Contractors should have handheld noise level meter for measurement of noise during night hours;
- (viii) Contractors should have handheld lux meter for the measurement of illumination during night hours;
- (ix) Preferably electrical connections are available for running equipment otherwise sound proof/super silent Diesel Generator set should be available;
- (x) Sound level should not increase as per following-

Type of area of work	Maximum noise level dB(A)
Industrial	70
Commercial	55
Residential	45
Silence zone	40

- (xi) Illumination should be as follows-

Minimum illumination (lx)	Areas to be illuminated	Type of work activity
54	Illumination throughout the work area	General work area lighting, and performance of visual tasks of large size, or medium contrast, or low require accuracy
108	Illumination of work area and areas adjacent to equipment	Performance of visual tasks of medium size, or low to medium contrast, or medium required accuracy
216	Illumination of task	Performance of visual tasks of small size, or low contrast or high required accuracy or fine finish

- (xii) As far as possible ready-mix concrete from batching plant to be used, otherwise the concrete should be prepared away from residential areas and brought to the site;
- (xiii) All the noise activity like hammering, cutting, crushing, running of heavy equipment should be done in day time and avoided in night time;
- (xiv) Workers engaged in night works should have adequate rest/sleep in day time before start of night works;
- (xv) Worker engaged for night works should have previous experience of night works and should be physically fit for such works including clear vision in night;
- (xvi) All the necessary provisions of traffic aids such as traffic signals, road signage, barricades, cautions boards, traffic diversion boards etc. should be available with fluorescent/retro-reflective arrangements;

- (xvii) Workers should be trained before start of night works about risks and hazards of night works and their mitigation measures and should be provided all the protective aids (PPEs) including fluorescent/retro-reflective vests;
- (xviii) Horns should not be permitted by equipment and vehicles;
- (xix) Workers should not shout and create noise;
- (xx) First aid and emergency vehicles should be available at site;
- (xxi) Emergency preparedness plan should be operative during night works;
- (xxii) Old persons and pregnant women and women having small kids should not work in night time;
- (xxiii) All the vehicles and equipment being used at night works should have adequate type of silencers/enclosures/mufflers to reduce noise;
- (xxiv) All the vehicles should be checked for working head lamps, tail lamps, inner lights etc. before start of night works;
- (xxv) PIU/PMSC site engineers and contractor's safety personnel should closely monitor the safety of works continuously and noise and illumination levels on hourly basis and maintain photographic and video graphic records as well as register the observations;
- (xxvi) Night works should be stopped early in the morning at least one hour before start of pedestrian/traffic movement;
- (xxvii) After completion of night works all the site should be cleaned and maintained obstruction free for day time movement of vehicles and pedestrians;
- (xxviii) Drivers and workers should be alert and responsive during night works;
- (xxix) All the wages to workers working in night hours should be as per the applicable labour acts;
- (xxx) Avoid any nuisance which may create problems to nearby habitants and work peacefully during night hours; and
- (xxxi) Night works should not be conducted near hospitals and during peak seasons such as peak tourist season, students' exam times etc.

120. **Accessibility.** Excavation along the roads for construction of drain, hauling of construction materials and operation of equipment on-site can cause traffic problems. Roads connecting sites are narrow and carry considerable local traffic, mainly comprise bicycles, 2 wheelers, mini trucks, auto rickshaws, buses etc., Hauling of construction material, equipment, construction waste, etc., to and from the work site may increase the road traffic on local roads, which are not in good condition. This will further inconvenience the local community and road users. Potential impact is negative but short term and reversible by mitigation measures. The construction contractor will be required to:

121. Hauling (material, waste/debris, and equipment) activities
- (i) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;
 - (ii) Schedule transport and hauling activities during non-peak hours;
 - (iii) Locate entry and exit points in areas where there is low potential for traffic congestion;
 - (iv) Drive vehicles in a considerate manner; and
 - (v) Notify affected public by public information notices, providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.

122. **Traffic diversion or road closure.** On the project road, utilities within the RoW at few locations will have to be shifted / removed prior to construction. As works are conducted on or

along the roads, traffic may experience delays when diverted around active construction areas but will be more severely hampered at the locations where temporary road closures are necessary. In narrow, single lane roads, complete road closure may be needed to conduct the road works, whereas drain works may not require road closure. Diversion and road closure points will have proper signs indicating the nature of the problem envisaged. The contractor will ensure that information on the timing of construction works and notifications of road closure (if any) is provided through the local community heads. At certain locations on the road, particularly at bridge /culvert sites, traffic will be temporarily diverted from the existing carriageway while construction is in progress and temporary traffic diversions will be managed within the RoW.

123. The following measures are to be included in the project and implemented:

- (i) Start the work from downstream end of the drains
- (ii) Prepare and implement a traffic management plan
- (iii) Conduct work in small sections, say 100 m at a time; confine the drain in the section and stop all inlets in general, and into that section in particular
- (iv) Provide a bypass arrangement for the water coming for upstream by providing pumping arrangement so that the water coming from upstream side of the selected section are pumped through a pipe to the downstream
- (v) Dewater the selected section; pump the accumulated water into the downstream;
- (vi) As far as possible allow the silt to dry before start of desilting work.
- (vii) Avoid manual desilting of drains as far as possible in the section where there is space to employ mechanical diggers or appropriate equipment and tools
- (viii) Provide proper tools and equipment for desilting (winches and buckets), and personal protection equipment (PPE) for workers (gloves, gum boots, face masks, etc.); additional oxygen tanks
- (ix) Provide onsite training to workers on safe handling of contaminated water and sludge, and
- (x) Silt/soil generated from desilting shall be disposed municipal land fill site with prior permission from respective municipal councils and in consultation with Tripura State Pollution Control Board

124. The drain construction works will also disturb some modern-day social and cultural resources, such as schools, hospitals, and temples. Repair and rehabilitation of Drain interrupt access to commercial establishments, residences and for pedestrians and vehicles. This will be achieved through several of the measures recommended above, including:

- (i) Avoiding working at sensitive times,
- (ii) Limiting dust by removing waste soil quickly, bringing sand to site only when necessary, covering and watering stockpiles, and covering soil and sand when carried on trucks;
- (iii) Increasing the workforce in sensitive areas to complete the work quickly;
- (iv) Providing wooden bridges for pedestrians and metal sheets for vehicles to allow access across open trenches where required (including access to houses);

125. **Socio-Economic – Income.** Blocking of access to the business / livelihood activities, especially during drainage construction work along the roads, may impact the income of households. The impacts will result from excavation and construction works, stockpiling, the operation of construction vehicles and equipment, and accidental damage to utilities (e.g., power supply poles, open drains, and water taps or hoses). The potential impacts include disturbance to economic activities, particularly to the businesses operating along the alignments of construction works. Contractor will be required to:

- (i) Implement the traffic management plan in collaboration with local authorities;

- (ii) Where traffic congestion will likely occur, place traffic flagmen during working hours;
- (iii) Avoid full road closures by applying the construction method on section-wise and/or chainage-wise approach during excavation, concreting and/or curing periods;
- (iv) If full road closure is not possible, especially on very narrow roads, ensure that alternate routes are identified and that affected residents and establishments are informed prior to conducting the construction activities;
- (v) Provide convenient access to pedestrians when works occur in front of residential, commercial, or institutional establishments. Examples are planks with handrails that should be provided to cross excavated areas.
- (vi) Provide appropriate compensation to qualified affected people or businesses per approved resettlement plan for the subproject;
- (vii) Manage stockpile;
- (viii) Manage pumped water from excavations either to drains or drums for later use;
- (ix) Relocate the affected power supply poles, and
- (x) Advise the concerned authority during accidental damage to utilities.

126. **Socio-Economic – Employment.** Construction skilled and unskilled workers will be required during the 36 months construction stage. This can result in generation of temporary employment and increase in local revenue. The construction contractor will be required to employ local labor force as far as possible.

127. **Occupational Health and Safety.** Workers need to be mindful of the occupational hazards which can arise from working at excavation works. Potential impacts are negative and long-term but reversible by mitigation measures. The construction contractor will be required to:

- (i) Comply with all national, state, and local labour laws (see **Appendix 5**);
- (ii) Implementation of international best practices on occupational health and safety such as those in Section 4.2 of World Bank EHS Guidelines on Construction and Decommissioning Activities
- (iii) Develop and implement site-specific occupational health and safety (OHS) Plan along with COVID-19 SOP which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective equipment; (c) OHS Training¹¹ including COVID 19 for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;
- (iv) Ensure availability of first aid box at work site;
- (v) Ensure the workers follow COVID 19 SOP and implement accordingly;
- (vi) Provide medical insurance coverage for workers;
- (vii) Maintain Safe distance at work and use of Mask should be encouraged for safeguard from COVID-19
- (viii) Secure all installations from unauthorized intrusion and accident risks;

¹¹ Some of the key areas that may be covered during training as they relate to the primary causes of accidents include (i) slips, trips and falls; (ii) personal protective equipment; (iii) ergonomics, repetitive motion, and manual handling; workplace transport; and (v) legislation and responsibilities. Training can provide the foundations of competence but it does not necessarily result in a competent worker. Therefore, it is essential to assess staff competence to ensure that the training provided is relevant and effective. Supervision and monitoring arrangements shall be in place to ensure that training has been effective and the worker is competent at their job. The level of supervision and monitoring required is a management decision that shall be based on the risks associated with the job, the level of competence required, the experience of the individual and whether the worker works as part of a team or is a lone worker.

- (ix) Provide health and safety orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;
- (x) Make sure vaccination against COVID-19 is done for the labourers
- (xi) Ensured the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;
- (xii) Ensured moving equipment is outfitted with audible back-up alarms;
- (xiii) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate;
- (xiv) Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.
- (xv) Provide supplies of potable drinking water;
- (xvi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances

128. **Community Health and Safety.** Drainage and road construction works along the road, and hauling of equipment and vehicles have potential to create safety risks to the community. Hazards posed to the public, specifically in high-pedestrian areas may include traffic accidents and vehicle collision with pedestrians. Potential impact is negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

- (i) Contractor's implementation of community health and safety plan following international best practices on community health and safety such as those in Section 4.3 of World Bank Environmental Health and Safety (EHS) Guidelines on Construction and Decommissioning Activities. As a minimum and whichever is applicable, the health and safety plan shall ensure the following:
- (ii) implement risk management strategies to protect the community from physical, chemical, or other hazards associated with sites under construction and decommissioning;
- (iii) restricting access to the site, through a combination of institutional and administrative controls, with a focus on high-risk structures or areas depending on site-specific situations, including fencing, signage, and communication of risks to the local community;
- (iv) removing hazardous conditions on construction sites that cannot be controlled affectively with site access restrictions, such as covering openings to small confined spaces, ensuring means of escape for larger openings such as trenches or excavations, or locked storage of hazardous materials;
- (v) implement measure to prevent proliferation of vectors of diseases at work sites;
- (vi) Implement necessary structural safety and site safety measures to prevent collapse of trenches, and damage / structural failure / collapse of adjacent buildings, boundary walls and other structures; provide proper braces, struts, anchors as required in the trench and for protecting the adjoining structures; avoid placing of material, equipment, waste, close to the trench edges
- (vii) adequate space and lighting, temporary fences, reflectorized barriers and signage's at active work sites
- (viii) contractor's preparedness in emergency response;
- (ix) adequate dissemination of GRM and contractor's observance and implementation of GRM

- (x) Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency);
- (xi) Enforce strict speed limit (20-30 kmph) for playing on unpaved roads, construction tracks;
- (xii) Night-time driving will be by exception only, as approved by the Cluster-PIU to minimise driving risk and disturbance to communities;
- (xiii) Adopt standard and safe practices for micro tunneling, if required;
- (xiv) Temporary traffic control (e.g., flagmen) and signs will be provided where necessary to improve safety and provide directions;
- (xv) All drivers will undergo safety and training; along with COVID-19 awareness
- (xvi) Public access to all areas where construction works are on-going will be restricted through the use of barricading and security personnel;
- (xvii) Warning signs, blinkers will be attached to the barricading to caution the public about the hazards associated with the works, and presence of excavation;
- (xviii) Control dust pollution – implement dust control measures as suggested under air quality section;
- (xix) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure;
- (xx) Provide road signs and flag persons to warn of on-going trenching activities.

129. **Construction Camps.** Contractor will set up a construction camp – for temporary storage of construction material (cement, steel, fixtures, fuel, lubricants etc.), and stocking of surplus soil, and include separate living areas for migrant workers. The contractor is however encouraged to engage local workers as much as possible. Operation of work camps cause temporary air, noise and water pollution, and may become a source of conflicts, and unhealthy environment if not operated properly. Potential impacts are negative but short-term and reversible by mitigation measures. The construction contractor is required to:

- (i) As far as possible locate the camp site away from residential areas (at least 50 m buffer shall be maintained)
- (ii) Avoid tree cutting for setting up camp facilities
- (iii) Ensured that a proper compound wall is provided, and erect a wind/dust screen around
- (iv) Camp site shall not be located near (50 m) water bodies, flood plains flood prone/low lying areas, or any ecologically, socially, archeologically sensitive areas
- (v) Construction camp must be safeguarded from COVID -19 including safe eating area, maintaining Hygiene inside camp, ensure physical distancing measures
- (vi) Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit
- (vii) Provide proper temporary accommodation with proper materials, adequate lighting and ventilation, appropriate facilities for winters and summers; ensure conditions of livability at work camps are maintained at the highest standards possible at all times;
- (viii) Consult Cluster-PIU before locating project offices, sheds;
- (ix) Minimize removal of vegetation and disallow cutting of trees
- (x) Ensure conditions of livability at work camps are always maintained at the highest standards possible; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be allowed as accommodation

- for workers
- (xi) Camp shall be provided with proper drainage, there shall not be any water accumulation
- (xii) Ensure COVID vaccination is done for all the labours involved in the work
- (xiii) Provide drinking water, water for other uses, and sanitation facilities for employees
- (xiv) Prohibit employees from cutting of trees for firewood; contractor should be provided proper facilities including cooking fuel (oil or gas; fire wood not allowed)
- (xv) Train employees in the storage and handling of materials which can potentially cause soil contamination
- (xvi) Recover used oil and lubricants and reuse or remove from the site
- (xvii) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in local market
- (xviii) Remove all wreckage, rubbish, or temporary structures which are no longer required
- (xix) At the completion of work, camp area shall be cleaned and restored to pre-project conditions, and submit report to Cluster-PIU; Cluster-PIU to review and approve camp clearance and closure of work site.

130. **Appendix 10** shows guideline for set up worker's camp.

131. **Social and Cultural Resources.** Significant negative social impacts in project are not anticipated. Site of social/cultural importance (schools, hospitals, and religious places) may be distributed by noise, dust, and impeded access. There are schools located close to the project sites, and these may pose safety risks to school children, staff and visitors. This short-term impact, mitigated by the following mitigation measures.

- (i) Avoiding working at sensitive times,
- (ii) Limiting dust by removing waste soil quickly, bringing sand to site only when necessary, covering and watering stockpiles, and covering soil and sand when carried on trucks;
- (iii) Using modern vehicles and machinery with standard adaptations to reduce noise and exhaust emissions, and ensuring they are maintained to manufacturers' specifications.
- (iv) Implement community health and safety measures recommended above; isolate work site from the school access road; provide proper barricading to prevent entry of children / public into work site; create awareness

132. **Post-construction clean-up and reinstatement.** Construction debris, spoils, and excess construction materials may pose hazards to properties, community and environment if left unattended after construction.

133. The contractor will reinstate all working areas and access routes as work proceeds during construction. All plant, equipment, materials, temporary infrastructure, and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition. The following generic measures should be taken up:

- (i) Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;
- (ii) All excavated roads shall be reinstated to original condition;

- (iii) All disrupted utilities restored;
- (iv) All affected structures rehabilitated/compensated;
- (v) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up;
- (vi) All hardened surfaces within the construction camp area shall be ripped;
- (vii) All imported materials removed, and the area shall be top soiled and regressed using guidelines set out in the re-vegetation specification that forms part of this document;
- (viii) The contractor must arrange the cancellation of all temporary services;
- (ix) Request cluster-PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.

B. Operation and Maintenance Impacts

134. **Roads.** In the operations and maintenance (O&M) phase, the roads will operate with routine maintenance, which should not affect the environment. Routine repairs will be very small in scale, to be conducted manually by small teams of workers with simple equipment (shovels, wheelbarrows, etc.) and works will be very short in duration thus will not cause significant physical impacts. Traffic may be interrupted temporarily but this work will be very small in scale, infrequent, and short in duration, so there will be no economic or other implications. The infrastructures will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.

135. To maintain the safety of workers and road-users, such work should be coordinated with the local police department so that adequate warning signs and traffic diversions can be set up when necessary. Debris need to be collected and disposed at a designated site such as the landfill. Community participation will be encouraged in ensuring drainage canals are clog-free through information and behavior change campaigns and incentives, if possible.

136. **Air pollution and noise level.** Improved roads may result in elevated noise level and air emissions from increased vehicular traffic over time. However, the extent of air pollution will depend upon i) the rate of vehicular emission and ii) the prevailing meteorological conditions. Air quality is likely to improve in the initial years after commissioning because of saving of fuel in the vehicular traffic riding on smooth and improved roads with much less interruption. locations.

137. **Community safety.** Improved roads may give way to faster vehicle speeds which could endanger people and households along the road alignments. Damage in roads may also cause accidents to motorists.

138. To mitigate these impacts, the PIU will be required to:

- (i) Conduct regular inspection of the roads to check for damages, and undertake rehabilitation measures for any damages found;
- (ii) Inspect and maintain the integrity of road barriers, especially at critical curves or locations that are prone to vehicular accidents;
- (iii) Inspect and maintain speed limiters such as humps installed on road sections near residential areas, schools, and religious establishments.
- (iv) Inspect and maintain all road signages, including appropriate warning signages at silent zones, and ensure that these are reflectorized and visible even during night time; and
- (v) Ensure pedestrian crossings are maintained.

139. **Drains.** The drains will not function without maintenance, as silt inevitably collects in areas of low flow over time. The project will therefore provide equipment for cleaning/desilting of drains, including buckets and winches to remove silt.

140. Rehabilitation of major drain in Kailashahar, Kumarghat, Dharmanagar and Ambassa will improve the drainage system of this area, through quick discharge of rainwater from the localities. Discharge of wastewater and improper disposal of solid waste from households and roadsides may clog the drains in the medium or longer term. This may result to accumulation of putrescible organic materials causing odor nuisance to the community and pollution to the receiving water bodies. This may also attract vectors of communicable diseases such as pests and rodents in the drainage system that could affect public health:

- (i) Prevent entry of wastewater into drains; this requires development of sewerage system (intercepting of wastewater) in the town. In the interim, an interception, diversion and treatment of drain water proposed under AMRUT/other govt. scheme; PMU to ensure that this project is implemented as per the schedule so that wastewater that enter the drains is collected and treated prior to discharge into streams and river
- (ii) Ensure that sewage/septic tank outflow is not discharged into drains; implementation of the proposed sanitation and septage management system under AMRUT/ other govt. scheme will minimize this impact
- (iii) promotion and enforcement of good waste management practices at household level; and
- (iv) regular monitoring and cleaning of the drains, and siltation or sedimentation chambers (or similar structures) at the outfalls, to prevent entry or accumulation of silt and solid wastes inside these drains.
- (v) Ensure regular cleaning and desilting of drains; project shall include provision of necessary maintenance equipment
- (vi) Prevent encroachment of drains.

141. **Community hazards due to destroyed or removed drainage cover.** Damaged or removed drain cover exposes the drainage as hazard to people, animals and vehicles in the area, especially at night. PIU / ULB shall conduct regular inspection of the drainage alignments and ensure that all drainage covers are intact. In case of damage or loss of drainage cover, the municipality shall provide replacement of this cover to avoid occurrence of accidents.

142. Repair works could cause some temporary disruption of activities at sensitive locations such as schools, hospitals, religious places, etc., so the same precautions as employed during the construction period should be adopted. ULB will:

- (i) Complete work in these areas quickly; and
- (ii) Consult municipal authorities, custodians of important buildings, cultural and tourism authorities and local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.

C. Unanticipated Impacts during Construction and Operation

143. In the event of unanticipated environmental impacts not considered as significant during implementation and not considered in the IEE and EMP, the PMU shall prepare a corresponding time-bound and budgeted corrective action plan acceptable to ADB, and ensure that these are implemented by the contractor/s and reported accordingly in environmental monitoring reports to ADB. If unanticipated environmental impacts deemed as significant become apparent during

project implementation, the PMU will: (i) inform and seek ADB's advice; (ii) assess the significance of such unanticipated impacts; (iii) evaluate the options available to address them; and (iv) update the IEE including EMP. ADB will help the borrower mobilize the resources required to mitigate any adverse unanticipated impacts or damage.

VII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Overview

144. The active participation of stakeholders in all stages of project preparation and implementation is essential for successful implementation of the project. It ensures that the subprojects are designed, constructed, and operated with utmost consideration to local needs, ensures community acceptance, and will bring maximum benefits to the people. Public consultation and information disclosure are a must as per the ADB policy.

B. Public Consultation

145. The public consultation and disclosure program are a continuous process throughout the project implementation, including project planning, design, and construction.

1. Consultation during Project Preparation

146. Institutional consultations were conducted with the project agencies, and Government Departments of Tripura, Tripura State Pollution Control Board, etc. The subproject proposal is formulated in consultation with the local bodies in the project area to suit their requirements. The following methodologies have been used for carrying out public consultation:

- (i) Local communities, individuals affected and owners and employees of affected commercial establishments who are directly or indirectly affected were given priority while conducting public consultation.
- (ii) Walk-through and informal group consultations in the proposed subproject area.
- (iii) The local communities had been informed through public consultation about the project and its benefits.
- (iv) The environmental concerns and suggestions made by the participants were listed and discussed. The suggestions were incorporated in the EMP.

147. The main objectives of the consultation programs were to inform stakeholders on adverse environmental & social impacts, efforts to minimize and mitigate negative impacts while making people aware of the Road and Drainage project benefits. Different techniques of consultation with stakeholders were used during project preparation (interviews, official meeting, public meetings, etc.). A socio-economic household survey has been conducted in the project area, covering sample households, to understand the household characteristics, health status, and the infrastructure service levels, and the demand for infrastructure services. General public and the people residing along the project activity areas were also consulted during visits to the project sites. The stakeholders were involved in developing the IEE through focus group discussions (FGD) and public consultation at project area level, after which views expressed were incorporated into the IEE and in the planning and development of the project.

148. A workshop on Environment and Social safeguards has been arranged on 19th-20th December 2022 at Agartala for all the ULBs (main stakeholders) and project executing and implementation agencies. The primary intent of the orientation workshop was to enhance the

knowledge base of the ULB officials, TUDA officials and officials of UDD on the mentioned disciplines (details in **Appendix 8**). Focus Group Discussions (FGD) have been carried out at different locations (wards) of the project area.

149. In **Kailashahar** Stakeholder Consultation has been carried out at 3 locations: with 52 nos. of participants. Among 52 participants, female no. covers 31%. FGD has also been carried out with 63 persons, out of which almost 60% are female. In **Kumargaht** Stakeholder Consultation has been carried out at 2 locations; with 45 nos. of participants (Female- 40%). In FGDs Total 63 persons participated in discussion, out of which almost 79% are female. In **Dharamanagar** FGDs was conducted along the project alignment in month on January, February and April 2022 with 50 participant 60% are female. Stakeholder consultation was attended by 37 stakeholders (13% female). In **Ambassa** Focus group discussion has been conducted along the project alignment in the month of March & April 2022 with 106 participants (31 Male and 75 Female, Female-70%). Stakeholder consultation was attended by 51 stakeholders (Female- 21%).

150. All participants are expressed need for the project and willingness to take it up and stakeholders were very supporting of the project and promises to extend full cooperation during the construction phase as the activities are proposed to improve the road and drainage system and the living standards. Important issues or concerns that were raised by the stakeholders during consultations along with photographs and attendance sheets are provided in **Appendix 8**. Further a project-level consultation workshop will also be conducted in the project area.

- (i) During consultation people were apprised about the road configuration and arrangements to be made during construction for safety of commuters, pedestrians, providing unhindered access to shops, measures to be taken for dust & noise pollution control.
- (ii) It was told by the residents that the condition of storm water drainage condition is not up to the mark; the low-lying areas generally get flooded during rainy season. Drains are clogged with waste.
- (iii) Residents want closed covered drain.
- (iv) Residents expressed their views about the willingness to engage with the project and explore job opportunities.
- (v) Aware of short-term impacts during the works such as dust generation, noise level, access problem, inconvenience for public and movement of vehicle. People demanded for the measures of dust suppression such as water sprinkler to control dust and noise during construction phase. Project team informed stakeholders of the proposed mitigation measures.
- (vi) It was also informed no road closures anticipated due to this work, and if needed during the construction phase, alternative access will be provided. Short term impact explained to local public and it assured that the measures will be included in the Environment Management Plan.
- (vii) All stakeholders were very supporting of the project, and promises to extend full cooperation during the construction phase as the activities are proposed to improve the road connectivity and drainage condition.
- (viii) As regards the storm water drainage project, it has been told by the residents that it will improve the roads and condition of low laying areas and improve the quality of river where the outfall will go.
- (ix) Stakeholders also indicated that a public notice on works, and awareness programs to be conducted
- (x) The project team explained the proposed mitigation measures to mitigate / minimize such issues. Attention of stakeholders drawn to the EMP, and explained

to them how the construction phase issues by avoided, minimized, or mitigated and managed.

2. Consultation during Implementation

151. Prior to start of construction, PIU in coordination with the local bodies will conduct information dissemination sessions at various places and solicit the help of the local community, leaders/ prominent for the project work. Focus group meetings will be conducted to discuss and plan construction work with local communities to reduce disturbance and other impacts and regarding the project grievance redress mechanism. A constant communication strategy will be established with the affected communities to redress the environmental issues likely to surface during construction phase. Consultation will continue during implementation and reported through environmental monitoring reports to ADB, semi-annually during construction and annually during operation until project completion.

C. Information Disclosure

152. Executive summary of the IEE will be translated in Bengali (local language) and will be made available at the offices of PMU, PIU, Nagar Panchayet and will be displayed on the notice boards. Hard copies of the IEE will be accessible to citizens to disclose the document and at the same time creating wider public awareness. Electronic version of the IEE in English and Executive Summary in Bengali will be placed in the official website of the TUDA (PIU), UDD (PMU) after approval of the IEE by Government and ADB. Stakeholders will also be made aware of grievance register and redress mechanism.

153. Public information campaigns to explain the project details to a wider population is being conducted. Public disclosure meetings will be conducted at key project stages to inform the public of progress and future. Prior to start of construction, the cluster- PIU will issue Notification on the start date of implementation in local newspapers. A board showing the details of the project will be displayed at the construction site for the information of general public.

154. Local communities will be continuously consulted regarding location of construction camps, access and hauling routes and other likely disturbances during construction. The road closure together with the proposed detours will be communicated via advertising, pamphlets, radio broadcasts, road signage, etc.

VIII. GRIEVANCE REDRESS MECHANISM

155. A project will put in place a common GRM to receive, evaluate, and facilitate the resolution of social, environmental or any other project-related grievances. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project. The public awareness campaign will generate awareness of the project and its grievance redress procedures. The campaign will ensure that the poor, vulnerable, and others know about the GRM.

156. The GRM will provide an accessible, inclusive, gender sensitive and culturally appropriate platform for receiving and facilitating the resolution of affected persons' grievances related to the project. The multi-tier GRM for the project is outlined below, each tier having time-bound schedules and with responsible persons identified to facilitate and address grievances at each stage. ULB-wide public awareness campaigns will ensure that awareness of grievance redress procedures is generated through the campaign. The project coordinator (urban and tourism), supported by

independent consultants (social and environment), will be responsible for timely grievance redress on environmental and social safeguards issues.

157. Besides the project's grievance redress mechanism, the state also has a centralized public grievance redress monitoring system (CPGRMS) where the general public can file grievances through a dedicated web portal (grievance.tripura.gov.in). The general administrative (administrative reforms) department is the nodal agency, and an officer of the rank of joint secretary is responsible for its functioning. Each department of the state has nominated officers to receive the grievances. TUDA and DOT have nominated officers of the rank of Deputy Director as nodal officers, whose names and contact details are provided on its website. The affected persons can also lodge their complaints through this online portal.

158. **Information to the stakeholders about the GRM:** The stakeholders, including affected persons, will be informed about the GRM under the project and of the state through public consultations, disclosures, and distribution of public information booklets (PIB). In the case of illiterate DPs, the information will be provided verbally during meetings with them.

159. **Who can complain:** A complaint can be registered by stakeholders directly or indirectly affected by the project. A representative can register a complaint on behalf of the affected person or group, provided that the affected person or group identifies the representative and submits evidence of the authority to act on their behalf.

160. **What the Grievance/Complaint should contain:** Any comments, complaints, queries and suggestions pertaining to safeguard compliance - environment, involuntary resettlement, and indigenous people, design-related issues, compensation, service delivery or any other issues or concerns related to the project. The complaint must contain the complainant's name, date, address/contact details, location of the problem area, and the problem. A sample grievance registration form is provided in Appendix 9.

161. **Where and how to file a Complaint:** The complaint can be filed both online and offline. The people can submit their complaints at the contractor's site office or at PIU/PMU office. In addition, they can also have grievances/suggestions/queries submitted through phone or e-mails or the state grievance portal.

162. **Grievance redress /Problem solving through participatory Process:** The PMU and PIUs must make efforts to resolve the problems and conflicts amicably through a participatory process with the community and the ULBs. In case of immediate and urgent grievances in the complainant's perception, the contractor and supervision personnel from the PIU will provide the most easily accessible or first level of contact to resolve grievances quickly. Contact phone numbers and names of the concerned staff and contractors will be posted and displayed at all construction sites.

163. **Grievance Redressal Committee:** The GOT will establish the grievance redressal committees at the site, PIU and PMU levels to provide a mechanism to mediate conflict and disputes concerning compensation payments and cut down on lengthy litigation. The following will be the composition of the GRCs.

164. **Site-level GRC (1st level)** - The site-level GRC will comprise a Junior Engineer. PIU, a field engineer of PSMC, safeguard support staff of PSMC, and a representative from the affected community (as and when required). The contractor's site engineer and EHS cum social supervisor will jointly support in meetings, consultations, and site-level grievance resolution. The effort will be

made to resolve issues on-site, in consultation with each other and within five days of receipt of a complaint/grievance.

165. **PIU-level GRC (2nd level)** - All grievances that cannot be redressed within five days at the field level will be brought to the notice of the PIU-level GRC established in each PIU. The PIU-level within two days of receipt of the complaint to determine the merit of each grievance brought to the committee. GRC at the PIU-level will be headed by Project Manager (executive/ assistant engineer)- focal for safeguards, and include the construction manager of PSMC, safeguards specialists of PSMC, and the Project Manager of the concerned contractor as members. The PIU-level GRC will also co-opt the representative of line departments (PWD, ULB) and a representative from the affected community, as and when required, including indigenous peoples communities or civil society organization working with indigenous peoples, as and when required.¹²

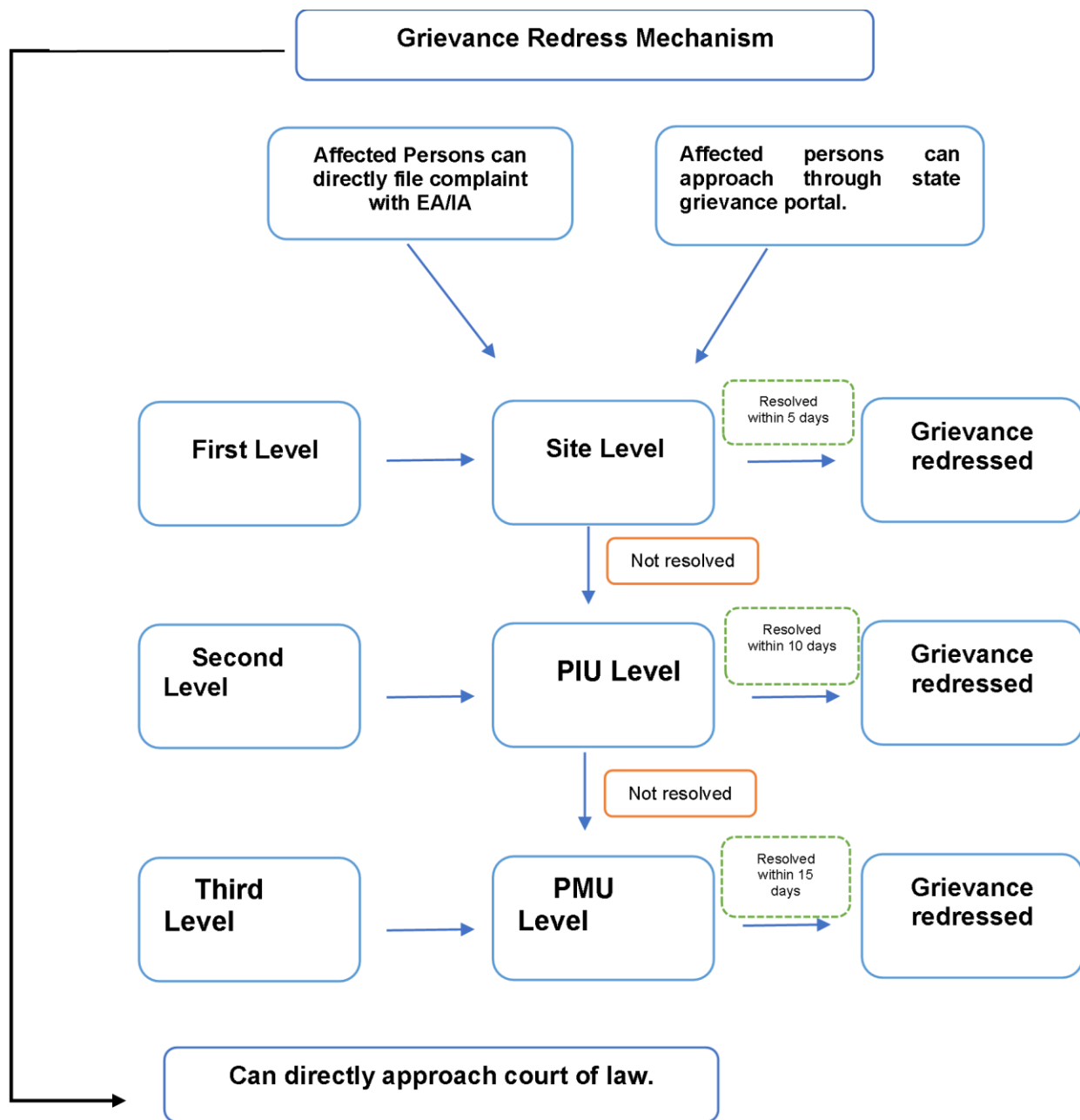
166. **PMU-Level GRC (3rd level)** - In case the grievances are not addressed at the PIU-level within 10 days of receipt, the same shall be brought to the notice of the PMU-level GRC. The PMU-level GRC will comprise of Project Director as chairman, a Co-Project Director as co-chairman, a Project Coordinator (Urban and Tourism) as member secretary, environment safeguards officer of PMU and social, gender officer of PMU,, women representatives from the line departments (ULB, PWD, Environment and Forests) and representative of affected community (including indigenous people community)¹³. The committee can co-opt any other member required for the resolution of the grievances. The GRC at the PMU-level will resolve the grievance within 15 days of receiving the complaint.

167. The complainant will be informed in writing about the resolution of their complaint or the decision of the grievance redress committees. The complainants are free to approach the court of law at any time of their own will at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

¹² In case of any components with impact on indigenous people, GRC will have representative from affected indigenous people community or NGO working with indigenous people groups.

¹³ In case of any components with impact on indigenous people, GRC will have representative from affected indigenous people community, including at least one female indigenous person or NGO working with indigenous people groups.

Figure 49: Grievance Redressal Mechanism (GRM)



168. **Documentation.** PMU, with the support of PIUs, will be responsible for the timely registration of grievances, related disclosure, and communication with the aggrieved party. PMU will also ensure that all the details from submission to resolution are well recorded and documented.

169. **Record-keeping.** PIUs will keep records of grievances received, including contact details of the complainant, the date the complaint was received, the nature of the grievance, agreed corrective actions and the date these were affected and the final outcome. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the PMU and PIUs and reported in monitoring reports submitted to ADB on a semiannual basis.

170. **Periodic review and documentation of lessons learned.** The Project Coordinator, PMU, will periodically review the functioning of the GRM in each town and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances.

171. **Costs.** All costs related to the resolution of grievances (meetings, consultations, communication and reporting/ information dissemination as well as costs incurred by affected persons to attend GRC meetings, if any) will be borne by PMU.

IX. ENVIRONMENTAL MANAGEMENT PLAN

A. Environmental Management Plan

172. An environmental management plan (EMP) is being developed to provide mitigation measures to reduce all negative impacts to acceptable levels.

173. The EMP will guide the environmentally-sound construction of the subproject and ensure efficient lines of communication between Project Management Unit (PMU), Project Implementation Unit (PIU) / TUDA, ULBs (Nagar Panchayat/ Municipal Council), Consultants and Contractors. The EMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (ii) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (iii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iv) detail specific actions deemed necessary to assist in mitigating the environmental impact of the sub project; and (v) ensure that safety recommendations are complied with. The EMP includes a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries.

174. The construction contractor will submit to Cluster - PIUs, for review and approval, a Site-Specific Environmental Management Plan (SEMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program as per SEMP; and (iv) budget for SEMP implementation. The approved Site-Specific Environmental Management plans will be disclosed in the project website & website links will be provided in Semi- Annual Environment Monitoring Report.

175. A copy of the EMP/approved SEMP will be always kept on site during the construction period. The approved EMP to be included in the bid and contract documents. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

176. For civil works, the construction contractor will be committed to (i) carry out all of the mitigation and monitoring measures set forth in the approved SEMP; and (ii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer may prepare from time to time to monitor implementation of this IEE and SEMP. The contractor will allocate budget for compliance with these SEMP measures, requirements, and actions.

177. The following tables show the potential environmental impacts, proposed mitigation measures and responsible agencies for implementation and monitoring.

Table 30: Design Stage Environmental Impacts and Mitigation Measures

Field	Anticipated Impact	(i) Mitigation Measures	Responsibility of Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Design of the Proposed Components.	Lack of sufficient planning to assure long term sustainability of the improvements and ensure protection of the assets created	(ii) Storm water drain is provided at the extreme edge of the right of way; (iii) Water supply lines carrying water at high pressure may cause damage to the road pavement, so they are provided on one side of the road; (iv) There is safe distance between water supply line and drainage line to avoid any intermixing in case of any leakage or pipe burst. (v) Footpaths are provided cater the needs of elderly and persons with disability. (vi) Electric cables are kept away from water supply lines to avoid short circuit; (vii) The cables are away from tree line to avoid possible entrapment of the cable by tree roots	Contractor Cluster-PIUs/ PMSC	PMU	Project Costs
Integration of EMP in bidding documents and contracts	Lack of awareness by contractors on ADB SPS requirements may result in insufficient budget and non-implementation of EMP	(i) Once the Contractor is selected, the PIU with support from PMSC will inform contractors on their responsibilities in EMP implementation, in compliance with ADB and government requirements, self -monitoring and reporting procedures. (ii) The PMU will incorporate the costs of implementing OHS and the EMP as well as specific provisions requiring contractors to comply with all other conditions required by ADB into the bidding and contract document.	PMU, PMSC	PMU	Project Costs
Preparation of H&S Plan for Pandemic like COVID-19.	COVID safety	(i) Consistently practice social distancing. (ii) Cover coughs and sneezes. (iii) Maintain hand hygiene. (iv) Clean surfaces frequently.	Contractor	PIU	Project costs
Seismic sensitivity	Damage to infrastructure and potential risks: project	Designs of project component structures shall comply with relevant codes of design such as Bureau of Indian Standard (BIS) specifications for earthquake resistant design (IS: 1893: Criteria for earthquake resistant design of structures).	Contractor Cluster-PIUs	PMU	

	area in High earthquake risk zone (Zone V)				
Physical Cultural resource	Encroachment/ damage to protected monuments and chance finds	(i) Create awareness among the workers, supervisors and engineers about the chance finds during excavation work; (ii) Stop work immediately to allow further investigation if any finds are suspected; (iii) Inform local Archaeological Department / Museum office if a find is suspected and take any action, they require to ensure its removal or protection in situ; and prepare a chance find protocol	Contractor / cluster-PIUs/ PMSC	PMU	Project Costs
Site selection of sources of materials	Improper selection source of material	(i) Contractor should, to the maximum extent possible, procure material from existing authorized quarries; (ii) The contractor shall try to procure/ source the material from the nearest possible authorized sources. (iii) It will be the construction contractor's responsibility to verify the suitability of all material sources and to obtain the approval of Department of Mines & Geology and local revenue administration (iv) Contractor should submit the details of sources and copies of approvals, permissions to Kailashahar MC, Kumarghat MC, Dharmanagar MC and Ambassa MC, and should start procurement only after the respective source is approved by respective MC and PIU (v) The transportation of raw material should be done in covered vehicles. (vi)	Contractor / cluster-PIUs/ PMSC	PMU	Project Costs
Site selection for equipment lay-down and storage area	Improper selection will affect local environment and inconvenience to public.	(i) Choice of location for equipment lay-down and storage areas must consider distances to adjacent land uses, general onsite topography and water erosion potential of the soil. Impervious surfaces must be provided where necessary. (ii) Storage areas shall be secure to minimize the risk of crime. They shall also be safe from access by children or animals etc. (iii) Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area. (iv) Equipment lay-down and storage areas must be designated, demarcated, and fenced if necessary.	Contractor / cluster-PIUs	PMSC and PMU	Project Costs

		(v) Fire prevention facilities must be present at all storage facilities. (vi) Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals, and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage areas. (vii) These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources. (viii) Fuel tanks must meet relevant specifications and be elevated so that leaks may be easily detected. (ix) Staff dealing with these materials or substances must be aware of their potential impacts and follow the appropriate safety measures.			
Tree cutting	Cutting of trees	(i) Minimize tree cutting as much as possible during joint verification with the contractor; where possible, amend the alignment of drains locally to avoid tree cutting. (ii) As per compensatory afforestation requirement, the tree plantation will be done five times of tree cutting (1:5 of tree cutting). (iii) No trees shall be removed for setting up construction facilities / ancillary sites.	Contractor cluster-PIUs /	PMSC and PMU	Project Costs
Drinking water quality	Health risks from the poor supplied drinking water	(i) Contractor will ensure that drinking water supply in compliance with the Indian National drinking water quality standards (ii) The Contractor will undertake water quality testing via accredited laboratory to confirm quality in compliance with y standards. If the groundwater quality does not comply with the standards, the contractor will source potable water from an alternative source or provide a potable onsite treatment facility with own costs and approval from PIU/PMU.	Contractor cluster-PIUs /	PMSC and PMU	Project Costs

Table 31: Pre-Construction Stage Environmental Impacts and Mitigation Measures

Field	Anticipated Impact	Mitigation Measures	Responsibility of Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Compliance with environmental subproject selection criteria	Environmental impacts due to subproject	Compliance with environmental subproject selection criteria	Contractor in collaboration with Cluster-PIUs, and with approval of PMSC/ PIU	PMU	No costs required
Legal compliance	Environmental legal noncompliance may attract legal actions Failure to obtain necessary consents, permits, NOCs etc. can result to design revisions and/or stoppage of works	Obtain all consents, clearances (CTE/CTO from TSPCB), permits NOCs etc. before start of construction works Ensure that all necessary approvals for construction to be obtained by contractor are in place before start of construction work	PIU/Consultants in coordination of ULB	PMU	Cost of obtaining all consents, permits, clearance, NOCs etc. prior to start of civil works responsibility of PIU.
Environmental monitoring of baseline conditions of air, noise, water and soil	To establish base line environmental conditions	Environmental monitoring through NABL accredited laboratory	Construction contractor	(i) Report for NABL laboratory	Project Cost
Utilities	Telephone lines, electric poles and wires, water lines within proposed project area may be affected	(i) Operators of these utilities have been identified and included in the detailed design documents to prevent unnecessary disruption of services during construction phase; (ii) Utility shifting will be required before start of construction; (iii) Construction contractor will prepare and implement a contingency plan to include actions to be taken in case of unintentional interruption of services.	Contractor in collaboration with Cluster-PIUs, and with approval of PMSC/ PIU	(ii) List of affected utilities (if any) and operators; (iii) Bid document to include requirement for a contingency plan for	Project Cost

Field	Anticipated Impact	Mitigation Measures	Responsibility of Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(iv) Consult with and prior information to affected households and business (at least 1 week prior) on the intended utility shifting and likely disruptions in services		service interruptions	
Construction work camps, stockpile areas, storage areas, and disposal areas.	Conflicts with local community; disruption to traffic flow and sensitive receptors	(i) Construction camp to be set up in open area, slightly away from residential area (ii) Extreme care to be taken in selecting sites to avoid direct disposal waste/ excess earth near water body which may inconvenience the community. If required, for excess spoil disposal, (a) sites will be selected from barren, infertile lands. In case agricultural land selected, written consent will be taken from landowners; (b) debris disposal site will be selected 200 m away from surface water bodies; (c) no residential areas be located within 50 m downwind side of the site; and (d) site will be selected 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies.	Contractor to finalize locations in consultation and approval of Cluster-PIUs	List of selected sites for construction work camps, spot mix plants, stockpile areas, storage areas, and disposal areas. Written consent of landowner/s (not lessee/s)	Project Cost
Works near common properties, physical cultural resources other religious, and cultural places	Disturbance of private and common properties (such as ramps, drainage, boundary walls, houses, soak well, lamp post), and	• Prior to commencement of construction, consult with concerned religious authorities of these temples, nearby people and devotees and explain the work method and duration of proposed works, take their suggestions and comments in scheduling and conducting the works • Do not use equipment that generate heavy noise, ground vibration, dust	PIU, PMSC	Survey data and site condition	Project Cost

Field	Anticipated Impact	Mitigation Measures	Responsibility of Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	physical cultural resources	etc., (such as pneumatic drills, dozers etc., within 50 m of these structures - Put in place proper dust and noise control measures - Adjacent to religious/social buildings, undertake excavation and construction work in such a way that no structural damage is caused to the structures - Observe the local rituals and important dates of festivals, weekly/monthly/annual religious occasions in the religious places and do not make any disturbance/hindrance/obstacles during such time to the religious places - Cutting of any religious trees may be avoided, if possible, change alignment to protect old and religious trees. - Provide proper signage, barricades etc. to protect public and devotees from dangers of construction works. - Ensure proper traffic management planning to minimize the disruption to the normal traffic flow in the area and ensure the safety of the people. - Clear the work site of unnecessary material, equipment, and debris / surplus soil; do not stock material / soil at the sites - Conduct continuous consultations with the local people during the works			
Traffic Management	Impede traffic flow during construction	Prepare a traffic management plan during preconstruction phase.	Contractor to finalize traffic management plan in	Ensure Traffic Management Plan is prepared	Project Cost

Field	Anticipated Impact	Mitigation Measures	Responsibility of Mitigation	Monitoring of Mitigation	Cost and Source of Funds
			consultation with cluster PIUs		
Disposal sites of dredge materials and solid wastes	Cleaning of drains will generate large amounts of dredge material (i.e., silt) and solid waste which needs to be disposed in designated area away from sensitive receptors	Identify agreed sites with local officials to dispose of dredged materials	Contractor to finalize disposal plan in consultation with cluster PIUs	Cluster PIUs, and PMSC to ensure sites are agreed with local officials and in locations which are away from sensitive receptors.	Project Cost
EMP Implementation Training	Noncompliance with ADB, GoI and GoT environmental policies	The PMU, PIU and contractors will be required to undergo training on EMP implementation. Methodology of capacity and training activities are discussed in next sections. The capacity building program will be participatory to the extent possible to make it more effective, with learning by doing, role playing, group exercises, on-the job training, etc. Pre- and post-training assessment will be conducted to measure the effectiveness of the program.	PMSC	Training document	Project cost
Community Awareness on Project Activities and Impacts	Lack of community awareness on project activities may result in potential community health and safety	- The community should be made aware of overview and objectives of the proposed project; - Preliminary and/or final detailed design of proposed project components; - Potential environmental and social impacts (positive and negative) of the project, and the proposed mitigation	PIU, Contractor, PMSC	Awareness document, consultation document and record	Project cost

Field	Anticipated Impact	Mitigation Measures	Responsibility of Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	concerns and complaints.	measures for the perceived negative impacts; and Grievance redress mechanism and contact details of the project			

Table 32: Construction Stage Environmental Impacts and Mitigation Measures

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Planning	Inadequate planning could lead to non-implementation of EMP during the construction phase and result in significant environmental impacts leading to non-compliance with ADB's environmental safeguard requirements.	i.Designate an Environmental Health and Safety Officer (EHSO). ii.Conduct training on the rationale for and implementation of the SEMP and EMP to enhance general understanding and clarify responsibilities regarding implementation, including monitoring and reporting, must also be provided to relevant staff of contractors (including EHS Officer) iii.The Contractor will be required to submit to PMU, for review and approval, a SEMP including (a) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes, (b) specific mitigation measures following the approved EMP; (c) monitoring program as per EMP; and (d) budget for SEMP implementation. No works can commence prior to approval of SEMP. The SEMP shall include, but not limited to, the following: (a) Traffic management plan; (b) Construction health and safety plan (including COVID-19 H&S guidance); (c) Construction waste and debris management Plan	Contractor in association with PIU	PMU	Project costs
Excavation, soil erosion and sediment mobilization	Loose soil generated during excavation can be carried through surface run-off	The Contractor shall always implement the measures to control soil erosion which shall include, but not be limited to the followings:	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	during a rainfall. Contamination of surface waterbody.	i. The Contractor shall plan works to minimize surface excavation works during the rainy season where practicable. ii. Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms shall be developed by the Contractor. iii. The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. iv. Channels, earth bunds, netting, tarpaulin and or sandbag barriers shall be used on site to manage surface water runoff and minimize erosion. v. The overall slope of the works areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows. vi. Monitor groundwater quality that could exist close to the working areas to ensure compliance			responsibility of contractor.
Sources of Materials	Selection of material from government approved sources	(i) Obtain construction materials only from government approved quarries with prior approval of Cluster-PIU; (ii) Cluster-PIU to review, and ensure that proposed quarry sources have all necessary clearances/permissions in place prior to approval; (iii) Contractor to submit to Cluster-PIU on a monthly basis documentation on material obtained from each source (quarry/ borrow pit); (iv) Avoid creation of new borrow areas, quarries etc., for the project; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance prior to approval by Cluster- PIU.	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Air Quality	Emissions from construction related vehicles, equipment, machinery, resulting to dusts and increase in concentration of vehicle related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons	(i) Take every precaution to reduce the levels of dust at construction sites (ii) Fit all heavy equipment and machinery with air pollution control devices that are operating correctly. (iii) Asphalt / bitumen, and concrete mixing plants should be operated within the permissible emission standards, and should be located away from settlements (up wind) (iv) Vehicles travelling to and from the construction site must adhere to speed limits to avoid producing excessive dust. (v) Reduce dust by spraying stockpiled soil, excavated materials, and spoils. (vi) over with tarpaulin vehicles transporting soil and sand. (vii) Cover stockpiled construction materials with tarpaulin or plastic sheets. (viii) Heavy equipment and transport vehicles shall move only in designated areas and roads. (ix) Water spraying to access roads, camp sites and work sites to reduce dust emissions. (x) Machines and vehicles must be regularly examined and maintained to comply with requirements of technical specifications. (xi) All vehicles, equipment, and machinery used for construction will be regularly maintained to ensure that pollution emission levels comply with the relevant standards. Copies of conformance will be submitted regularly to the PIU. (xii) Repair and maintain access roads, as necessary. (xiii) Monitor air quality according to the environmental monitoring plan. (xiv) clean wheels and undercarriage of vehicles prior to leaving construction site;	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(xv) prohibit burning firewood in work and labor camps (promote liquified petroleum gas for cooking purposes and electric heater for heating purposes); (xvi) use vehicles that have government-issued permits and registrations; and (xvii) prohibit open burning of solid waste			
Noise and vibration	Increase in noise level due to earth-moving and excavation equipment, and transportation of equipment, materials, and people	✓ Plan activities in consultation with Cluster-PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance; ✓ Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimize sound impact to surrounding sensitive receptor ✓ Construction work shall be limited to day light hours (8 AM to 6 PM) for all the works located within the town ✓ Adapt low noise producing work methods, and provide additional noise control measures (such as temporary barriers / enclosures) near sensitive receptors (i.e. religious places, academic institution, health centers etc.). ✓ Noise level not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s; ✓ Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; and ✓ Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.
Surface water quality	Mobilization of settled silt and materials, and	(i) Disposal of drain sludge/silt in solid waste disposal sites with prior permission from municipality and/or TSPCB	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	chemical contamination from fuels and lubricants during construction can contaminate nearby surface waterbody. Ponding of water in the pits/ foundation excavations	(ii) Provision of temporary sedimentation canal along construction areas, particularly alignments that are adjacent to receiving bodies of water or canals. (iii) Works of culvert construction shall be planned in lean or dry / lean flow season only (iv) establish safety procedures against flash floods and other hazards associated with working in or near water during the construction of culverts on rivers. (v) The measures to address soil erosion at the proposed facilities will consist of measures as per design, or as directed by the construction supervision consultant/PIU to control soil erosion, sedimentation, and water pollution. All temporary sedimentation, pollution control works, and maintenance thereof will be deemed incidental to the earthwork or other items of work. (vi) All temporary discharge points shall be located, designed and constructed in a manner that will minimize erosion in the receiving channels. (vii) Ensure proper compaction of refilled soil and there shall not be any loose soil particles on the top; the material shall be refilled in layers and compacted properly layer by layer. (viii) Use surplus soil for beneficial purposes such as in any other construction activities, or to raise the level of low-lying areas. (ix) Avoid scheduling of excavation work during the monsoon season. Earthworks during dry season. (x) Confine construction area including the material storage (sand and aggregate) so that runoff will not enter the site. (xi) Ensure that drains are not blocked with excavated soil (xii) Stockyards, storage of fuel and lubricants at least 50 meters (m) away from watercourses.			measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(xiii) Fuel and other petroleum products stored at storage areas away from water drainage and protected by impermeable lining and bunded 110%. (xiv) Daily control of machinery and vehicles for leakages (xv) No obstruction in flowing water. (xvi) For effluents from workplace, camps, and offices, provide treatment arrangements such as retention ponds and septic tanks which should be incorporated in the facility designs. A sewage management plan has to be prepared by the contractor and agreed with the PMSC. (xvii) Monitor water quality according to the environmental monitoring plan. (xviii) Provide uncontaminated water for dust suppression;			
Groundwater use and contamination	The water collected in excavated pits will contain silt and disposal of this in drainage channels lead to silting	(i) Create a temporary drainage channel around the work area to arrest the entry of runoff from upper areas into the work area (ii) Pump out the water collected in the pits / excavations to a temporary sedimentation pond; dispose of only clarified water into drainage channels/streams after sedimentation in the temporary ponds (iii) Consider safety aspects related to pit collapse due to accumulation of water	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.
Generation of Construction Wastes.	Solid wastes to be generated from the construction activities are excess excavated earth (spoils) during road and side drain construction, drain silt/ sludge	(i) Prepare and implement a Construction Waste Management Plan; (ii) As far as possible utilize the debris and excess soil in construction purpose, (iii) Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed at approved designated areas immediately; (iv) If disposal is required, the site shall be selected preferably from barren, infertile lands; site should	Construction Contractor	PIU and ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	during cleaning operation,	be located away from residential areas, few water bodies and any other sensitive land uses; (v) Drainage silt/ sludge will be disposed at landfill site or open area away from habitation and after receiving NOC from TSPCB; (vi) Domestic solid wastes should be properly segregated in biodegradable and non-biodegradable for collection and disposal to designated solid waste disposal site; create a compost pit at workers' camp sites for disposal of biodegradable waste; non-biodegradable / recyclable material shall be collected separately and sold in the local recycling material market; (vii) Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposed of in disposal sites approved by TSPCB; (viii) Prohibit burning of construction and/or domestic waste; (ix) Ensure that wastes are not haphazardly thrown in and around the project site, provide proper collection bins, and create awareness to use the dust bins; (x) Conduct site clearance and restoration to original condition after the completion of construction work; Cluster-PIU to ensure that site is properly restored prior to issuing of construction completion certificate.			
Existing Infrastructure and Facilities	Disruption of service and damage to existing infrastructure at specified project location during implementation of the project	(i) Prepare a list of affected utilities and operators if any; and (ii) Prepare a contingency plan to include actions to be done in case of unintentional interruption of service	Construction Contractor	PIU and ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Disturbance to terrestrial flora and fauna	Loss of vegetation and tree cover	(i) Conduct final confirmatory tree cutting and bird nest survey before start of construction. (ii) no trees will be removed without prior approval of concerned government agency/foresee department. (iii) Restrict vegetation removal to within ROW / actual work site. (iv) Tree cutting is avoided to maximum possible, transplant trees, where feasible (v) For any tree cut, conduct replacement planting at a ratio of 1(cut):5 (new planting) (vi) Before any tree cutting activity takes place, a thorough inspection of the tree must be conducted to check for any active bird nests. If an active nest is found, the tree cutting activity must be postponed until the young birds have flown off from their nests and are no longer dependent on them. This measure ensures that young birds are not harmed and that their habitats are protected. (vii) The contractor will not use or permit the use of wood as a fuel for the execution of any part of the works, including but not limited to the extent practicable shall ensure that fuels other than wood are used for cooking. (viii) Within ROWs, minimize land cover removals, and install protective physical barriers around trees. (ix) All ROW to be re-vegetated and landscaped after construction completed. (x) Prior to tree cutting, placard/s shall be installed in conspicuous places to inform the public that the tree cutting is authorized (xi) Protect giant trees and locally important trees (for religious reasons), if any is identified at the site during implementation (xii) Prohibit employers and workers from poaching animals and cutting of trees for firewood in the vicinity of the site	Construction Contractor	PIU and ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Impacts on aquatic ecology	Alterations in aquatic ecology	(i) Provide temporary protection at sections near the river/ponds to avoid sliding of soils; (ii) Store spoils away from the side of the river/pond; (iii) Implement proper storage/disposal of materials, chemicals and waste (iv) Implement mitigation measures for excavation, soil erosion and sediment mobilization, surface water pollution, and construction waste generation.	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.
Management Plan for Night works (if required).	Disturbance to nearby establishment	(i) Night works should be avoided at construction sites specially in residential areas and should be performed only when day works are not possible due to excessive traffic/public/pedestrian movement, site of cultural or religious importance, where there is huge crowd during day hours or any other unavoidable circumstances; (ii) Contractor should plan for night works only after directions from PMU/PIU/project consultants (iii) Contractor should submit plan for night works for approval from PIU; (iv) PIU should ensure that prior written information should be given to local authorities such as district administration, Police/traffic police, line agencies concerned, resident's welfare association/business association/vyapar of the affected areas and their consents/permissions should be taken prior to start of night works; (v) PIU/PMSC engineers should check and ensure that all the preparation as per management plan is done by contractor and contractor is having all the necessary equipment and materials for night works; (vi) Contractor is required to have following equipment/arrangements for night works;	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds										
		(vii) Contractors should have handheld noise level meter for measurement of noise during night hours; (viii) Contractors should have handheld lux meter for the measurement of illumination during night hours; (ix) Preferably electrical connections are available for running equipment otherwise sound proof/super silent Diesel Generator set should be available; (x) Sound level should not increase as per following- <table><tr><th>Type of area of work</th><th>Maximum noise level dB(A)</th></tr><tr><td>Industrial</td><td>70</td></tr><tr><td>Commercial</td><td>55</td></tr><tr><td>Residential</td><td>45</td></tr><tr><td>Silence zone</td><td>40</td></tr></table> (xi) As far as possible ready-mix concrete from batching plant to be used, otherwise the concrete should be prepared away from residential areas and brought to the site; (xii) All the noise activity like hammering, cutting, crushing, running of heavy equipment should be done in day time and avoided in night time; (xiii) Workers engaged in night works should have adequate rest/sleep in day time before start of night works; (xiv) Worker engaged for night works should have previous experience of night works and should be physically fit for such works including clear vision in night; (xv) All the necessary provisions of traffic aids such as traffic signals, road signage, barricades,	Type of area of work	Maximum noise level dB(A)	Industrial	70	Commercial	55	Residential	45	Silence zone	40			
Type of area of work	Maximum noise level dB(A)														
Industrial	70														
Commercial	55														
Residential	45														
Silence zone	40														

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		cautions boards, traffic diversion boards etc. should be available with fluorescent/retro-reflective arrangements; (xvi) Workers should be trained before start of night works about risks and hazards of night works and their mitigation measures and should be provided all the protective aids (PPEs) including fluorescent/retro-reflective vests; (xvii) Horns should not be permitted by equipment and vehicles; (xviii) Workers should not shout and create noise; (xix) First aid and emergency vehicles should be available at site; (xx) Emergency preparedness plan should be operative during night works; (xxi) Old persons and pregnant women and women having small kids should not work in night time; (xxii) All the vehicles and equipment being used at night works should have adequate type of silencers/enclosures/mufflers to reduce noise; (xxiii) All the vehicles should be checked for working head lamps, tail lamps, inner lights etc. before start of night works; (xxiv) PIU/PMSC site engineers and contractor's safety personnel should closely monitor the safety of works continuously and noise and illumination levels on hourly basis and maintain photographic and video graphic records as well as register the observations; (xxv) Night works should be stopped early in the morning at least one hour before start of pedestrian/traffic movement; (xxvi) After completion of night works all the site should be cleaned and maintained obstruction free for day time movement of vehicles and pedestrians;			

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(xxvii) Drivers and workers should be alert and responsive during night works; (xxviii) All the wages to workers working in night hours should be as per the applicable labour acts; (xxix) Avoid any nuisance which may create problems to nearby habitants and work peacefully during night hours; and (xxx) Night works should not be conducted near hospitals and during peak seasons such as peak tourist season, students' exam times etc.			
Accessibility	Traffic problems and conflicts near project locations and haul road Impact on access to house and road user particularly during Construction of road and drain	(i) Hauling (material, waste/debris, and equipment) activities (ii) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites; (iii) Schedule transport and hauling activities during non-peak hours; (iv) Locate entry and exit points in areas where there is low potential for traffic congestion; (v) Drive vehicles in a considerate manner; and (vi) Notify affected public by public information notices, providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.
Traffic diversion or road closure	Traffic management and chances of accidents near construction site	(i) Prepare and implement a traffic management plan (ii) Start the work from downstream end of the drains (iii) Conduct work in small sections, say 100 m at a time; confine the drain in the section and stop all inlets in general, and into that section in particular (iv) Provide a bypass arrangement for the water coming for upstream by providing pumping arrangement so that the water coming from upstream side of the selected section are pumped through a pipe to the downstream	Construction contractor and PMSC	PIU and ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(v) Dewater the selected section; pump the accumulated water into the downstream; (vi) As far as possible allow the silt to dry before start of desilting work. (vii) Avoid manual desilting of drains as far as possible in the section where there is space to employ mechanical diggers or appropriate equipment and tools (viii) Provide proper tools and equipment for desilting (winches and buckets), and personal protection equipment (PPE) for workers (gloves, gum boots, face masks, etc.); additional oxygen tanks for emergency use (ix) Provide onsite training to workers on safe handling of contaminated water and sludge, and (x) Silt/soil generated from desilting shall be disposed municipal land fill site with prior permission from respective municipal councils and in consultation with Tripura State Pollution Control Board			
Socio-Economic - Employment	Generation of temporary employment and increase in local revenue	(i) Employ local labor force as far as possible; and (ii) Comply with labor laws (See Appendix 5 of this IEE)	Construction Contractor	PMSC and PIU	Contractor costs
Impact on socio economic-Income	Disturbance to economic activities may result from excavation works, stockpiling, the operation of construction vehicles and equipment, and accidental damage to utilities	- Implement the traffic management plan in collaboration with local authorities; - Where traffic congestion will likely occur, place traffic flagmen during working hours; - Avoid full road closures by applying the construction method on section-wise and/or chainage-wise approach during excavation, concreting and/or curing periods; - If full road closure is not possible, especially on very narrow roads, ensure that alternate routes are identified and that affected residents and	Construction Contractor	PMSC and PIU	Contractor costs

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	(e.g., power supply poles, open drains, and water taps or hoses)	establishments are informed prior to conducting the construction activities; • Provide convenient access to pedestrians when works occur in front of residential, commercial, or institutional establishments. Examples are planks with handrails that should be provided to cross excavated areas. • Provide appropriate compensation to qualified affected people or businesses per approved resettlement plan for the subproject; • Manage stockpile; • Manage pumped water from excavations either to drains or drums for later use; • Relocate the affected power supply poles, and • Advise the concerned authority during accidental damage to utilities			
Occupational Health and Safety	Occupational hazards which can arise during work, safe from COVID 19	(i) All national, state and local core labor laws to be complied with (see Appendix 5 of this IEE). Labour license and Workmen Compensation policy to be obtained by contractor before start of construction (ii) Implementation of international best practices on occupational health and safety such as those in Section 4.2 of World Bank EHS Guidelines on Construction and Decommissioning Activities (iii) Develop and implement site-specific occupational health and Site-specific occupational health and safety (OHS) Plan and Supplementary H & S plan for COVID 19 to be developed and implemented which included measures such as: (a) excluding public from the site; (b) maintaining social distancing for protection from COVID 19 infection; (c) ensuring all workers are provided with and use personal protective equipment like helmet, gumboot, safety belt, gloves, nose mask, face mask and ear plugs;	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(d) OHS Training and COVID 19 awareness H & S training for all site personnel; (e) complete COVID 19 vaccinations for workers, (f) documented procedures to be followed for all site activities including follow of SOP for COVID 19 to be developed for the project and H & S plan; and (g) documentation of work-related accidents; (iv) Availability of First aid box/ facility throughout the project period; (v) Medical insurance and tie-up with local hospitals to be provided for workers; (vi) All installations will be secured from unauthorized intrusion and accident risks; (vii) Potable drinking water to be provided for the workers; (viii) Clean eating areas to be provided where workers are not exposed to hazardous or noxious substances; (ix) To provide health and safety orientation training including COVID 19 risk and mitigation to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; (x) Visibility of workers to be ensured through the use of high visibility vests when working in or walking through heavy equipment operating areas; (xi) Moving equipment will be outfitted with audible back-up alarms; (xii) Sign boards will be provided for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage is in accordance with international standards and are well known to, and easily understood by			

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		workers, visitors, and the general public as appropriate; (xiii) Workers will be disallowed exposure to noise level greater than 85 dB (A) for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. Standard Operating Procedure (SOP) for the project and Supplementary H & S plan for COVID 19 will be prepared which cover, (xiv) General instruction to follow to prevent the spread of COVID-19 in construction workplace (Refer to Error! Reference source not found.1) (xv) Worksite prevention practice at work site, office, during meeting, travelling, etc. (xvi) Precaution to be taken at workmen habitat/ camp (xvii) Use of PPEs: face mask – hand gloves, maintaining social distancing, disinfection, requirement of awareness covered under the H & S plan.			
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation and road, drain construction work	(i) Contractor's implementation of community health and safety plan following international best practices on community health and safety such as those in Section 4.3 of World Bank Environmental Health and Safety (EHS) Guidelines on Construction and Decommissioning Activities. As a minimum and whichever is applicable, the health and safety plan shall ensure the following: (ii) implement risk management strategies to protect the community from physical, chemical, or other hazards associated with sites under construction and decommissioning; (iii) restricting access to the site, through a combination of institutional and administrative controls, with a focus on high-risk structures or areas depending on site-specific situations,	Construction Contractor	PMSC and PIU	Cost for Implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		including fencing, signage, and communication of risks to the local community; (iv) removing hazardous conditions on construction sites that cannot be controlled affectively with site access restrictions, such as covering openings to small confined spaces, ensuring means of escape for larger openings such as trenches or excavations, or locked storage of hazardous materials; (v) implement measure to prevent proliferation of vectors of diseases at work sites; (vi) Implement necessary structural safety and site safety measures to prevent collapse of trenches, and damage / structural failure / collapse of adjacent buildings, boundary walls and other structures; provide proper braces, struts, anchors as required in the trench and for protecting the adjoining structures; avoid placing of material, equipment, waste, close to the trench edges (vii) adequate space and lighting, temporary fences, reflectorized barriers and signage's at active work sites (viii) contractor's preparedness in emergency response; (ix) adequate dissemination of GRM and contractor's observance and implementation of GRM (x) Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency); (xi) Enforce strict speed limit (20-30 kmph) for playing on unpaved roads, construction tracks; (xii) Night-time driving will be by exception only, as approved by the Cluster-PIU to minimize driving risk and disturbance to communities; (xiii) Adopt standard and safe practices for micro tunneling, if required;			

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(xiv) Temporary traffic control (e.g. flagmen) and signs will be provided where necessary to improve safety and provide directions; (xv) All drivers will undergo safety and training; along with COVID-19 awareness (xvi) Public access to all areas where construction works are on-going will be restricted through the use of barricading and security personnel; (xvii) Warning signs, blinkers will be attached to the barricading to caution the public about the hazards associated with the works, and presence of excavation; (xviii) Control dust pollution – implement dust control measures as suggested under air quality section; (xix) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure; (xx) Provide road signs and flag persons to warn of on-going trenching activities.			
Work Camps and worksites	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants. Unsanitary and poor living conditions for workers	(i) As far as possible locate the camp site away from residential areas (at least 50 m buffer shall be maintained) (ii) Avoid tree cutting for setting up camp facilities (iii) Ensured that a proper compound wall is provided, and erect a wind/dust screen around (iv) Camp site shall not be located near (50 m) water bodies, flood plains flood prone/low lying areas, or any ecologically, socially, archeologically sensitive areas (v) Construction camp must be safeguarded from COVID -19 including safe eating area, maintaining Hygiene inside camp, ensure physical distancing measures	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(vi) Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit (vii) Provide proper temporary accommodation with proper materials, adequate lighting and ventilation, appropriate facilities for winters and summers; ensure conditions of livability at work camps are maintained at the highest standards possible at all times; (viii) Consult Cluster-PIU before locating project offices, sheds; (ix) Minimize removal of vegetation and disallow cutting of trees (x) Ensure conditions of livability at work camps are always maintained at the highest standards possible; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be allowed as accommodation for workers (xi) Camp shall be provided with proper drainage, there shall not be any water accumulation (xii) Ensure COVID vaccination is done for all the labours involved in the work (xiii) Provide drinking water, water for other uses, and sanitation facilities for employees (xiv) Prohibit employees from cutting of trees for firewood; contractor should be provided proper facilities including cooking fuel (oil or gas; fire wood not allowed) (xv) Train employees in the storage and handling of materials which can potentially cause soil contamination (xvi) Recover used oil and lubricants and reuse or remove from the site			

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(xvii) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in local market (xviii) Remove all wreckage, rubbish, or temporary structures which are no longer required (xix) At the completion of work, camp area shall be cleaned and restored to pre-project conditions, and submit report to Cluster-PIU; Cluster-PIU to review and approve camp clearance and closure of work site.			
Chance Finds	There are no protected properties in the subproject sites.	In case of chance finds, works must be stopped immediately, informed to PIU and until such time chance finds are cleared by experts	Construction Contractor	PMSC and PIU	Contractor cost
Social and Cultural Resources	However, in case of chance finds, contractors will be required to follow a protocol as defined in the mitigation measures.	• Avoiding working at sensitive times, • Limiting dust by removing waste soil quickly, bringing sand to site only when necessary, covering and watering stockpiles, and covering soil and sand when carried on trucks; • Put in place proper dust and noise control measures • Adjacent to religious/social/historical buildings, undertake excavation and construction work in such a way that no structural damage is caused to the structures • Observe the local rituals and important dates of festivals, weekly/monthly/annual religious occasions in the religious places and do not make any disturbance/hindrance/obstacles during such time to the religious places • Provide proper signage, barricades etc. to protect public and devotees from dangers of construction works.	Construction Contractor	PMSC and PIU	Contractor cost

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		• Ensure proper traffic management planning to minimize the disruption to the normal traffic flow in the area and ensure the safety of the people. • Clear the work site of unnecessary material, equipment and debris / surplus soil; do not stock material / soil at the sites • Conduct continuous consultations with the local people during the works • Implement additional safety features for working near the schools; isolate work site from the school access road; provide proper barricading to prevent entry of children / public into work site; create awareness among school children and staff on construction safety			
Submission of EMP implementation report	Unsatisfactory compliance to EMP	(i) Appointment of Environment, Health and Safety (EHS) cum social supervisor to ensure EMP implementation (ii) Timely submission of monitoring reports including pictures	Construction Contractor	PMSC and PIU	Contractor cost
Post-construction clean-up	Damage due to debris, spoils, excess construction materials	(i) Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) after completion of work; (ii) All excavated roads shall be reinstated to original condition. (iii) All disrupted utilities will be restored (iv) All affected structures will be rehabilitated/ compensated (v) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. (vi) The contractor must arrange the cancellation of all temporary services. (vii) Request Cluster-PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.	Construction Contractor	PMSC and PIU	Cost for implementation of mitigation measures responsibility of contractor.

Table 33: Operation Stage Environmental Impacts and Mitigation Measures

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Drainage Maintenance	Entry of wastewater, blocking/choking of drains due to accumulation of silt, and solid waste could damage the health and environment	(i) Prevent entry of wastewater into drains; this requires development of sewerage system (intercepting of wastewater) in the town. In the interim, an interception, diversion and treatment of drain water proposed under AMRUT/other govt. scheme; PMU to ensure that this project is implemented as per the schedule so that wastewater that enter the drains is collected and treated prior to discharge into streams and river (ii) Ensure that sewage/septic tank outflow is not discharged into drains; implementation of the proposed sanitation and septage management system under AMRUT/ other govt. scheme will minimize this impact (iii) promotion and enforcement of good waste management practices at household level; (iv) regular monitoring and cleaning of the drains, and siltation or sedimentation chambers (or similar structures) at the outfalls, to prevent entry or accumulation of silt and solid wastes inside these drains. (v) Ensure regular cleaning and desilting of drains; project shall include provision of necessary maintenance equipment (vi) Prevent encroachment of drains	Operation Contractor	ULB	Operating costs
Community hazards due to destroyed or removed drainage cover	Repair works could cause some temporary disruption of activities at sensitive locations such as schools, hospitals, religious places, etc.,	Repair works could cause some temporary disruption of activities at sensitive locations such as schools, hospitals, religious places, etc., so the same precautions as employed during the construction period should be adopted. ULB will: • Complete work in these areas quickly; and • Consult municipal authorities, custodians of important buildings, cultural and tourism authorities and local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.	Operation Contractor	ULB	Operating costs
Routine Maintenance of road	Traffic may be interrupted temporarily but this work will be very small in scale,	(i) To maintain the safety of workers and road-users, such work should be coordinated with the local police department so that adequate warning signs and traffic diversions can be set up when necessary. (ii) Debris need to be collected and disposed at a designated site such as the landfill.	Operation Contractor	ULB	Operating costs

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	infrequent, and short in duration, so there will be no economic or other implications. The infrastructures will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.	(iii) Continue to encourage community participation in ensuring drainage canals are clog-free through information and behavior change campaigns and incentives, if possible.			
Community safety	Improved roads may give way to faster vehicle speeds which could endanger people and households along the road alignments. Damage in roads may also cause accidents to motorists.	(i) Conduct regular inspection of the roads to check for damages, and undertake rehabilitation measures for any damages found; (ii) Inspect and maintain the integrity of road barriers, especially at critical curves or locations that are prone to vehicular accidents; (iii) Inspect and maintain speed limiters such as humps installed on road sections near residential areas, schools, and religious establishments. (iv) Inspect and maintain all road signages, including appropriate warning signages at silent zones, and ensure that these are reflectorized and visible even during night time; and (v) Ensure pedestrian crossings are maintained.	Operation Contractor	ULB	Operating costs

Table 34: Construction Stage Environmental Monitoring Plan

Monitoring field	Monitoring Location	Monitoring Parameters	Frequency	Responsibility	Monitoring	Cost and Source of Funds
Construction disturbances, nuisances, public and worker safety,	All work sites	Implementation of dust control, noise control, traffic management, and safety measures. Sample site inspection checklist attached as Appendix 13	Weekly during construction	Supervising staff and safeguards specialists	PMSC and PIU	No costs required

Monitoring field	Monitoring Location	Monitoring Parameters	Frequency	Responsibility	Monitoring	Cost and Source of Funds
Tree cutting	Along the proposed drain and road network	Tree cutting permit taken, Tree cutting done	Continuous	Supervising staff, EHS officer and safeguards specialists	PIU and ULB	Contractor
Shifting of utility structure	Along the proposed drain and road network	Inform to concerned service providers and shifting done	Continuous	Supervising staff, EHS officer and safeguards specialists	PIU and ULB	Contractor
Construction, Labour Camp, storage yard Management	Construction, Labour Camp, storage yard sites	As per SEMP	Weekly	EHS officer, Environment Specialist of consultant	PIU and ULB	contractor
Solid waste management	Construction, Labour Camp, storage yard Management	As per SEMP	Weekly	EHS officer, Environment Specialist of consultant	PMSC, PIU and ULB	contractor
Construction and demolition waste management	All construction site	As per SEMP and applicable rules and regulations	Monthly	EHS officer, Environment Specialist of consultant	PMSC, PIU and ULB	contractor
Consent to establish of batching plants, crusher, hot mix plant. DG sets etc.	Batching plants, crusher, hot mix plants etc.	Copies of Consents	Periodically	EHS officer, Environment Specialist of consultant	PMSC and PIU	No cost required for monitoring cost for obtaining CTE/CTO from PMU and for others from Contractor
Ambient air quality	Kailashahar 4 locations, (2 location on proposed road and 2 location on proposed drain, different areas) Kumarghat 4 locations, (2 location on proposed road and 2	PM ₁₀ , PM _{2.5} NO ₂ , SO ₂ , CO	(i) Once before start of construction. (ii) Yearly 3 times (for seasons: pre-monsoon, post-monsoon and winter) during construction (2.5-years period considered)	Construction Contractor	PMSC and PIU	Cost for implementation of monitoring measures responsibility of contractor

Monitoring field	Monitoring Location	Monitoring Parameters	Frequency	Responsibility	Monitoring	Cost and Source of Funds
	location on proposed drain, different areas) Dharamanagar 2 locations, (2 location on proposed drain) Ambassa 4 locations, (2 location on proposed road and 2 location on proposed drain, different areas)					
Ambient noise level	Kailashahar 4 locations, (2 location on proposed road and 2 location on proposed drain, different areas) Kumarghat 4 locations, (2 location on proposed road and 2 location on proposed drain, different areas) Dharamanagar 2 locations, (2 location on proposed drain) Ambassa 4 locations, (2 location on proposed road and 2 location on proposed drain,	Day time and nighttime noise levels	(i) Once before start of construction. (ii) Yearly 3 times (for seasons: pre-monsoon, post-monsoon and winter) during construction (2.5-years period considered)	Construction Contractor	PMSC and PIU	Cost implementation for of monitoring measures responsibility of contractor

Monitoring field	Monitoring Location	Monitoring Parameters	Frequency	Responsibility	Monitoring	Cost and Source of Funds
	different areas)					
Surface water quality	Two no. for each town if required (suspected water body contamination)	pH, TDS, Oil and grease, Cl, F, NO ₃ , TC, FC, Hardness, Turbidity BOD, COD, DO, Total Alkalinity	(i) Once before start of construction (ii) Yearly 3 times (for seasons: pre-monsoon, post-monsoon and winter) during construction (2.5-years period considered)	Construction Contractor	PMSC and PIU	Cost for implementation of monitoring measures responsibility of contractor
COVID-19 Heath Monitoring	At all operating sites	Known symptoms of COVID-19 e.g., fever, cough, etc.	Daily	Construction Contractor	PMSC and PIU	Cost for implementation of monitoring measures responsibility of contractor (Lumpsum)

Table 35: Operation Stage Environmental Monitoring Plan

Monitoring Field	Monitoring Location	Monitoring Parameters	Frequency	Responsibility	Monitoring	Cost and Source of Funds
Monitoring of quality of water on discharge point of the drain	Outfall of the drain sampling in all zones	pH, Nitrite, Nitrate, Turbidity BOD, COD, Hardness, residual chlorine, Total Alkalinity	Quarterly once	Contractor / ULB	ULB	O&M costs
Air quality Monitoring on proposed road	At sensitive locations	PM ₁₀ , PM _{2.5} NO ₂ , SO ₂ , CO	Two times in a year	Contractor / ULB	ULB	O&M costs

B. Implementation Arrangements

178. Urban Development Department (UDD) of Government of Tripura (GOT) is the executing agency, and the implementing agencies are Tripura Urban Planning and Development Authority (TUDA, for urban component) and Tripura Tourism Development Corporation Limited (TTDCL, for tourism component). A Project Management Unit (PMU) will be established with the secretary, UDD as the project director and secretary, Department of Tourism (DOT), GOT, as co-project director. The PMU will also include two additional project directors (one each for urban and tourism), a project coordinator, and an additional project coordinator. Six project implementation units (PIUs) will be established to cover urban and tourism components separately and will be located at Agartala, Udaipur and Kumarghat. Project Management & Supervision Consultant (PMSC) will be engaged to assist PMU and the PIUs for implementation of the project.

179. At PMU level, the project coordinator at PMU will be the nodal officer for environmental, social safeguards and gender and will be responsible for ensuring compliance with ADB's Safeguards Policy Statement (SPS), 2009, during the project implementation, including the monitoring and reporting. PMU will engage a qualified and experienced consultant, designated as environmental safeguards officer (ESO), to support project coordinator in environmental safeguards tasks. Project manager or assistant project manager of PIU will be designated as safeguards focal in each PIU. PMSC team will include an Environmental Safeguards Specialist (ESS), and three support safeguards staff, located in PIUs and will provide all necessary support and expert guidance to PMU and PIUs. Contractor will appoint an Environment, Health and Safety (EHS).

180. **Project Management Unit (PMU).** The PMU will be responsible for planning, management, coordination, supervision and progress monitoring. The PMU has the responsibility of fulfilling environmental requirements of the government and ensuring effective implementation of the environmental management provisions in the IEEs, EMPs and civil works contracts. The following are the key environmental safeguard tasks and responsibilities of the ESO at the PMU:

- (i) ensure project compliance with the statutory environmental requirements, ADB SPS 2009, and loan covenants
- (ii) ensure that draft IEEs prepared based on preliminary designs are updated to reflect the final subproject detailed designs, and are approved by ADB and disclosed prior to bid invitation (for works contracts) and commencement of works (for design-build contract)
- (iii) ensure that IEEs including EMPs are included in bidding documents and contracts
- (iv) Ensure that baseline monitoring as suggested in the EMPs are conducted and base values established prior to commencement of works
- (v) Ensure that detailed environmental audit conducted for existing facilities and corrective actions are included in project for implementation
- (vi) coordinate with design engineers to avoid potential environmental impacts
- (vii) ensure that SEMP are submitted by contractor and cleared by PIU prior to commencement of works
- (viii) ensure that construction works are not commenced until all applicable government clearances, permits (including those required by construction contractor) are obtained;
- (ix) Oversee and ensure that contractors and their subcontractors comply with labor laws and rules
- (x) ensure that the IEEs including EMPs are updated in case of any change project scope, design or location during implementation

- (xi) confirm compliance with all measures and requirements set forth in the IEEs, the EMPs and any corrective or preventive actions set forth in safeguard monitoring reports;
- (xii) finalize environmental sections quarterly progress reports, and environmental monitoring reports for submission to ADB
- (xiii) ensure availability of budget for safeguards activities
- (xiv) ensure adequate awareness campaigns, information disclosure among affected communities and timely disclosure of final IEEs/EMPs and SEMRs, including corrective action plans, if any, in project website and in a form accessible to the public;
- (xv) assist in setting up of grievance redress mechanism (GRM), identifying grievance redressal committee (GRC) members and developing capacity of GRC members, PIUs, consultants, and contractors in addressing environmental safeguards-related issues/concerns/complaints;
- (xvi) ensure any grievances brought about through the GRM are redressed in a timely manner;
- (xvii) organize periodic capacity building and training programs on safeguards for PMU, PIUs and contractors.

181. **Project Implementation Units.** The PIUs will be responsible for the day-to-day activities of project implementation in the field and will have direct supervision of all contractors. PIUs will oversee and monitor the day-to-day progress and implementation including environmental safeguards. The following are the key environmental safeguard tasks and responsibilities of the Safeguard Officer at the PIU with the PMSC's support environmental staff:

- (i) Promptly report to PMU on any changes in project design / location / scope during the design verification and implementation phase and coordinate with PMSC to update IEEs and EMPs
- (ii) Liaise with local offices of regulatory agencies and ensure that clearances /approvals are obtained timely;
- (iii) Take necessary action for obtaining right-of-way prior to start of works;
- (iv) Review and approve contractor SEMP's;
- (v) Oversee implementation of SEMP's by contractors
- (vi) Ensure that contractors and their subcontractors comply with labor legislations and standards; ensure that workers are accommodated, paid and treated according to the requirements
- (vii) ensure strict implementation of occupational health and safety requirements
- (viii) Review monthly reports from contractors on EMP implementation, and support PMU in preparing quarterly reports and SEMRs
- (ix) Ensure continuous public consultation and awareness;
- (x) Coordinate grievance redress process and ensure timely actions by all parties; and
- (xi) Support all other environmental safeguards-related activities and tasks of the PMU as may be needed.
- (xii) recommend issuance of construction work completion certification to the contractor upon verification of satisfactory post-construction clean-up.

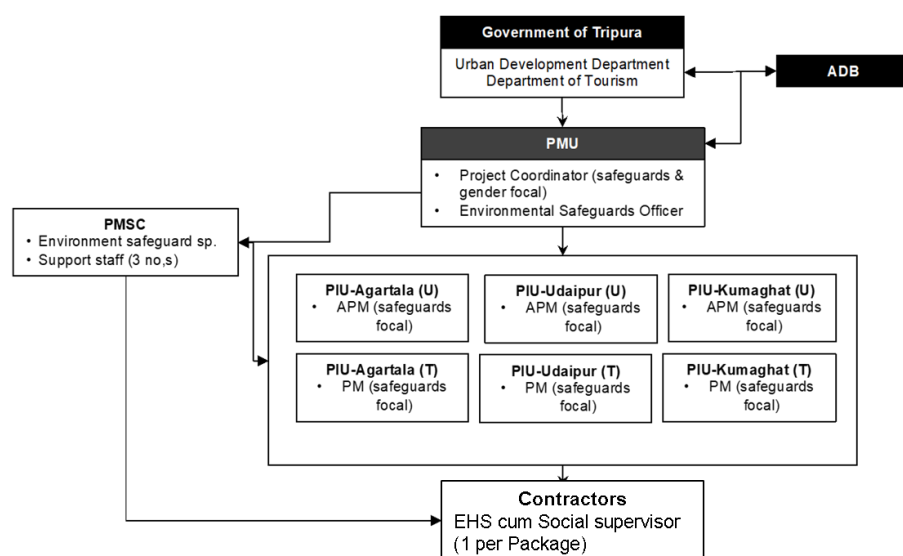
182. **Project Management and Supervision Consultant.** The PMU and PIUs will be supported by PMSC's Environmental specialist and three support environmental staff. Key tasks of will include, but not limited to, the following:

- (i) Assist in preparing, updating, reviewing, implementing, monitoring, and reporting of all tasks related to environmental safeguards as required
- (ii) Monitoring of EMP implementation, regulatory compliance, grievance redress, reporting etc.,
- (iii) Provide all necessary support and expert guidance to ESO and SO in managing environmental safeguards tasks
- (iv) Work closely with design teams to include environmental considerations in subproject location, design and technical specifications
- (v) Update IEEs and EMPs as needed to reflect detailed designs, changes in design verification and/or implementation phase of subprojects
- (vi) Assist in public consultations, feedback and reporting
- (vii) Ensure that the relevant provisions of EMPs, including costs of implementing the EMPs, are fully included in bid and contract documents, particularly in the bill of quantities and cost line items;
- (viii) Identify statutory clearances / permissions / approvals required and assist in obtaining them;
- (ix) Assist in including standards/conditions of regulatory clearances and consents, if any, in the project design;
- (x) Conduct training, capacity building activities for PMU, PIU and contractors
- (xi) Ensure compliance with ADB's disclosure requirements as per the SPS;
- (xii) Assist PMU/PIUs in reviewing and approving contractor SEMP, and other associated plans
- (xiii) Carry out site verification, and monitor the EMP implementation and ensure compliance by the contractors and subcontractors;
- (xiv) Ensure that contractors and their subcontractors comply with labor legislations; ensure that workers are paid and treated according to the labor legislations
- (xv) Identify any non-compliances or unanticipated impacts and recommend corrective actions
- (xvi) Prepare environmental safeguards section in quarterly reports
- (xvii) Prepare semiannual environmental monitoring reports
- (xviii) Assist in operating GRM effectively
- (xix) Advise contractor on appropriate actions on grievances, ensure timely resolution and proper documentation; and
- (xx) Support all other environmental safeguards-related activities and tasks of the PMU and PIUs as may be needed.

183. **Contractor.** The approved draft IEEs and EMPs are to be included in bidding and contract documents. The PMU and PIUs will ensure that bidding and contract documents include specific provisions requiring contractors to comply with: (i) all applicable laws and regulations relating to environment, health and safety; (ii) reinstate pathways, other local infrastructure, and agricultural land to at least to their pre-project condition upon the completion of construction; (iii) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation, international treaties for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; (c) no discrimination in respect of employment and occupation; (d) allow freedom of association and effectively recognize the right to collective bargaining, and (e) elimination of forced labor; and (iv) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the project sites. The contractor will be required to appoint a full time Environment, Health and Safety (EHS) cum social supervisor on-site to implement the EMP. EHS cum social supervisor will assist contractor in the following:

- (i) Prepare SEMP and submit to PMU/PIU for approval prior to start of construction
- (ii) Comply with the measures forth in the IEEs, the EMPs, and SEMRs
- (iii) Ensure implementation of SEMP and report to PIU/PMC on any new or unanticipated impacts
- (iv) Ensure that necessary pre-construction and construction permits are obtained
- (v) Ensure to adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and
- (vi) Conduct orientation, daily briefing sessions, toolbox talks, to workers on environment, health and safety;
- (vii) provide appropriate worker facilities at the workplace and labor camps as per the requirements and contractual provisions;
- (viii) Carry out site inspections on a regular basis and prepare site-inspection checklists/reports;
- (ix) Record EHS incidents and undertake remedial actions;
- (x) Conduct environmental monitoring (air, noise, etc.,) as per the monitoring plan
- (xi) Prepare monthly EMP monitoring reports and submit to PIU
- (xii) Comply with labor legislations, and ensure that subcontractors also implement labor legislations requirements, through cascading of requirements to subcontractors—HR policy, labor management requirements, any worksite specific grievance redress mechanism.
- (xiii) Work closely with PIU and PMC to ensure communities are aware of project related impacts, mitigation measures, and GRM;
- (xiv) Receive, record, and redress grievances in an effective and timely manner;
- (xv) Provide the PIU/ PMU with a written notice of any unanticipated environmental, impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP;
- (xvi) Reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction;
- (xvii) Site clearance and restoration after the completion of works

184. Safeguards implementation arrangement is shown in Figure 50.

Figure 50: Safeguards Implementation Arrangements

ADB = Asian Development Bank; APM = Assistant project manager; EHS = Environment, Health & Safety; IA – Implementing Agency; PIU = Project Implementation Unit; PMSC = Project Management and Supervision Consultant; PMU = Project Management Unit; PM = project manager

C. Capacity Building and Training

185. Safeguard focal of PIU will be trained by Environmental Safeguard Specialist of PMSC on safeguards issues related to the project, EMP, SEMP and GRM. The SEMP, IPPF and GESI action plan will provide indicative capacity building program which included modules on: (i) introduction and sensitization to ADB SPS on environmental, involuntary resettlement and indigenous people policies and requirements; (ii) project related requirements as provided in the EMP, SEMP, IPPF and GESI action plan, (iii) review, updating and preparation of the IEEs, SEMP, RPs, DDRs and IPPs (as required) upon the completion of project detailed design; (iv) improved coordination within nodal departments; (v) monitoring and reporting system; and (vi) project GRM.

186. The estimated cost is ₹3,00,000 (excluding trainings of contractors which is a part of EMP implementation cost during construction) to be covered by the project's capacity building program. The detailed cost and specific modules are being customized for the available skill set after assessing the capabilities of the target participants and the requirements of the project by the Environment Safeguard specialist (ESS) of PMSC.

Table 36: Outline Capacity Building Program on EMP Implementation

Description	Target Participants and Venue	Estimate (Rs)	Cost and Source of Funds
1. Introduction and Sensitization to Environmental Issues (1 day) - ADB Safeguards Policy Statement - Government of India and Tripura state applicable safeguard laws, regulations and policies including but not limited to core labor standards, OHS, etc. - Incorporation of EMP into the project design and contracts - Monitoring, reporting and corrective action planning	All staff and consultants involved in the project At PIU-PMU (combined program for all subprojects in one cluster)	150,000	Included in the overall program cost
2. EMP implementation (1/2 day) - EMP mitigation and monitoring measures - Roles and responsibilities - Public relations, - Consultations - Grievance redress - Monitoring and corrective action planning - Reporting and disclosure - Construction site standard operating procedures (SOP) - Health & safety, specifically health risk from COVID 19. -- Chance find (archeological) protocol -Traffic management plan - Waste management plan - Site clean-up and restoration	All Cluster-PIU staff, contractor staff and consultant involved in the subproject At PIU- cluster- PIUs	150,000 (Lump sum)	Included in subproject cost estimates
3. Contractors Orientation to Workers (1/2 day) - Environment, health and safety in project construction -Health impact and protection from COVID 19	Once before start of work, and thereafter regular briefing every month once. Daily briefing / tool box talk on safety prior to start of work All workers (including unskilled laborers)	100,000	Contractor's cost

D. Monitoring and Reporting

187. Immediately after mobilization and prior to commencement of the works, the contractor is to submit a compliance report to cluster-PIU that all identified pre-construction mitigation measures as detailed in the EMP will be undertaken. Contractor should confirm that the staff for EMP implementation (EHS supervisor/officer) is mobilized. Cluster-PIU is required to review and approve the report and permit commencement of works.

188. During construction, results from internal monitoring by the contractor is to be reflected in their monthly EMP/SEMP implementation reports to the Cluster-PIU/PIU. PMSC is required to review and advise contractors for corrective actions if necessary. The quarterly report summarizing compliance and corrective measures taken is to be prepared by PMSC team at PIU and to be submitted to PMU. During operation, the contractor is required to conduct management and monitoring actions as per the operation stage EMP and submit to PIU a quarterly report on EMP implementation and compliance.

189. Based on monthly and quarterly reports and measurements, PMU/PIU (assisted by PMSC) is required to submit semi-annual environmental monitoring report (SEMR). Once concurrence from the ADB is received the report will be disclosed on TUDA/PMU websites.

190. ADB will review project performance against the TUTDP commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system.

191. ADB's monitoring and supervision activities will be carried out on an on-going basis until a Project Completion Report (PCR) is issued. ADB issues a PCR within 1-2 years after the project is physically completed and in operation.

E. Environmental Management Plan Implementation Cost

192. Most of the mitigation measures require the contractors to adopt good site practices, which should be part of their normal procedures already, so there are unlikely to be major costs associated with compliance. The costs which are specific to EMP implementation and are not covered elsewhere in the projects are given below. **Table 37** indicates cost estimate to implement EMP.

Table 37: Cost Estimates to Implement the Environmental Management Plan

	Particulars	Stages	Unit	Total No.				Rate	Cost	Costs Covered By
								(INR)	(INR)	
				Kailas hahar	Kumar ghat	Dharama nagar	Ambassa			
A.	Implementation staff									
1	Environment, Health, and Safety cum social supervisor	Construction	Per month (Effective work period for the town)	30	30	24	30	70,000	79,80,000	Contractor cost
	Subtotal (A)								79,80,000	
B.	Mitigation Measures									
1	Consent for establishments and consent for operation from TSPCB	Pre-construction – not applicable	Lumpsum	-	-	-	-	-	-	Project cost
2	Provision for tree cutting and compensatory plantation measures (1: 5 ratio replantation) Includes plantation along the road (depends on availability of land)	Construction	Per tree	120	120	50	150	1,000	4,40,000	Contract
3	Traffic management at work sites (Pavement Markings, Channelizing Devices, Arrow Panels and Warning Lights)	Construction	Lump sum	1,00,000	1,20,000	80,000	1,20,000	Lump sum	4,20,000	Contract
4	Provision for COVID-19 preventive measures e.g., mask, sanitizer, etc.	Construction	Lump sum	70,000	70,000	70,000	70,000	Lump sum	2,80,000	Health & Safety budget

	Particulars	Stages	Unit	Total No.				Rate	Cost	Costs Covered By
				Kailas hahar	Kumar ghat	Dharama nagar	Ambassa	(INR)	(INR)	
	Subtotal (B)								11,40,000	
C.	Monitoring Measures									
1	Air quality monitoring	Construction	per sample	32	32	16	32	10,000	11,20,000	Contract
2	Noise monitoring levels	Construction	Per sample	32	32	16	32	1500	1,68,000	Contract
3	Surface water monitoring	Construction	Per sample	18	18	15	18	8000	5,52,000	Contract
5	COVID-19 health monitoring at operating sites	Construction	Per thermal gun	5	5	5	5	5000	1,00,000	Item rate contract
	Subtotal (C)								19,40,000	
D.	Capacity Building									
1	Introduction and Sensitization to Environmental Issues	Pre-construction	Lump sum	1,50,000	1,50,000	1,50,000	1,50,000	Lump sum	6,00,000	PIU
2	EMP implementation	Pre-construction	Lump sum	1,50,000	1,50,000	1,50,000	1,50,000	Lump sum	6,00,000	PIU
3	Contractors Orientation to Workers on EMP implementation	Prior to dispatch to worksite	Lump sum	1,00,000	1,00,000	1,00,000	1,00,000	Lump sum	4,00,000	Contract
	Subtotal (D)								16,00,000	
E	Civil Works									
1	Water Sprinkling for dust suppression	Construction	KL	1500	2000	1000	2000	120	7,80,000	Civil works contract under DBO Contractor
	Subtotal								7,80,000	

	Particulars	Stages	Unit	Total No.				Rate	Cost	Costs Covered By
								(INR)	(INR)	
				Kailas hahar	Kumar ghat	Dharama nagar	Ambassa			
F	Barricading									
1	Providing and fixing Barricading using 40 mm dia M.S. pipe vertical and horizontal posts	Construction	m	Already included in Civil cost						Civil works contract under Contractor
2	Providing and fixing using 40 mm dia M.S. pipe ("B" class) as vertical post and PVC tape	Construction	m	Already included in Civil cost						Civil works contract under Contractor
	Subtotal									
G	Grievance Redressal Mechanism			350000	350000	350000	350000	Lumpsum	14,00,000	Civil works contract under Contractor
	Total +C+D+E+F+G)							INR	1,48,40,000	
Contractor Cost								INR	1,36,40,000	
PIU Cost								INR	12,00,000	
Total								INR	1,48,40,000	

X. CONCLUSION AND RECOMMENDATIONS

193. The process described in this document has assessed the environmental impacts of all elements of the proposed Road and Drain subproject for Cluster IIIA towns. All potential impacts are identified in relation to pre-construction, construction, and operation phases. Planning principles and design considerations have been reviewed and incorporated into the site planning and design process wherever possible; thus, environmental impacts as being due to the project design or location were not significant.

194. Road and drainage system rehabilitation will be carried out within existing right of ways or roads and drains. Works are located in urban areas, and there are no notable sensitive environmental features except few local religious places, sensitive receptors like health institutes and educational institutes along the project roads. There are no environmentally, or historically or archeologically sensitive or protected areas within or adjoining the project sites. Nearest protected area to Kailashahar town within 10 km, Raj kandi Reserved Forest which is located in Bangladesh.

195. Road improvements are combined with necessary improvements drainage facilities along the roads, and therefore no adverse impacts due to rehabilitation / construction of roads envisaged. Provision of side lateral drains, and cross drainage structures like culverts where required to collect and convey surface runoff is already included in the proposed roads. Subproject also includes construction / improvement of existing drains in various places to collect and convey runoff into nearby streams / *charras* / rivers to mitigate the problem of water logging. In the existing condition, wastewater, mainly sullage (grey water) from the houses is being discharged into open drains. It is necessary that the proposed septage management and interception, diversion and treatment project under AMRUT/ other govt. scheme is implemented as per the schedule to prevent discharge of wastewater into natural drains, especially during dry season.

196. The public participation processes undertaken during project design ensured stakeholders are engaged during the preparation of the IEE. The planned information disclosure measures and process for carrying out consultation with affected people will facilitate their participation during project implementation.

197. The project's grievance redress mechanism will provide the citizens with a platform for redress their grievances, and describes the informal and formal channels, time frame, and mechanisms for resolving complaints about environmental performance.

198. The EMP will assist the project agencies and contractor in mitigating the environmental impacts and guide them in the environmentally sound execution of the proposed project.

199. A copy of the EMP/approved SEMP shall be always kept on-site during the construction period. The EMP shall be made binding on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document shall constitute a failure in compliance.

200. The project will benefit the general public by contributing to the long-term improvement of road & drain and community livability in the project area, Kailashahar, Kumarghat, Dharmanagar and Ambassa towns. The potential adverse environmental impacts are mainly related to the construction period, which can be minimized by the mitigating measures and environmentally sound engineering and construction practices.

201. **Conclusion.** Therefore, as per ADB SPS, the project is classified as environmental category B and does not require further environmental impact assessment. However, to conform to government guidelines. In case of any change in scope, design and location IEE report will be updated and to be approved by ADB before final disclosure.

202. **Recommendations.** The following are recommendations applicable to the subproject to ensure no significant impacts:

- (i) Obtain all statutory clearances at the earliest time possible and ensure conditions/provisions are incorporated in the detailed design;
- (ii) Include this IEE in bid and contract documents;
- (iii) Update/revise this IEE in case of change in scope, alignment, or location;
- (iv) Conduct safeguards induction to the contractor upon award of contract;
- (v) Ensure that the construction and demolition waste generated from demolition is existing structure to be reused and disposed as per guidelines stipulated in Construction and Demolition Waste Management Rules 2016
- (vi) Ensure proper disposal of drainage silt after receiving of NOC from Pollution Control Board;
- (vii) Ensure contractor appointed qualified environment, health, and safety (EHS) officers prior to start of works;
- (viii) Timely disclosure of information and establishment of GRM;
- (ix) Involvement of contractors, including subcontractors, in first level GRM;
- (x) Strictly supervise EMP implementation;
- (xi) Continuous consultations with stakeholders;
- (xii) Documentation and reporting on a regular basis as indicated in the IEE.
- (xiii) Commitment from PMU, PIUs, project consultants, and contractors to protect the environment and the people from any impact during project implementation.

Appendix 1: REA Checklist

RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST- Kailashahar

Rapid Environmental Assessment Checklist

Road & Highways- Kailashahar

Country/Project Title: India/ Tripura Urban & Tourism Development Project

Sector: Urban development – Road

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area adjacent to or within any of the following environmentally sensitive areas?			
Cultural heritage site		✓	No historical/cultural/ monuments/ areas exist in or close vicinity of the subproject components. Hence no such impacts are anticipated Unakoti, famous for rock art - ASI protected Heritage site is located about 5.6 km (aerial distance) from Kailashahar
Protected Area		✓	No as such protected area nearby the proposed roads considered for improvement
Wetland		✓	None
Mangrove		✓	Not Applicable
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	Proposed roads are not within buffer zone of any protected area
Special area for protecting biodiversity		✓	None of the subproject component sites are adjacent to or within any special area for protecting biodiversity
B. Potential Environmental Impacts Will the Project cause...			
Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		✓	Work will be done within existing ROW. No encroachment on historical/cultural areas have been identified. No major disfiguration of landscape is envisaged as the roads pass through generally flat terrains.
Encroachment on precious ecology (e.g. sensitive or protected areas)?		✓	Not applicable – no protected areas nearby the roads
Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	✓		Inclusion of drainage works with roads in critical areas will help reduce flooding risks in these sections.
Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	✓		There may be siltation of natural streams/drains located in the vicinity of project sites during construction and operation and mitigation measures have been proposed in the EMP Poor camp management may lead to runoff of silt and other wastes from workers' camps. This possible impact has been identified and mitigation measures have been included in the EMPs.

Screening Questions	Yes	No	Remarks
Increased local air pollution due to rock crushing, earth cutting and filling works, and chemicals from asphalt processing?	✓		Dust generation from earthworks and fumes from equipment and construction vehicles would be unavoidable. Rock crushing and asphalt processing will be sited away from settlements and other sensitive receptors. Measures to minimize local air pollution problems have been proposed in the EMP. Due to the nature of construction works, it is anticipated that air pollution will be increased during construction phase. As such guidance will be provided on the siting requirements for hot mix and ready-mix plants. Local regulations will also apply. Other mitigation measures needed will be covered in the EMP.
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	✓		As a standard, workers will be provided with PPE to minimize exposure to risks and associated harmful occupational health effects Although, the scale of construction works is relatively small for brick/ mud road, occupational health and safety (OHS) risks have still been taken into consideration and mitigation measures have been proposed in the EMP.
Noise and vibration due to blasting and other civil works?	✓		Although, the use of blasting is not proposed under the project, noise and vibration will be generated from construction works. Measures for minimizing this nuisance have been identified in the EMP
Dislocation or involuntary resettlement of people?		✓	Minimal impact is anticipated since improvement work will mostly be accommodated within available ROW. Temporary impact may be during construction work.
Dislocation and compulsory resettlement of people living in right-of-way?		✓	ROW encroachment in the project is very uncommon although some commercial structures (e.g. kiosks, stores) will have to be relocated temporarily. These have been covered in the resettlement plans (RPs).
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	Currently, no specific vulnerable groups have been identified in the project areas
Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?		✓	ROW encroachment in the project state is very uncommon although some commercial Impacts to air quality will be highly localized and temporary during construction activity. Regular water sprinkling is a standard measure that will be employed to reduce the dust.
Hazardous driving conditions where construction interferes with pre-existing roads?	✓		With strict occupational health and safety requirements, restrictions on construction timing and mitigation measures against dust and other forms of pollution, serious concerns on respiratory problems and stress are not expected Contractors are required to prepare traffic management plans to avoid hazards and risks
Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?	✓		As a standard practice, these issues have been covered in the provisions for sanitation, health care and solid and liquid waste management in the contract documents.

Screening Questions	Yes	No	Remarks
Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?		✓	Minimal risk is anticipated. Regular monitoring of drains and other potential breeding grounds for mosquitoes and proper waste management in camps will be implemented
Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?	✓		The preparation of traffic management plans and road safety provisions are included in the EMPs.
Increased noise and air pollution resulting from traffic volume?	✓		Noise barriers at sensitive receptors and community place will be provided to minimize impacts. Additional plantation along the road has been planned (depends on space availability) and improved road conditions will improve the air quality in the areas during operation.
increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		✓	Major impacts are expected from accidental spillage which is not very likely. The project includes roads safety measures to ensure that the risks are minimized.
Social conflicts if workers from other regions or countries are hired?		✓	As a standard requirement, most of the workers will be locals. No such conflict is anticipated
Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	Workers will be mostly locals. Workers from remote places will be provided with adequate boarding facilities.
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	✓		Road construction involves the use of fuel, lubricants and bitumen which poses risk during transport and storage. Appropriate mitigation measures are covered in the EMPs.
Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.	✓		Adequate measures have been adopted to mitigate such risks The project includes road safety measures to ensure that the risks are minimized during operation.

A Checklist for Preliminary Climate Risk Screening

Screening Questions	Score	Remarks ¹⁴
Location and Design of project Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Some project location may experience increased flooding during high rain season. However, no project components are sited in flood plains and road specifications have been designed taking into

¹⁴ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Screening Questions		Score	Remarks ¹⁴
			account increased risk of water logging.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	Proposed investments will not be passing through riverine areas
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	Work involved improvement of small stretch of the road. Not much impact anticipated.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	Increased flooding due to predicted increased precipitation will likely increase the cost of maintenance of the roads to maintain an acceptable level of service.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Increase in temperature may cause rutting but not projected to be at a scale that can affect achieving the project objective of providing safe and efficient transport. Likely road blockages may occur during extreme weather events.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): **Medium Risk**

Other Comments: None

Rapid Environmental Assessment Checklist**Storm Water Drain- Kailashahar****Country/Project Title:** India/ Tripura Urban & Tourism Development Project**Sector:** Sewerage & Drainage

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area...			
Densely populated?		✓	Kailashahar is not densely populated. The subproject area comprises different part of the town, Project locations supports open area, residential and commercial areas.
Heavy with development activities?		✓	The area comprises of residential structures, commercial establishments, and open area. The developmental activities such as construction works are ongoing at an average pace.
Adjacent to or within any environmentally sensitive areas?		✓	Drainage work will be carried out within Kailashahar town. There is no forest area nearby.
Cultural heritage site		✓	Drainage components are not located nearby the ASI protected area Unakoti, famous for rock art - ASI protected Heritage site is located about 5.6 km (aerial distance) from Kailashahar
Protected Area		✓	No as such protected area nearby the proposed drainage locations
Wetland		✓	None
Mangrove		✓	Not Applicable
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	Drainage location not within buffer zone of any protected area
Special area for protecting biodiversity		✓	None of the subproject component sites are adjacent to or within any special area for protecting biodiversity
Bay		✓	Not Applicable
B. Potential Environmental Impacts Will the Project cause...			
Impairment of historical/cultural monuments/areas and loss/damage to these sites?		✓	No historical/cultural/ monuments/ areas exist in or close vicinity of the subproject components. Hence no such impacts are anticipated.

Screening Questions	Yes	No	Remarks
Interference with other utilities and blocking of access to buildings; nuisance to neighbouring areas due to noise, smell, and influx of insects, rodents, etc.?	✓		No significant impact is anticipated. However, during construction there will be minor impacts due to noise, and dust of construction activities. The interference with access to buildings and commercial establishments is anticipated during construction phase. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No problems of smell, influx of insects, rodents, etc. are anticipated due to implementation of sub project. The works will be mainly restricted within the existing storm water drains.
Dislocation or involuntary resettlement of people?		✓	Scope of the sub-project will entail no involuntary resettlement impacts and no physical dislocation of people is anticipated. Temporary impact may be during construction phase. This deals under RP/ due diligence report
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	No such impact is anticipated.
Impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?		✓	Not applicable as sub project pertains to rehabilitation of existing storm water drains and outfalls.
Overflows and flooding of neighboring properties with raw sewage?		✓	No such impact is anticipated. The proposed subproject will reduce the water logging and flooding in the drainage zones
Environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?		✓	Not Applicable
Noise and vibration due to blasting and other civil works?	✓		Noise due to operation of machines during civil works is anticipated. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No blasting activity shall be involved
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?	✓		During execution stage, workers may face occupational health and safety related issues if personal protection measures are not used properly. No such impact is anticipated in operation stage.
Discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?		✓	Not applicable as the subproject involves rehabilitation of existing storm water drains
Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities?		✓	Not applicable. Pumping and treatment plants are not involved.

Screening Questions	Yes	No	Remarks
Road blocking and temporary flooding due to land excavation during the rainy season?	✓		Temporary road blocking during construction of culverts shall be there for which proper traffic management and diversion arrangements shall be implemented. Due care shall be taken to carry out the works during dry periods to avoid any incidence of temporary flooding in the areas
Noise and dust from construction activities?	✓		Minor noise and dust from construction activities is anticipated which shall be temporary in nature coinciding only with the duration of construction activities.
Traffic disturbances due to construction material transport and wastes?		✓	The transportation of construction material and wastes shall be site specific and restricted to daily requirements which is not expected to result into traffic disturbances. However, traffic diversion plan, if required, will be prepared by contractor in consultation with Engineer to avoid traffic disturbances.
Temporary silt runoff due to construction?	✓		Temporary silt run off may be there during rainy season. Majority of the works shall be carried out during dry periods to avoid such impacts. To avoid silt flow in drains, during construction, silt fencing arrangements will be provided at the banks of drains.
Hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?		✓	Not Applicable
Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?		✓	Not anticipated as the proposed subproject envisages rehabilitation of existing storm water drains. The major drains running the core area of the town are identified for interception and diversion to the proposed STP site. These components are proposed to be funded under AMRUT/ Similar scheme of GOI
Contamination of surface and ground waters due to sludge disposal on land?		✓	No as such impact anticipated
Health and safety hazards to workers from toxic gases and hazardous materials which may be contained in confined areas, sewage flow and exposure to pathogens in untreated sewage and unsterilized sludge?		✓	Not anticipated as there will be construction and rehabilitation of existing open drains. However, the workers shall be provided with personal protective equipment like gum boots, gloves and masks, etc. while working within the drains to avoid any occupational health hazards.
Large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?		✓	No as such impact anticipated
Social conflicts between construction workers from other areas and community workers?		✓	No such conflicts are anticipated. Preference will be given to local laborers and migratory labour shall be employed in unavoidable circumstances only.

Screening Questions	Yes	No	Remarks
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		✓	No as such impact anticipated
Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		✓	No such impact is anticipated in case of the proposed drainage work

A Checklist for Preliminary Climate Risk Screening

Screening Questions		Score	Remarks ¹⁵
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Extreme weather, specifically high rain intensity may result flooding of the drain. Outfall area of drain should be cleaned for final discharge of storm water to River
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	Maintenance of the drain will be affected under extreme climatic condition.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

¹⁵ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Result of Initial Screening (Low, Medium, High): **Medium Risk**

RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST- Kumarghat

Road & Highways- Kumarghat

Country/Project Title: India/ Tripura Urban & Tourism Development Project

Sector: Urban development – Road

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area adjacent to or within any of the following environmentally sensitive areas?			
Cultural heritage site		✓	No historical/cultural/ monuments/ areas exist in or close vicinity of the subproject components. Hence no such impacts are anticipated. ASI protected area Unakoti, famous for rock art is located about 17.5 km (aerial distance) from Kumarghat.
Protected Area		✓	No as such protected area nearby the proposed roads considered for improvement
Wetland		✓	None
Mangrove		✓	Not Applicable
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	Proposed roads are not within buffer zone of any protected area
Special area for protecting biodiversity		✓	None of the subproject component sites are adjacent to or within any special area for protecting biodiversity
B. Potential Environmental Impacts Will the Project cause...			
Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		✓	Work will be done within existing ROW. No encroachment on historical/cultural areas have been identified. No major disfiguration of landscape is envisaged as the roads pass through generally flat terrains.
Encroachment on precious ecology (e.g. sensitive or protected areas)?		✓	Not applicable – no protected areas nearby the roads
Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	✓		Inclusion of drainage works with roads in critical areas will help reduce flooding risks in these sections.
Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	✓		There may be siltation of natural streams/drains located in the vicinity of project sites during construction and operation and mitigation measures have been proposed in the EMP Poor camp management may lead to runoff of silt and other wastes from workers' camps. This possible impact has been identified and mitigation measures have been included in the EMPs.

Screening Questions	Yes	No	Remarks
Increased local air pollution due to rock crushing, earth cutting and filling works, and chemicals from asphalt processing?	✓		Dust generation from earthworks and fumes from equipment and construction vehicles would be unavoidable. Rock crushing and asphalt processing will be sited away from settlements and other sensitive receptors. Measures to minimize local air pollution problems have been proposed in the EMP. Due to the nature of construction works, it is anticipated that air pollution will be increased during construction phase. As such guidance will be provided on the siting requirements for hot mix and ready-mix plants. Local regulations will also apply. Other mitigation measures needed will be covered in the EMP.
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	✓		As a standard, workers will be provided with PPE to minimize exposure to risks and associated harmful occupational health effects Although, the scale of construction works is relatively small for brick/ mud road, occupational health, and safety (OHS) risks have still been taken into consideration and mitigation measures have been proposed in the EMP.
Noise and vibration due to blasting and other civil works?	✓		Although, the use of blasting is not proposed under the project, noise and vibration will be generated from construction works. Measures for minimizing this nuisance have been identified in the EMP
Dislocation or involuntary resettlement of people?		✓	Minimal impact is anticipated since improvement work will mostly be accommodated within available ROW. Temporary impact may be during construction work.
Dislocation and compulsory resettlement of people living in right-of-way?		✓	ROW encroachment in the project state is very uncommon although some commercial structures (e.g. kiosks, stores) will have to be relocated temporarily. These have been covered in the resettlement plans (RPs).
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	Currently, no specific vulnerable groups have been identified in the project areas
Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?		✓	ROW encroachment in the project state is very uncommon although some commercial Impacts to air quality will be highly localized and temporary during construction activity. Regular water sprinkling is a standard measure that will be employed to reduce the dust.
Hazardous driving conditions where construction interferes with pre-existing roads?	✓		With strict occupational health and safety requirements, restrictions on construction timing and mitigation measures against dust and other forms of pollution, serious concerns on respiratory problems and stress are not expected Contractors are required to prepare traffic management plans to avoid hazards and risks
Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?	✓		As a standard practice, these issues have been covered in the provisions for sanitation, health care and solid and liquid waste management in the contract documents.

Screening Questions	Yes	No	Remarks
Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?		✓	Minimal risk is anticipated. Regular monitoring of drains and other potential breeding grounds for mosquitoes and proper waste management in camps will be implemented
Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?	✓		The preparation of traffic management plans and road safety provisions are included in the EMPs.
Increased noise and air pollution resulting from traffic volume?	✓		Noise barriers at sensitive receptors and community place will be provided to minimize impacts. Additional plantation along the road has been planned (depends on space availability) and improved road conditions will improve the air quality in the areas during operation.
increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		✓	Major impacts are expected from accidental spillage which is not very likely. The project includes roads safety measures to ensure that the risks are minimized.
Social conflicts if workers from other regions or countries are hired?		✓	As a standard requirement, most of the workers will be locals. No such conflict is anticipated
Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	Workers will be mostly locals. Workers from remote places will be provided with adequate boarding facilities.
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	✓		Road construction involves the use of fuel, lubricants and which poses risk during transport and storage. Appropriate mitigation measures are covered in the EMPs.
Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.	✓		Adequate measures have been adopted to mitigate such risks The project includes road safety measures to ensure that the risks are minimized during operation.

A Checklist for Preliminary Climate Risk Screening

Screening Questions	Score	Remarks ¹⁶
Location and Design of project Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Some project location may experience increased flooding during high rain season. However, no project components are sited in flood plains and road specifications have been designed taking into

¹⁶ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Screening Questions		Score	Remarks ¹⁶
			account increased risk of water logging.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	Proposed investments will not be passing through riverine areas
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	Work involved improvement of small stretch of the road. Not much impact anticipated.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	Increased flooding due to predicted increased precipitation will likely increase the cost of maintenance of the roads to maintain an acceptable level of service.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Increase in temperature may cause rutting but not projected to be at a scale that can affect achieving the project objective of providing safe and efficient transport. Likely road blockages may occur during extreme weather events.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): **Medium Risk**

Other Comments: None

Rapid Environmental Assessment Checklist**Storm Water Drain- Kumarghat****Country/Project Title:** India/ Tripura Urban & Tourism Development Project**Sector:** Sewerage & Drainage

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area...			
Densely populated?		✓	Kumarghat is not densely populated. The subproject area comprises different part of the town, Project locations supports open area, residential and commercial areas.
Heavy with development activities?		✓	The town area comprises of residential structures, commercial establishments, and open area. The developmental activities such as construction works are ongoing at an average pace.
Adjacent to or within any environmentally sensitive areas?		✓	Drainage work will be carried out within Kumarghat town. There is no forest area nearby.
Cultural heritage site		✓	Unakoti, famous for rock art - ASI protected Heritage site is located about 17.5 km (aerial distance) from Kumarghat Drainage components are not located nearby the ASI protected area
Protected Area		✓	No as such protected area nearby the proposed drainage locations
Wetland		✓	None
Mangrove		✓	Not Applicable
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	Drainage location not within buffer zone of any protected area
Special area for protecting biodiversity		✓	None of the subproject component sites are adjacent to or within any special area for protecting biodiversity
Bay		✓	Not Applicable
B. Potential Environmental Impacts Will the Project cause...			
Impairment of historical/cultural monuments/areas and loss/damage to these sites?		✓	No historical/cultural/ monuments/ areas exist in or close vicinity of the subproject components. Hence no such impacts are anticipated.

Screening Questions	Yes	No	Remarks
Interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.?	✓		No significant impact is anticipated. However, during construction there will be minor impacts due to noise, and dust of construction activities. The interference with access to buildings and commercial establishments is anticipated during construction phase. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No problems of smell, influx of insects, rodents, etc. are anticipated due to implementation of sub project. The works will be mainly restricted within the existing storm water drains.
Dislocation or involuntary resettlement of people?		✓	Scope of the sub-project will entail no involuntary resettlement impacts and no physical dislocation of people is anticipated. Temporary impact may be during construction phase. This deals under RP/ due diligence report
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	No such impact is anticipated.
Impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?		✓	Not applicable as sub project pertains to rehabilitation of existing storm water drains and outfalls.
Overflows and flooding of neighboring properties with raw sewage?		✓	No such impact is anticipated. The proposed subproject will reduce the water logging and flooding in the drainage zones
Environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?		✓	Not Applicable
Noise and vibration due to blasting and other civil works?	✓		Noise due to operation of machines during civil works is anticipated. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No blasting activity shall be involved
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?	✓		During execution stage, workers may face occupational health and safety related issues if personal protection measures are not used properly. No such impact is anticipated in operation stage.
Discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?		✓	Not applicable as the subproject involves rehabilitation of existing storm water drains
Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities?		✓	Not applicable. Pumping and treatment plants are not involved.

Screening Questions	Yes	No	Remarks
Road blocking and temporary flooding due to land excavation during the rainy season?	✓		Temporary road blocking during construction of culverts shall be there for which proper traffic management and diversion arrangements shall be implemented. Due care shall be taken to carry out the works during dry periods to avoid any incidence of temporary flooding in the areas
Noise and dust from construction activities?	✓		Minor noise and dust from construction activities is anticipated which shall be temporary in nature coinciding only with the duration of construction activities.
Traffic disturbances due to construction material transport and wastes?		✓	The transportation of construction material and wastes shall be site specific and restricted to daily requirements which is not expected to result into traffic disturbances. However, traffic diversion plan, if required, will be prepared by contractor in consultation with Engineer to avoid traffic disturbances.
Temporary silt runoff due to construction?	✓		Temporary silt run off may be there during rainy season. Majority of the works shall be carried out during dry periods to avoid such impacts. To avoid silt flow in drains, during construction, silt fencing arrangements will be provided at the banks of drains.
Hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?		✓	Not Applicable
Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?		✓	Not anticipated as the proposed subproject envisages rehabilitation of existing storm water drains. The major drains running the core area of the town are identified for interception and diversion to the proposed STP site. These components are proposed to be funded under AMRUT/ Similar scheme of GOI
Contamination of surface and ground waters due to sludge disposal on land?		✓	No as such impact anticipated
Health and safety hazards to workers from toxic gases and hazardous materials which may be contained in confined areas, sewage flow and exposure to pathogens in untreated sewage and unsterilized sludge?		✓	Not anticipated as there will be construction and rehabilitation of existing open drains. However, the workers shall be provided with personal protective equipment like gum boots, gloves and masks, etc. while working within the drains to avoid any occupational health hazards.
Large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?		✓	No as such impact anticipated
Social conflicts between construction workers from other areas and community workers?		✓	No such conflicts are anticipated. Preference will be given to local laborers and migratory labour shall be employed in unavoidable circumstances only.

Screening Questions	Yes	No	Remarks
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		✓	No as such impact anticipated
Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		✓	No such impact is anticipated in case of the proposed drainage work

A Checklist for Preliminary Climate Risk Screening

Screening Questions		Score	Remarks ¹⁷
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Extreme weather, specifically high rain intensity may result flooding of the drain. Outfall area of drain should be cleaned for final discharge of storm water to River
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	Maintenance of the drain will be affected under extreme climatic condition.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): **Medium Risk**

Other Comments: None

¹⁷ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST- Dharmanagar**Storm Water Drain- Dharmanagar****Country/Project Title:** India/ Tripura Urban & Tourism Development Project**Sector:** Sewerage & Drainage

Screening Questions	Yes	No	Remarks
B. Project Siting Is the project area...			
Densely populated?		✓	Dharmanagar town is not densely populated. The project area comprises different part of the town, Project locations supports open area, residential and commercial areas.
Heavy with development activities?		✓	The town area comprises of residential structures, commercial establishments, and open area. The developmental activities such as construction works are ongoing at an average pace.
Adjacent to or within any environmentally sensitive areas?		✓	Drainage work will be carried out within Dharmanagar town. There is no environment sensitive, forest area nearby.
Cultural heritage site		✓	Sculptures and rock reliefs of Unakoti Tirtha, Unakuti Range ASI protected heritage site is located at Unakoti district, 21 km from Dharmanagar. Proposed Drain is not located nearby the ASI protected area
Protected Area		✓	No as such protected area nearby the proposed drain
Wetland		✓	None
Mangrove		✓	Not Applicable
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	Drainage location not within buffer zone of any protected area
Special area for protecting biodiversity		✓	Drainage site is not adjacent to or within any special area for protecting biodiversity
Bay		✓	Not Applicable
A. Potential Environmental Impacts Will the Project cause...			
Impairment of historical/cultural monuments/areas and loss/damage to these sites?		✓	No historical/cultural/ monuments/ areas exist in or close vicinity of the subproject components. Hence no such impacts are anticipated. Sculptures and rock reliefs of Unakoti Tirtha, Unakuti Range ASI protected heritage site is located at Unakoti district, 21 km from Dharmanagar

Screening Questions	Yes	No	Remarks
Interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.?	✓		No significant impact is anticipated. However, during construction there will be minor impacts due to noise, and dust of construction activities. The interference with access to buildings and commercial establishments is anticipated during construction phase. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No problems of smell, influx of insects, rodents, etc. are anticipated due to implementation of sub project. The works will be mainly restricted within the existing storm water drains.
Dislocation or involuntary resettlement of people?		✓	Scope of the sub-project will entail no involuntary resettlement impacts and no physical dislocation of people is anticipated. Temporary impact may be during construction phase. This deals under RP/ due diligence report
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	No such impact is anticipated.
Impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?		✓	Not applicable as sub project pertains to rehabilitation of existing storm water drains and outfalls.
Overflows and flooding of neighboring properties with raw sewage?		✓	No such impact is anticipated. The proposed subproject will reduce the water logging and flooding in the drainage zones
Environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?		✓	Not Applicable
Noise and vibration due to blasting and other civil works?	✓		Noise due to operation of machines during civil works is anticipated. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No blasting activity shall be involved
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?	✓		During execution stage, workers may face occupational health and safety related issues if personal protection measures are not used properly. No such impact is anticipated in operation stage.
Discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?		✓	Not applicable as the subproject involves rehabilitation of existing storm water drains
Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities?		✓	Not applicable. Pumping and treatment plants are not involved.
Road blocking and temporary flooding due to land excavation during the rainy season?	✓		Temporary road blocking during construction of culverts shall be there for which proper traffic management and diversion arrangements shall be implemented. Due care shall be taken to carry out the works during dry periods to avoid any incidence of temporary flooding in the areas

Screening Questions	Yes	No	Remarks
Noise and dust from construction activities?	✓		Minor noise and dust from construction activities is anticipated which shall be temporary in nature coinciding only with the duration of construction activities.
Traffic disturbances due to construction material transport and wastes?		✓	The transportation of construction material and wastes shall be site specific and restricted to daily requirements which is not expected to result into traffic disturbances. However, traffic diversion plan, if required, will be prepared by contractor in consultation with Engineer to avoid traffic disturbances.
Temporary silt runoff due to construction?	✓		Temporary silt run off may be there during rainy season. Majority of the works shall be carried out during dry periods to avoid such impacts. To avoid silt flow in drains, during construction, silt fencing arrangements will be provided at the banks of drains.
Hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?		✓	Not Applicable
Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?		✓	Not anticipated as the proposed subproject envisages rehabilitation of existing storm water drains. The major drains running the core area of the town are identified for interception and diversion to the proposed STP site. These components are proposed to be funded under AMRUT/ Similar scheme of GOI
Contamination of surface and ground waters due to sludge disposal on land?		✓	No as such impact anticipated
Health and safety hazards to workers from toxic gases and hazardous materials which maybe contained in confined areas, sewage flow and exposure to pathogens in untreated sewage and unsterilized sludge?		✓	Not anticipated as there will be construction and rehabilitation of existing open drains. However, the workers shall be provided with personal protective equipment like gumboots, gloves and masks, etc. while working within the drains to avoid any occupational health hazards.
Large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?		✓	No as such impact anticipated
Social conflicts between construction workers from other areas and community workers?		✓	No such conflicts are anticipated. Preference will be given to local laborers and migratory labour shall be employed in unavoidable circumstances only.
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		✓	No as such impact anticipated
Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		✓	No such impact is anticipated in case of the proposed drainage work

A Checklist for Preliminary Climate Risk Screening

Screening Questions		Score	Remarks ¹⁸
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Extreme weather, specifically high rain intensity may result flooding of the drain. Outfall area of drain should be cleaned for final discharge of storm water to River
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	Maintenance of the drain will be affected under extreme climatic condition.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g., annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low-risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): **Medium Risk**

Other Comments: None

¹⁸ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST- Ambassa**Road & Highways- Ambassa****Country/Project Title: India/ Tripura Urban & Tourism Development Project****Sector: Urban development – Road**

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area adjacent to or within any of the following environmentally sensitive areas?			
Cultural heritage site		✓	No historical/cultural/ monuments/ areas exist in or close vicinity of the subproject components. Hence no such impacts are anticipated.
Protected Area		✓	No as such protected area nearby the proposed roads considered for improvement
Wetland		✓	None
Mangrove		✓	Not Applicable
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	Proposed roads are not within buffer zone of any protected area
Special area for protecting biodiversity		✓	None of the subproject component sites are adjacent to or within any special area for protecting biodiversity
B. Potential Environmental Impacts Will the Project cause...			
Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		✓	Work will be done within existing ROW. No encroachment on historical/cultural areas have been identified. No major disfiguration of landscape is envisaged as the roads pass through generally flat terrains.
Encroachment on precious ecology (e.g. sensitive or protected areas)?		✓	Not applicable – no protected areas nearby the roads
Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	✓		Inclusion of drainage works with roads in critical areas will help reduce flooding risks in these sections.
Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	✓		There may be siltation of natural streams/drains located in the vicinity of project sites during construction and operation and mitigation measures have been proposed in the EMP Poor camp management may lead to runoff of silt and other wastes from workers' camps. This possible impact has been identified and mitigation measures have been included in the EMPs.

Screening Questions	Yes	No	Remarks
Increased local air pollution due to rock crushing, earth cutting and filling works, and chemicals from asphalt processing?	✓		Dust generation from earthworks and fumes from equipment and construction vehicles would be unavoidable. Rock crushing and asphalt processing will be sited away from settlements and other sensitive receptors. Measures to minimize local air pollution problems have been proposed in the EMP. Due to the nature of construction works, it is anticipated that air pollution will be increased during construction phase. As such guidance will be provided on the siting requirements for hot mix and ready-mix plants. Local regulations will also apply. Other mitigation measures needed will be covered in the EMP.
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	✓		As a standard, workers will be provided with PPE to minimize exposure to risks and associated harmful occupational health effects Although, the scale of construction works is relatively small for brick/ mud road, occupational health and safety (OHS) risks have still been taken into consideration and mitigation measures have been proposed in the EMP.
Noise and vibration due to blasting and other civil works?	✓		Although, the use of blasting is not proposed under the project, noise and vibration will be generated from construction works. Measures for minimizing this nuisance have been identified in the EMP
Dislocation or involuntary resettlement of people?		✓	Minimal impact is anticipated since improvement work will mostly be accommodated within available ROW. Temporary impact may be during construction work.
Dislocation and compulsory resettlement of people living in right-of-way?		✓	ROW encroachment in the project is very uncommon although some commercial structures (e.g. kiosks, stores) will have to be relocated temporarily. These have been covered in the resettlement plans (RPs).
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	Currently, no specific vulnerable groups have been identified in the project areas
Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?		✓	ROW encroachment in the project site is very uncommon although some commercial Impacts to air quality will be highly localized and temporary during construction activity. Regular water sprinkling is a standard measure that will be employed to reduce the dust.
Hazardous driving conditions where construction interferes with pre-existing roads?	✓		With strict occupational health and safety requirements, restrictions on construction timing and mitigation measures against dust and other forms of pollution, serious concerns on respiratory problems and stress are not expected Contractors are required to prepare traffic management plans to avoid hazards and risks
Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?	✓		As a standard practice, these issues have been covered in the provisions for sanitation, health care and solid and liquid waste management in the contract documents.

Screening Questions	Yes	No	Remarks
Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?		✓	Minimal risk is anticipated. Regular monitoring of drains and other potential breeding grounds for mosquitoes and proper waste management in camps will be implemented
Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?	✓		The preparation of traffic management plans and road safety provisions are included in the EMPs.
Increased noise and air pollution resulting from traffic volume?	✓		Noise barriers at sensitive receptors and community place will be provided to minimize impacts. Additional plantation along the road has been planned (depends on space availability) and improved road conditions will improve the air quality in the areas during operation.
increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		✓	Major impacts are expected from accidental spillage which is not very likely. The project includes roads safety measures to ensure that the risks are minimized.
Social conflicts if workers from other regions or countries are hired?		✓	As a standard requirement, most of the workers will be locals. No such conflict is anticipated
Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	Workers will be mostly locals. Workers from remote places will be provided with adequate boarding facilities.
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	✓		Road construction involves the use of fuel, lubricants and bitumen which poses risk during transport and storage. Appropriate mitigation measures are covered in the EMPs.
Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.	✓		Adequate measures have been adopted to mitigate such risks The project includes road safety measures to ensure that the risks are minimized during operation.

A Checklist for Preliminary Climate Risk Screening

Screening Questions	Score	Remarks ¹⁹
Location and Design of project Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Some project location may experience increased flooding during high rain season. However, no project components are sited in flood plains and road specifications have been designed taking into

¹⁹ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Screening Questions		Score	Remarks ¹⁹
			account increased risk of water logging.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	Proposed investments will not be passing through riverine areas
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	Work involved improvement of small stretch of the road. Not much impact anticipated.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	Increased flooding due to predicted increased precipitation will likely increase the cost of maintenance of the roads to maintain an acceptable level of service.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Increase in temperature may cause rutting but not projected to be at a scale that can affect achieving the project objective of providing safe and efficient transport. Likely road blockages may occur during extreme weather events.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): **Medium Risk**

Other Comments: None

Rapid Environmental Assessment Checklist**Storm Water Drain- Ambassa****Country/Project Title:** India/ Tripura Urban & Tourism Development Project**Sector:** Sewerage & Drainage

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area...			
Densely populated?		✓	Ambassa is not densely populated. The subproject area comprises different part of the town, Project locations supports open area, residential and commercial areas.
Heavy with development activities?		✓	The area comprises of residential structures, commercial establishments, and open area. The developmental activities such as construction works are ongoing at an average pace.
Adjacent to or within any environmentally sensitive areas?		✓	Drainage work will be carried out within Ambassa town. There is no forest area nearby.
Cultural heritage site		✓	Shyamsundar Ashram Tila - A brick built Buddhist monastic complex, ASI protected area is situated in Jolaibari, South Tripura and which is about 27 km away from Ambassa town. Chaturdasa Devata, ASI protected area is located about 53 km from Ambassa. Drainage components are not located nearby the ASI protected area
Protected Area		✓	No as such protected area nearby the proposed drainage locations
Wetland		✓	None
Mangrove		✓	Not Applicable
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	Drainage location not within buffer zone of any protected area
Special area for protecting biodiversity		✓	None of the subproject component sites are adjacent to or within any special area for protecting biodiversity
Bay		✓	Not Applicable
B. Potential Environmental Impacts Will the Project cause...			
Impairment of historical/cultural monuments/areas and loss/damage to these sites?		✓	No historical/cultural/ monuments/ areas exist in or close vicinity of the subproject components. Hence no such impacts are anticipated.

Screening Questions	Yes	No	Remarks
Interference with other utilities and blocking of access to buildings; nuisance to neighbouring areas due to noise, smell, and influx of insects, rodents, etc.?	✓		No significant impact is anticipated. However, during construction there will be minor impacts due to noise, and dust of construction activities. The interference with access to buildings and commercial establishments is anticipated during construction phase. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No problems of smell, influx of insects, rodents, etc. are anticipated due to implementation of sub project. The works will be mainly restricted within the existing storm water drains.
Dislocation or involuntary resettlement of people?		✓	Scope of the sub-project will entail no involuntary resettlement impacts and no physical dislocation of people is anticipated. Temporary impact may be during construction phase. This deals under RP/ due diligence report
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	No such impact is anticipated.
Impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?		✓	Not applicable as sub project pertains to rehabilitation of existing storm water drains and outfalls.
Overflows and flooding of neighbouring properties with raw sewage?		✓	No such impact is anticipated. The proposed subproject will reduce the water logging and flooding in the drainage zones
Environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?		✓	Not Applicable
Noise and vibration due to blasting and other civil works?	✓		Noise due to operation of machines during civil works is anticipated. This shall be temporary in nature and shall be restricted to the duration of construction activities at a particular site. No blasting activity shall be involved
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?	✓		During execution stage, workers may face occupational health and safety related issues if personal protection measures are not used properly. No such impact is anticipated in operation stage.
Discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?		✓	Not applicable as the subproject involves rehabilitation of existing storm water drains
Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities?		✓	Not applicable. Pumping and treatment plants are not involved.

Screening Questions	Yes	No	Remarks
Road blocking and temporary flooding due to land excavation during the rainy season?	✓		Temporary road blocking during construction of culverts shall be there for which proper traffic management and diversion arrangements shall be implemented. Due care shall be taken to carry out the works during dry periods to avoid any incidence of temporary flooding in the areas
Noise and dust from construction activities?	✓		Minor noise and dust from construction activities is anticipated which shall be temporary in nature coinciding only with the duration of construction activities.
Traffic disturbances due to construction material transport and wastes?		✓	The transportation of construction material and wastes shall be site specific and restricted to daily requirements which is not expected to result into traffic disturbances. However, traffic diversion plan, if required, will be prepared by contractor in consultation with Engineer to avoid traffic disturbances.
Temporary silt runoff due to construction?	✓		Temporary silt run off may be there during rainy season. Majority of the works shall be carried out during dry periods to avoid such impacts. To avoid silt flow in drains, during construction, silt fencing arrangements will be provided at the banks of drains.
Hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?		✓	Not Applicable
Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?		✓	Not anticipated as the proposed subproject envisages rehabilitation of existing storm water drains. The major drains running the core area of the town are identified for interception and diversion to the proposed STP site. These components are proposed to be funded under AMRUT/ Similar scheme of GOI
Contamination of surface and ground waters due to sludge disposal on land?		✓	No as such impact anticipated
Health and safety hazards to workers from toxic gases and hazardous materials which maybe contained in confined areas, sewage flow and exposure to pathogens in untreated sewage and unsterilized sludge?		✓	Not anticipated as there will be construction and rehabilitation of existing open drains. However, the workers shall be provided with personal protective equipment like gum boots, gloves and masks, etc. while working within the drains to avoid any occupational health hazards.
Large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?		✓	No as such impact anticipated
Social conflicts between construction workers from other areas and community workers?		✓	No such conflicts are anticipated. Preference will be given to local laborers and migratory labour shall be employed in unavoidable circumstances only.
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		✓	No as such impact anticipated

Screening Questions	Yes	No	Remarks
Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		✓	No such impact is anticipated in case of the proposed drainage work

A Checklist for Preliminary Climate Risk Screening

Screening Questions		Score	Remarks ²⁰
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Extreme weather, specifically high rain intensity may result flooding of the drain. Outfall area of drain should be cleaned for final discharge of storm water to River
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	Maintenance of the drain will be affected under extreme climatic condition.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): **Medium Risk**

Other Comments: None

²⁰ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Appendix 2: National Ambient Air Quality Standards

Parameter	Location ^a	India Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) ^b	WHO Air Quality Guidelines ($\mu\text{g}/\text{m}^3$)			Applicable Per ADB SPS ^e ($\mu\text{g}/\text{m}^3$)
			Global Update ^c 2005	Second Edition 2000 ^d	Air Pollution Guideline 2021	
PM ₁₀	Industrial Residential, Rural and Other Areas	60 (Annual) 100 (24-hr)	20 (Annual) 50 (24-hr)	-	15 (Annual) 45 (24-hr)	20 (Annual) 50 (24-hr)
	Sensitive Area	60 (Annual) 100 (24-hr)	20 (Annual) 50 (24-hr)	-		20 (Annual) 50 (24-hr)
PM ₂₅	Industrial Residential, Rural and Other Areas	40 (Annual) 60 (24-hr)	10 (Annual) 25 (24-hr)	-	05 (Annual) 15 (24-hr)	10 (Annual) 25 (24-hr)
	Sensitive Area	40 (Annual) 60 (24-hr)	10 (Annual) 25 (24-hr)			10 (Annual) 25 (24-hr)
SO ₂	Industrial Residential, Rural and Other Areas	50 (Annual) 80 (24-hr)	20 (24-hr) 500 (10-min)	-	40 (24-hr) 500 (10-min)	50 (Annual) 20 (24-hr) 500 (10-min)
	Sensitive Area	20 (Annual) 80 (24-hr)	20 (24-hr) 500 (10-min)	-		20 (Annual) 20 (24-hr) 500 (10-min)
NO ₂	Industrial Residential, Rural and Other Areas	40 (Annual) 80 (24-hr)	40 (Annual) 200 (1-hr)	-	10 (Annual) 25 (24-hr) 200 (1-hr)	40 (Annual) 80 (24-hr) 200 (1-hr)
	Sensitive Area	30 (Annual) 80 (24-hr)	40 (Annual) 200 (1-hr)	-		30 (Annual) 80 (24-hr) 200 (1-hr)
CO	Industrial Residential, Rural and Other Areas	2,000 (8-hr) 4,000 (1-hr)	-	10,000 (8-hr) 100,000 (15-min)	4 mg/ m ³ (24-hr) 10 mg/ m ³ (8-hr)	2,000 (8-hr) 4,000 (1-hr) 100,000 (15-min)
	Sensitive Area	2,000 (8-hr) 4,000 (1-hr)	-	10,000 (8-hr) 100,000 (15-min)	35 mg/ m ³ (1-hr) 100 mg/ m ³ (15-minute)	2,000 (8-hr) 4,000 (1-hr) 100,000 (15-min)
Ozone (O ₃)	Industrial Residential, Rural and Other Areas	100 (8-hr) 180 (1-hr)	100 (8-hr)		60 (peak season) 100 (8-hr)	100 (8-hr) 180 (1-hr)
	Sensitive Area	100 (8-hr) 180 (1-hr)	100 (8-hr)			100 (8-hr) 180 (1-hr)
Lead (Pb)	Industrial, Residential, Rural and Other Areas	0.5 (Annual) 1.0 (24-hr)		0.5 (Annual)		0.5 (Annual) 1.0 (24-hr)
	Sensitive Area	0.5 (Annual) 1.0 (24-hr)		0.5 (Annual)		0.5 (Annual) 1.0 (24-hr)
Ammonia (NH ₃)	Industrial Residential, Rural and	100 (Annual) 400 (24-hr)				100 (Annual) 400 (24-hr)

Parameter	Location ^a	India Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) ^b	WHO Air Quality Guidelines ($\mu\text{g}/\text{m}^3$)			Applicable Per ADB SPS ^e ($\mu\text{g}/\text{m}^3$)
			Global Update ^c 2005	Second Edition 2000 ^d	Air Pollution Guideline 2021	
	Other Areas					
	Sensitive Area	100 (Annual) 400 (24-hr)				100 (Annual) 400 (24-hr)
Benzene (C ₆ H ₆)	Industrial Residential, Rural and Other Areas	5 (Annual)				5 (Annual)
	Sensitive Area	5 (Annual)				5 (Annual)
Benzo(o)p yrene (BaP) particulate phase only	Industrial Residential, Rural and Other Areas	0.001 (Annual)				0.001 (Annual)
	Sensitive Area	0.001 (Annual)				0.001 (Annual)
Arsenic (As)	Industrial Residential, Rural and Other Areas	0.006 (Annual)				0.006 (Annual)
	Sensitive Area	0.006 (Annual)				0.006 (Annual)
Nickel (Ni)	Industrial Residential, Rural and Other Areas	0.02 (Annual)				0.02 (Annual)
	Sensitive Area	0.02 (Annual)				0.02 (Annual)

^a Sensitive area refers to such areas notified by the India Central Government.

^b Notification by Ministry of Environment and Forests, Government of India Environment (Protection) Seventh Amendment Rules, 2009

^c WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. Global update 2005. WHO 2006

^d Air Quality Guidelines for Europe Second Edition. WHO 2000

^e As per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS

Appendix 3: Ambient Noise Level Standards

Receptor/ Source	India National Noise Level Standards^a (dBA)		WHO Guidelines Value For Noise Levels Measured Out of Doors ^b (One Hour LA_q in dBA)		Applicable Per ADB SPS (dBA) ^c	
	Day	Night	07:00 – 22:00	22:00 – 07:00	Day time	Night time
Industrial area	75	70	70	70	70	70
Commercial area	65	55	70	70	65	55
Residential Area	55	45	55	45	55	45
Silent Zone	50	40	55	45	50	40

Note-

^a Noise Pollution (Regulation and Control) Rules, 2002 as amended up to 2010.

^b Guidelines for Community Noise. WHO. 1999

^c Per ADB SPS, the government shall achieve whichever of the ambient quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

Appendix 4: Vehicle Exhaust Emission Norms

1. Passenger Cars

Norms	CO(g/km)	HC+ NOx(g/km)
1991 Norms	14.3-27.1	2.0(Only HC)
1996 Norms	8.68-12.40	3.00-4.36
1998 Norms	4.34-6.20	1.50-2.18
India stage 2000 norms	2.72	0.97
Bharat stage-II	2.2	0.5
Bharat Stage-III	2.3	0.35 (combined)
Bharat Stage-IV	1.0	0.18 (combined)

2. Heavy Diesel Vehicles

Norms	CO(g/kmhr)	HC (g/kmhr)	NOx (g/kmhr)	PM(g/kmhr)
1991 Norms	14	3.5	18	-
1996 Norms	11.2	2.4	14.4	-
India stage 2000 norms	4.5	1.1	8.0	0.36
Bharat stage-II	4.0	1.1	7.0	0.15
Bharat Stage-III	2.1	1.6	5.0	0.10
Bharat Stage-IV	1.5	0.96	3.5	0.02

Source: Central Pollution Control Board

CO = Carbon Monoxide; g/kmhr = grams per kilometer-hour; HC = Hydrocarbons; NOx = oxides of nitrogen; PM = Particulates Matter

Appendix 5: Labour Laws

SALIENT FEATURES OF MAJOR LABOR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN CONSTRUCTION OF CIVIL WORKS

- (i) Workmen Compensation Act, 1923 - The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- (ii) Payment of Gratuity Act, 1972 - Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days' wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- (iii) Employees' PF and Miscellaneous Provisions Act, 1952 - The Act provides for monthly contributions by the employer plus workers @10 % or 8.33 %. The benefits payable under the Act are: (a) Pension or family pension on retirement or death as the case may be; (b) deposit linked insurance on the death in harness of the worker; (c) payment of PF accumulation on retirement/death etc.
- (iv) Maternity Benefit Act, 1951 - The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- (v) Contract Labour (Regulation and Abolition) Act, 1970 - The Act provides for certain welfare measures to be provided by the Contractor to contract labor and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labor.
- (vi) Minimum Wages Act, 1948 - The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employment.
- (vii) Payment of Wages Act, 1936 - It lays 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.
- (viii) Equal Remuneration Act, 1979 - The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees in the matters of transfers, training and promotions etc.
- (ix) Payment of Bonus Act, 1965 - The Act is applicable to all establishments employing 20 or more workmen. The Act provides for payments of annual bonus subject to a minimum of 8.33 % of wages and maximum of 20 % of wages to employees drawing Rs. 3,500/- per month or less. The bonus to be paid to employees getting Rs. 2,500/- per month or above up to Rs.3,500/- per month shall be worked out by taking wages as Rs.2,500/- per month only. The Act does not apply to certain establishments. The newly set up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of the Act.

- (x) Industrial Disputes Act, 1947 - The Act lays down the machinery and procedure for resolution of industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- (xi) Industrial Employment (Standing Orders) Act, 1946 - It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the employer on matters provided in the Act and get the same certified by the designated Authority.
- (xii) Trade Unions Act, 1926 - The Act lays down the procedure for registration of trade unions of workmen and employees. The trade unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- (xiii) Child Labor (Prohibition and Regulation) Act, 1986 - The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labor is prohibited in Building and Construction Industry.
- (xiv) Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979 - The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The inter-state migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.
- (xv) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996 - All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under this Act. All such establishments are required to pay Cess at rate not exceeding 2% of the cost of construction as may be notified by the Government. The employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. The employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

Appendix 6: Strip Plan for Proposed Road and Drain

Strip Plan of Cluster IIIA towns for Road and Drain

Kailashahar Road

Road 1 - UNAKOTI LODGE TO BIMAL SINHA HOUSING COMPLEX & HARIJAN COLONY AT KAILASHAHAR TOWN					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-50m	1 electric post 0.5m outside ROW at 27m chainage	-	Open partly residential. Under drain pipe at 45m chainage	Residential partly open
2	50m-150m	-	-	Residential	Open partly residential
3	150m-180m	-	-	Residential	Residential
4	50m-140m	-	-	Open	Open partly residential Bimal Singha Complex Nimno Buniadi Complex at 95m chainage
Road 2 - PWD ROAD TO GOPAL MALAKAR HOUSE NEAR BSNL OFFICE AT COLONY AT KAILASHAHAR TOWN					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road– impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post 0.45m outside ROW at 45m chainage	1 electric post 0.4m outside ROW at 5m chainage and 1 electric post 0.2m outside ROW at 82m chainage	Residential partly Vegetation. Culvert at 5m chainage	Vegetation partly Residential
2	100m-200m	1 electric post inside ROW at 112m chainage and 1 electric post 0.2m outside ROW at 175m chainage	1 electric post 0.4m outside ROW at 135m chainage	Open partly Residential	Open partly residential
3	200m-300m	1 electric post 0.4m outside ROW at 295m chainage	-	Agriculture partly Residential	Agriculture
4	300m-400m	-	1 electric post 0.35m outside ROW at 375m chainage	Residential partly Open	Agriculture partly Open
5	400m-456m	-	1 electric post 0.2m outside ROW at 405m chainage, 1 electric post 0.2m outside ROW at 430m chainage and 1 electric post 0.15m outside ROW at 456m chainage	Residential partly Open	Open
Road 3 - VETERINARY HOSPITAL TO NABA JAGRATA CLUB WEST SIDE OF EMBANKMENT AT KAILASHAHAR TOWN					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS

1	0-100m	-	1 Tree 1.5m outside proposed drain at 78m chainage. 1 Tree 1.5m outside proposed drain at 85m chainage	Vegetation open and residential	Vegetation partly open. Culvert at 18m chainage and Integrated Ayush Hospital behind 0 chainage outside ROW
2	100m-200m	-	-	Residential open partly	Open partly Vegetation.
3	200m-300m	-	1 Tree 0.3m outside proposed drain at 270m chainage. 1 Tree 0.3m outside proposed drain at 280m	Vegetation partly Residential	Vegetation. chainage
4	300m-400m	-	-	Residential Open partly	Vegetation
5	400m-500m	-	-	Residential Vegetation partly	Open partly Vegetation
6	500m-600m	-	-	Open Residential partly	Open
7	600m-700m	1 Tree 1m outside proposed drain at 630m chainage.	-	Open Residential. partly	Open partly Vegetation.
8	700m-800m	-	1 Tree 2.5m outside proposed drain at 710m chainage.	Residential Vegetation partly	Open partly Vegetation.
9	800m-900m	-	-	Residential open partly	Residential partly open
				Culvert at 838m chainage	
10	900m-930m	-	-	Residential open partly	Residential partly open
Road 4 - FLOOD CONTROL OFFICE TO HOUSE OF BISWAJIT BISWAS					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 Tree 2m outside proposed drain at 45m chainage	-	open partly commercial and vegetation.	Open partly vegetation. Culvert at 20m and 45m chainages across proposed road
2	100m-200m	-	1 transformer 0.3m outside ROW at 198m chainage	Open partly Residential	Open partly Residential
3	200m-300m	1 electric post 0.5m outside ROW at 297m chainage	1 electric post 0.3m outside ROW at 267m chainage, 1 electric post 0.45m outside ROW at 278m chainage and 1 telephone post 0.35m outside ROW at 264m chainage	Open partly Residential. Culvert at 238m chainage across proposed road	Residential partly Open
4	300m-400m	1 electric post 0.15m outside ROW at 320m chainage, 1 electric post 0.45m outside ROW at 348m chainage, 1	1 electric post 0.25m outside ROW at 397m chainage	Residential Vegetation partly	Residential partly Vegetation

		telephone post 0.25m outside ROW at 352m chainage			
5	400m- 500m	1 electric post 0.45m outside ROW at 418m chainage	-	Residential partly Vegetation	Residential and Water Body at 450m chainage
6	500m- 600m	1 telephone post 0.3m outside ROW at 525m chainage, 1 Electric Post inside ROW at 587m chainage	1 telephone post 0.2m outside ROW at 512m chainage	Open and Water body at 600m chainage. Culvert at 570m chainage across proposed road	Residential partly Open and Kajiragaon School on RHS at 540 m chainage
7	600m- 700m	1 electric post 0.3m outside ROW at 620m chainage	1 telephone post 0.2m outside ROW at 668m chainage	Residential and Water body. Culvert at 630m chainage across proposed road	Open partly Residential
8	700m- 800m	1 electric post 0.45m outside ROW at 743m chainage	1 electric post 0.4m outside ROW at 732m chainage	Open, pond and partly vegetation. Culvert at 765m chainage across proposed road	Vegetation partly Residential
9	800m- 852m	1 electric post 0.4m outside ROW at 802m chainage	-	Residential partly open	Residential partly open

Kailashahar Drain

Drain 1 - Northern side of road from Netaji corner to district jail					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 Telephone Post inside proposed drain at 20m chainage	1 Electric Post inside proposed drain at 10m chainage	Commercial	Road
2	100m- 200m	1 Tree 3m outside proposed drain at 120m chainage. 1 Tree 3m outside proposed drain at 130m chainage	-	Mixed Use (Residential/Commerci al).	Road
3	200m- 300m	-	-	Commercial partly vegetation	Road
4	300m- 400m	1 Tree 2m outside proposed drain at 320m chainage. 1 Tree 2.5m outside proposed drain at 328m chainage	-	Commercial.	Road
5	400m- 500m	-	1 Electric Post 0.2m outside proposed drain at 350m chainage	District Jail	Road
6	500m- 573m	-	-	Open	Open
Drain 2 - Southern side of road from netaji corner to RGM Hospital					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 Telephone Post inside proposed drain at 30m chainage, 1 Light Post	1 Telephone Post inside proposed drain at 70m chainage	Integrated Ayush Hospital and RGM Hospital	Road

		0.2m outside proposed drain at 100m chainage			
2	100m-200m	1 Light Post 0.3m outside proposed drain at 120m chainage, 1 Light Post 0.3m outside proposed drain at 140m chainage, 1 Light Post 0.2m outside proposed drain at 160m chainage	-	RGM Hospital and Satsang Vihar Temple at 125m chainage	Road
3	200m-300m	1 Light Post 0.3m outside proposed drain at 220m chainage, 5 nos. of Light Post inside proposed drain at 210m, 235m, 250m, 280m and 295m chainages.	1 Transformer 0.2m outside proposed drain at 260m chainage	Commercial	Road
4	300m-400m	4 nos. of Light Post inside proposed drain at 305m, 320m, 330m and 355m chainage. 1 Telephone Post inside proposed drain at 340m chainage.	-	Commercial and Government Office	Road
5	400m-489m	1 Electric 0.1m outside proposed drain at 465m chainage	1 Telephone Post inside proposed drain at 435m chainage	Commercial	Road
Drain 3 - Western side of road from Netaji Corner to crossing of Border Road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	Signal Post outside 0.3m at 13m chainage, 1 electric post 0.2m outside 16m chainage, 2 Electric Post inside proposed drain at 50m and 60m chainage. 2 Telephone Post inside proposed drain at 65m and 85m chainage. . 1 Light Post inside proposed drain at 80m chainage		Commercial	Road
2	100m-200m	1 Telephone Post 0.3m outside proposed drain at 135m chainage. 1 Tree 1m outside proposed drain at 180m chainage	-	Commercial.	Road
3	200m-300m	1 Electric Post inside proposed drain at 225m chainage	1 Electric Post 0.1m outside proposed drain at 230m chainage	Commercial	Road
4	300m-400m	1 Electric Post 0.15m outside proposed drain at 320m chainage, 1 Tree 0.4m outside proposed drain at 360m chainage. 1 Tree 0.5m outside proposed drain at 180m chainage	-	Commercial.	Road

5	400m-500m	-	1 Electric Post inside proposed drain at 450m chainage, 1 Telephone Post inside proposed drain at 465m chainage	Commercial and Soni Temple at 470m. Part of Temple wall encroaches Drain alignment	Road
6	500m-600m	-	-	Commercial and Radhakishore Institution at 500m chainage	Road
7	600m-700m	1 Electric Post inside proposed drain at 615m chainage, 2nos. of Trees inside proposed drain at 625m and 660m chainage. 1 Tree 0.3m outside proposed drain at 620m chainage. 1 Tree 0.3m outside proposed drain at 680m chainage	1 Tree 0.1m outside proposed drain at 680m chainage and 1 Telephone Post inside proposed drain at 695m chainage	Commercial Sree Sree Ram Thakur Temple at 680m chainage.	Road
8	700m-800m		1 Tree 0.4m outside proposed drain at 410m chainage	Residential	Road.
9	800m-900m		1 Electric Post inside proposed drain at 835m chainage	Residential	Road
10	900m-1000m	-	-	Residential	Road
11	1000m-1100m	-	-	Residential, Govt. property and Temple	Road
12	1100m-1200m	-	-	Residential	Road
13	1200m-1300m	-	-	Unakoti Tourist Lodge and Residential	Road
14	1300m-1400m	-	-	Residential	Road
15	1400m-1459m	-	-	Residential	Road
Drain 4 - Eastern side of road from Netaji Corner to crossing of Border Road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Road	Road and partly Commercial
2	100m-200m	-	-	Road	Road
3	200m-300m	-	1 Tree 3m outside proposed drain at 290m chainage	Road	Road.
4	300m-400m	-	-	Road	Road
5	400m-500m	-	1 Tree 2.5m outside proposed drain at 490m chainage	Road	Road.
6	500m-600m	-	-	Road	Road
7	600m-700m	-	1 Tree 5m outside proposed drain at 610m chainage. 1 Tree 3.5m	Road	Road.

			outside proposed drain at 690m chainage		
8	700m-800m	-	-	Road	Road and Water Body 8.5m outside Proposed drain
9	800m-900m	-	-	Road	Road
10	900m-1000m	-	-	Road	Road
11	1000m-1100m	-	1 Tree 3m outside proposed drain at 1090m chainage	Road	Road.
12	1100m-1200m	-	1 Tree 4m outside proposed drain at 1200m chainage	Road	Kataal Dighi Water Body 5m outside Proposed drain.
13	1200m-1300m	-	-	Road	Kataal Dighi Water Body 5m outside Proposed drain
14	1300m-1400m	-	-	Road	Residential
15	1400m-1459m	-	-	Road	Residential
<i>Drain 4 - Eastern side of border road to Culvert over Mora Chhera via crossing of Noopur Jamey Masjid Road</i>					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 Tree 1.8m outside proposed drain at 75m chainage. 1 Tree 1m outside proposed drain at 80m chainage	-	Road	Open partly residential.
2	100m-200m	1 Tree 1m outside proposed drain at 140m chainage. 1 Tree 1m outside proposed drain at 195m chainage	-	Road	Residential.
3	200m-300m	1 Tree 0.5m outside proposed drain at 270m chainage	-	Road	Open partly residential.
4	300m-400m	-	-	Road	Open partly residential. .
5	400m-500m	-	1 Tree 1.9m outside proposed drain at 450m chainage	Residential	Road.
6	500m-600m	1 Electric Post 0.1m outside Proposed Drain at 550m chainage, 1 Electric Post 0.1m outside Proposed Drain at 580m chainage	1 Tree 1m outside proposed drain at 525m chainage	Residential	Road.
7	600m-700m	1 Electric Post 0.1m outside Proposed Drain at 605m chainage, 1 Electric Post 0.1m outside Proposed Drain at 630m chainage	-	Residential and Water Body	Road
8	700m-800m	-	1 Electric Post inside Proposed Drain at 605m chainage	Residential	Road

9	800m-900m	1 Electric Post 0.1m outside Proposed Drain at 900m chainage	1 Tree 0.8m outside proposed drain at 845m chainage	Open, Water body and Partly Residential	Road.
10	900m-1000m	-	-	Residential	Road
				Drain alignment encroaches inside property line	
11	1000m-1100m	1 Electric Post inside Proposed Drain at 950m chainage	-	Agriculture	Road
12	1100m-1200m	-	-	Residential	Road

Kumarghat Road

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
Road 1 - From Akhil Sinha to Santimoy Deb house (ward-2)					
1	0-100m	-	-	Residential	Agricultural
				Culvert at 95m chainage across proposed road	
2	100m-200m	-	1 Electric Post inside ROW at 140m chainage, 1 Electric Post inside ROW at 175m chainage	Agricultural	Residential partly Agricultural
3	200m-300m	1 electric post 0.15m outside ROW at 320m chainage	-	Agricultural	Open
4	300m-367m	-	-	Residential	Open Pond located
Road 2 - From Asram palli ICDS to Samar Sukla Baidya house (ward-3)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road– impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post inside ROW at 35m chainage	-	Residential	Residential
2	100m-200m	1 electric post inside ROW at 100m chainage. 1 Tree 0.4m outside ROW at 105m chainage	1 Tree inside ROW at 140m chainage.	Residential and partly Agricultural.	Residential.
3	200m-254m	-	-	Agricultural	Residential and partly Open
Road 3 - From S.E. office to Nantunlal Dey house(ward-4)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post 0.15m outside ROW at 30m chainage	-	Government Office (PWD SE Office)	Open
2	100m-200m	-	-	Water Body	Agricultural
3	200m-300m	1 electric post 0.4m outside ROW at 294m chainage	-	Agricultural	Water Body

4	300-303m	-	-	Agricultural	Agricultural
Road 4 - From babul Barua to Tanu Sinha house(ward-5)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Residential and Water Body at 90m	Residential
2	100m-200m	-	-	Residential	Residential
3	200m-300m	-	-	Residential	Residential
4	300-305m	-	-	Residential	Residential
Road 5 - From Ujjal Sharma to Dilip Saha house (ward-6) and From Syamal Bhattacharya to Nikrunja Das house (ward-6)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post 0.3m outside ROW at 30m chainage, 1 electric post inside ROW at 50m chainage, 1 electric post inside ROW at 70m chainage and 1 electric post inside ROW at 95m chainage	-	Open and partly Residential	Open
2	100m-175m	1 electric post inside ROW at 115m chainage and 1 electric post inside ROW at 140m chainage	-	Open and partly Residential	Open
3	175m-222m	1 electric post inside ROW at 190m chainage and 1 electric post inside ROW at 200m chainage	-	Residential	Residential
4	0(175m)-84m	1 electric post inside ROW at 30m chainage and 1 electric post inside ROW at 65m chainage	-	Open and partly Residential	Open and partly Residential
Road 6 - From NH-8 to Arati Namu House(ward-7)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post 0.2m outside ROW at 50m chainage and 1 electric post 0.2m outside ROW at 85m chainage	-	Residential and Water Body at 70m chainage	Open and partly Residential
2	100m-200m	1 Electric Post inside ROW at 155m chainage	1 electric post 0.1m outside ROW at 180m chainage, 1 Electric Post inside ROW at 195m chainage	Residential	Residential

3	200m-48m	1 electric post 0.1m outside ROW at 230m chainage	-	Residential	Residential
Road 7 - From Kalipada Roy house to Tarani kr. Deb house(ward-8)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post 0.2m outside ROW at 70m chainage	1 electric post 0.1m outside ROW at 30m chainage	Open and partly residential	Open
2	100m-103m	-	-	Open	Open
Road 8 - From Pandap Saha to Jhantu Debnath house (ward- 9)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road– impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post 0.2m outside ROW at 70m chainage	1 electric post 0.45m outside ROW at 50m chainage, 1 electric post 0.1m outside ROW at 80m chainage	Residential	Open and partly residential
2	100m-130m	-	1 electric post inside ROW at 105m chainage	Residential	Residential
Road 9 - From Ranu Debnath to Kripamoy das house ward-10					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Residential	Residential
2	100m-200m	-	-	Open. Water Body at 170m chainage	Open and
3	200m-260m	-	-	Open	Open
Road 10 - From agriculture office to swapan das house (Ward-11)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post inside ROW at 85m chainage	1 electric post inside ROW at 55m chainage	Open and Water Body at 95m chainage. Property fence encroaches ROW at 70m chainage.	Residential. Culvert across proposed road at 20m chainage.
2	100m-139m	-	1 electric post 0.2m outside ROW at 115m chainage	Open	Residential
Road 11 - From Bhusan Chandra das House to Kakali Dhar Das house(ward-13)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road– impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post 0.1m outside ROW at 25m chainage and 1 electric post 0.2m outside ROW at 95m chainage	1 electric post 0.2m outside ROW at 65m chainage	Residential	Residential
2	100m-140m	-	1 electric post inside ROW at 130m chainage	Residential	Residential

Road 12 - From Kartik Dhar to Pabiachara fish market (ward-14)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 electric post inside ROW at 40m chainage	1 electric post inside ROW at 40m chainage	Social Forest Culvert at 95m chainage	Residential partly Open
2	100m-200m	-	1 electric post inside ROW at 130m chainage. Trees near ROW 125m, 140m, 155m, 170m and 180m chainages	Forest	Forest
3	200m-300m	Trees near ROW at, 220m and 240m chainages	-	Forest.	Forest
4	300m-320m	-	-	Residential	Residential

Kumarghat Drain

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
Drain 1 - National Highway Western Side of Road from the junction Railway Station Road to Pabia Cherra					
1	0-100m	1 Electric Post 0.3m outside Proposed Drain at 110m chainage	-	Commercial	Road
2	100m-200m	-	1 Electric Post inside Proposed Drain at 605m chainage	Commercial	Road
3	200m-300m	-	-	Commercial	Road
4	300m-400m	-	-	Commercial	Road
5	400m-500m	-	-	Commercial	Road
6	500m-600m	1 Electric Post 0.3m outside Proposed Drain at 510m chainage	-	Commercial	Road
7	600m-700m		-	Commercial	Road
8	700m-781m	1 Electric Post 0.3m outside Proposed Drain at 770m chainage		Commercial	Road
Drain 2 - National Highway Eastern Side of Road from the Bhagat Sing Chowmuhani to Cherra near Netaji Pally Road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Open Space	Commercial
2	100m-118m	-	-	Open Space	Commercial
Drain 3 - National Highway Eastern Side of Road from nearby SDM Office to Cherra near Netaji Pally Road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS

1	0-100m	-	-	Commercial	Open Space
2	100m-200m	-	-	Commercial	Open Space
3	200m-300m	1 Electric Post inside proposed drain at 275m chainage		Commercial. Culvert at 270m chainage	Open Space
4	300m-400m	-	1 Electric Post 0.3m outside proposed drain at 320m chainage. 1 Telephone Post 0.3m outside proposed drain at 380m chainage	Commercial	Open Space
5	400m-500m	-	1 Tree inside proposed drain at 315m chainage	Commercial	Open Space.
6	500m-578m	-	1 Tree 1.2m outside proposed drain at 520m chainage	Commercial	Open Space.
<i>Drain 4 - National Highway Eastern Side of Road nearby SDM Office to an existing culvert near SDM Office</i>					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Open Space. Temple 2.5m outside proposed Drain at 0m chainage	Commercial. Water Body 5m outside proposed Drain at 45m chainage.
2	100m-155m	-	-	Open Space. Culvert at 140m chainage	Commercial
<i>Drain 5 - National Highway Western Side of Road from nearby BDO office to culvert under National Highway nearby SDM office and outfall to Deo River</i>					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Road	Residential
2	100m-200m	-	1 Tree 0.8m outside proposed drain at 150m chainage	Road	Residential.
3	200m-300m		2 Electric Post inside proposed Drain at 270m and 280m chainages. 1 Tree 0.4m outside proposed drain at 210m chainage	Road	Residential
4	300m-400m	1 Electric Post 0.2m outside proposed Drain at 370m chainage	-	Road	Commercial
5	400m-437m	-	-	Road	Commercial
<i>Drain 6 - National Highway Western Side of Road from nearby BDO office to an existing underground drain nearby SP Mukherjee Lane.</i>					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	1 Electric Post inside proposed Drain at 90m chainages	Residential	Road
2	100m-200m	-	-	Residential and partly Open	Road
3	200m-301m		-	Open	Road

Dharmanagar Drain

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
Drain 1 - Batarasi Tri-Junction to Junction of Motor Stand Road and MB Unit Road along the Southern Side of Motor Stand Road					
1	0-100m	1 Electric Post 0.3m outside Proposed Drain at 70m chainage	-	Road	Commercial
2	100m-200m	1 Light Post 0.4m outside Proposed Drain at 130m chainage	-	Road. Culvert at 135m chainage	Commercial
3	200m-300m	-	-	Road	Commercial
4	300m-400m	1 Electric Post 0.4m outside Proposed Drain at 370m chainage		Road	Commercial
5	400m-500m		1 Transformer 1m outside Proposed Drain at 420m chainage	Road	Commercial
6	500m-600m		1 Electric Post inside Proposed Drain at 590m chainage	Road	Commercial. Temple 1.5m outside proposed Drain at 570m chainage.
7	600m-700m			Road	Commercial
Drain 2 - Railway Gate near Lalbahadur Shastri Road to MB Unit Road along the Southern Side of Motor Stand Road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Commercial and partly Open.	Road
2	100m-137m	-	-	Commercial	Road
Drain 3 - Railway Gate near Lalbahadur Shastri Road to MB Unit Road along the Northern Side of Motor Stand Road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	1 Electric post 0.5m outside proposed drain at 95m chainage. Tree 4m outside proposed Drain at 40m chainage. Tree 3m outside proposed Drain at 50m chainage. Tree 4m outside proposed Drain at 80m chainage.	Road	Commercial.
2	100m-145m	-	-	Road	Commercial
Drain 4 - Road crossing drain from Southern side of Motor Stand Road to Northern Side					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-11m	-	1 Electric Post 0.5 outside proposed Drain at 11m chainage	Road	Road
Drain 5 - Downstream of Motor Stand Road crossing drain to Upstream of MB Unit Road Crossing Drain					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-11m	1 Telephone Post inside proposed Drain at 9m		Commercial	Road

		chainage. 1 Electric Post inside proposed Drain at 12m chainage.			
Drain 6 - Road crossing drain from eastern side of MB Unit Road to Western Side					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-11m	-	-	Road	Road
Drain 7 - Junction of MB Unit Road and Motor Stand Road to Outfall at JuriKakri River along the Northern side of road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 Telephone post 0.5m outside proposed Drain at 10m chainage. 1 Electric post 0.2m outside proposed Drain at 10m chainage. 1 Telephone post 0.3m outside proposed Drain at 85m chainage. 1 Electric post 0.3m outside proposed Drain at 90m chainage	-	Road	Commercial
2	100m-109m	-	-	Road	Commercial
Drain 8 - Road crossing drain from Northern side of MB Unit Road to Southern Side					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-6m	-	1 Telephone post 0.5m outside proposed Drain at 3m chainage	Road	Road
Drain 9 - Junction of MB Unit Road and Motor Stand Road to Outfall at JuriKakri River along the Southern side of road					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	1 Electric post inside proposed Drain at 93m chainage	1 Electric post 0.5m outside proposed Drain at 70m chainage	Commercial and partly open	Road
2	100m-179m	-	-	Commercial and partly open	Road and partly open

Ambassa Road

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Road – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
Road 1 - Adhir Sikdar house to Sujit das house via Partha raj Debbarman house					
1	0-100m	5 Trees 4m outside ROW at 5m, 10m, 15m, 20m and 30m chainages	-	Vegetation	Residential
2	100m-140m (Junction at 70m chainage)	1 Tree inside ROW at 105m chainage	-	Vegetation	Residential
3	0(70m)-100m	2 electric post inside proposed ROW at 40m and 80m chainages	-	Residential	Residential

4	100m-160m	-	-	Residential partly Vegetation	Residential partly Vegetation
<i>Road 2 - Motor stand southside to Susuma Modak house via Siburanjan Dey house and Haralal Pal house</i>					
1	0-100m	-	-	Vegetation. Culvert at 85m chainage	Residential
2	100m-200m	1 electric post inside proposed ROW at 130m chainage	-	Residential	Residential
3	200m-300m		1 electric post 0.2m outside proposed ROW at 280m chainage	Vegetation. Water Body 4m outside Proposed ROW at 260m chainage.	Commercial
4	300m-329m	-	-	Open. Culvert at 315m chainage	Commercial
<i>Road 3 - Chunilal Debnath house to Babulal Pal house</i>					
1	0-46m	1 tree 3m outside ROW at 0m chainage.	-	Residential. Culvert at 5m chainage	Residential
<i>Road 4 - Alok Debnath house to Ganesh Goswami house</i>					
1	0-100m	-	-	Residential. Culvert at 5m chainage	Residential
2	100m-162m	-	1 Electric Post 0.1m outside proposed ROW at 162m chainage	Residential	Residential
<i>Road 5 - NH-8 To Kalpana Yadav house</i>					
1	0-100m	1 Tree inside ROW at 85m chainage.	1 Electric Post 0.4m outside proposed ROW at 40m chainage. 1 Electric Post 0.3m outside proposed ROW at 95m chainage. 2 Trees 0.8m outside ROW at 15m chainage.	Open.	Residential.
2	100m-200m	1 Tree 0.4m outside ROW at 145m chainage		Open. Bridge crossing Chorra River at 180m chainage	Residential
3	200m-300m			Residential	Residential
4	300m-400m	1 Tree 0.4m outside ROW at 350m chainage. 1 Tree 0.3m outside ROW at 365m chainage.	2 Trees 0.4m outside ROW at 330m chainage.	Open.	Open. Temple 0.2m outside proposed ROW at 320m chainage.
5	400m-500m	1 Tree 1m outside ROW at 340m chainage.	1 Electric Post 0.3m outside proposed ROW at 405m chainage. 1 Tree inside ROW at 495m chainage.	Residential.	Residential.
6	500m-600m			Open	Residential
7	600m-657m			Residential	Open
<i>Road 6 - Dumdum Marak house to Laxmi Charan Debnath house</i>					
1	0-100m	1 Electric Post 0.3m outside proposed ROW at 25m chainage.	1 Electric Post 0.4m outside proposed ROW at 85m chainage	Open and partly Residential.	Residential. River Pasinagar at 90m chainage.

		1 Tree inside ROW at 30m chainage.			
2	100m-200m	-	1 Electric Post 0.3m outside proposed ROW at 190m chainage	Vegetation and partly Open	Open and partly Residential
3	200m-300m	1 Electric Post 0.4m outside proposed ROW at 280m chainage		Vegetation	Residential
4	300m-316m	-	-	Vegetation	Residential
<i>Road 7 - Anil medical hall to Tejendra Mitra house</i>					
1	0-100m	-	-	Residential. Culvert at 5m chainage	Residential
2	100m-200m	1 Electric Post 0.3m outside proposed ROW at 140m chainage	1 Electric Post 0.3m outside proposed ROW at 170m chainage	Residential	Residential
3	200m-300m	-	1 Electric Post 0.3m outside proposed ROW at 205m chainage. 1 Electric Post 0.4m outside proposed ROW at 235m chainage	Residential	Residential
4	300m-316m	-	-	Residential	Residential
<i>Road 8 - P.R.T.I. Building to Dhalai river</i>					
1	0-100m	-	-	Residential. Culvert at 20m chainage	Residential
2	100m-200m	-	1 Electric Post 0.3m outside proposed ROW at 120m chainage	Residential	Residential
3	200m-300m	-	1 Electric Post 0.4m outside proposed ROW at 205m chainage.	Residential	Residential
4	300m-316m	-	-	Residential	Residential
<i>Road 9 - NH-08 to Sudhangshu Dutta house to Laxmi Charan Debnath house</i>					
1	0-100m	-	-	Residential	Open
2	100m-177m	-	1 Tree 2.5m outside ROW at 170m chainage.	Residential and partly Open	Residential.
<i>Road 10 - Narayan Debnath house Biswajit Sarma house via Niorde Sadhu Asram</i>					
1	0-100m	1 Electric Post 0.2m outside proposed ROW at 5m chainage	-	Residential	Vegetation (Trees)
2	100m-200m	-	-	Vegetation (Trees)	Vegetation (Trees)
				Culvert at 150m chainage	
3	200m-300m	-	-	Vegetation (Trees)	Vegetation (Trees)
4	300m-400m	1 Electric Post inside proposed ROW at 440m chainage	-	Residential	Residential
5	400m-474m	-	-	Residential	Residential

Ambassa Drain

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
Drain 1 - NH to Kalpana Jadav House					
1	0-100m	-	1 Electric Post 0.3m outside Proposed Drain at 80m chainage	Open	Road
2	100m-190m (Outfall at chorra)	1 Tree 1.5m outside proposed drain at 140m chainage	-	Open and partly Residential.	Road. Chorra at 190m chainage
3	0m-100m (88m Chainage branches to Outfall O3)	-	-	Open and Residential.	Road.
4	100m-200m	-	1 Tree 0.4m outside proposed drain at 190m chainage	Residential and Road from 150m chainage. 1 Water tap inside Proposed Drain at 125m chainage	Road and Residential from 150m chainage.
5	200m-300m	-	1 Tree inside Proposed Drain at 490m chainage	Road	Residential
6	300m-360m	1 Tree inside Proposed Drain at 305m chainage		Road	Open
7	0-32m (From 88m chainage to outfall 3)			Open	Open

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone				Nearby Land Use (Religious places & water bodies)	
		Left side drain		Right side drain		LHS	RHS
		LHS	RHS	LHS	RHS		
8	0m-100m	1 Water tap inside Proposed Drain at 20m chainage	-	1 Electric Post 0.15m outside Proposed Drain at 65m chainage	-	Open and Residential. Temple inside drain at 10m chainage. 1 Water tap inside Proposed Drain at 20m chainage	Residential
9	100m-200m	-	-	-	-	Residential.	Residential
10	200m-230m	-	-	-	-	Residential.	Residential

Drain 2 - PS Link Road to Chandraipara School

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone				Nearby Land Use (Religious places & water bodies)	
		Left side drain		Right side drain		LHS	RHS
		LHS	RHS	LHS	RHS		
1	0-100m (North of Road)	1 Electric Post 0.3m outside Proposed Drain at 8m chainage	1 Electric Post 0.3m outside Proposed Drain at 80m chainage	-	1 Transformer 0.4m outside Proposed Drain at 90m chainage	Residential	Residential
2	100m-200m		1 Electric Post inside Proposed	-	1 Tree 0.6m outside proposed	Residential	Residential.

			Drain at 180m chainage		drain at 110m chainage.		
3	200m-300m	-	-	1 Electric Post 0.3m outside Proposed Drain at 205m chainage	1 Electric Post 0.2m outside Proposed Drain at 240m chainage. 2 Trees 1m outside proposed drain at 225m chainage.	Residential	Residential.
4	300m-400m	-		-	-	Residential	Open
5	400m-500m	1 Electric Post 0.2m outside Proposed Drain at 405m chainage	1 Electric Post inside Proposed Drain at 450m chainage	1 Electric Post 0.2m outside Proposed Drain at 450m chainage	-	Residential. Ananda Marga School at 560m chainage	Open
6	500m-605m			-	-	Residential	Residential

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
7	0m-100m		1 Electric Post 0.2m outside Proposed Drain at 625m chainage. 1 Electric Post 0.2m outside Proposed Drain at 680m chainage	Road	Residential
8	100m-195m (Outfall)	-	1 Electric Post inside Proposed Drain at 605m chainage	Open	Open
9	0-100m	-	1 Tree 4m outside proposed drain at 45m chainage.	Residential	Road. Chandrai Para High School at 0 chainage.
10	100m-120m	-	-	Residential	Road

Drain 3 - Ambassa Colony to Dhalai River (Part of NH-8 to Zila Parisad office via Ramkrishna Ashram)

Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone				Nearby Land Use (Religious places & water bodies)	
		Left side drain		Right side drain		LHS	RHS
		LHS	RHS	LHS	RHS		
1	0-100m (North of Road)	1 Electric Post 0.3m outside Proposed Drain at 80m chainage		1 Transformer 0.2m outside Proposed Drain at 25m chainage. 1 Tree inside proposed	1 Tree 0.2m outside proposed drain at 80m chainage. 1 Tree 0.6m outside proposed	Residential. Water Body 0.3m outside proposed Drain at 100m chainage.	Residential.

				drain at 70m chainage.	drain at 90m chainage.		
2	100m-200m				-	Residential. Culvert at 200m chainage	Residential. Water Body 0.5m outside proposed Drain at 160m chainage.
3	200m-300m	-				Residential	Agricultural
4	300m-407m	1 Tree inside proposed drain at 400m chainage.		-	1 Transformer 0.4m outside Proposed Drain at 400m chainage	Residential	Agricultural
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)			
		LHS	RHS	LHS		RHS	
5	0-100m	-	-	Road		Agricultural and partly Residential	
6	100m-200m	-	-	Road		Residential	
7	200m-300m	-	-	Road		Open	
8	300m-400m	-	-	Road		Residential and partly Open	
9	400m-487m	-	-	Road		Residential	
Drain – 4 TRTC Para to existing main drain at Motor Stand Road (Part of Ambassa motor stand to Arun Debnath house at TRTC para)							
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)			
		LHS	RHS	LHS		RHS	
1	0-100m	-	-	Residential. Residential Fencing encroaches at 70m chainage.		Road	
2	100m-200m			Residential		Road	
3	200m-300m	-	1 Electric Post 0.3m outside Proposed Drain at 270m chainage	Residential		Road	
4	300m-400m	-	-	Residential. Culvert at 310m chainage		Road	
5	400m-500m	1 Tree 7m outside proposed drain at 430m chainage	-	Residential.		Road	
6	500m-600m	-		Residential		Road	
7	600m-700m		-	Residential. Residential Fencing encroaches at 680m chainage.		Road	
8	700m-781m	-		Residential		Road	
Drain – 5 Chandraipara School to Vivekananda Nagar to Outfall at Dhalai River (Part of Tripura Garmin Bank to Ambassa P.S. & Bankumari Bazar via Naresh Sharma house at V.K. Nagar)							
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)			
		LHS	RHS	LHS		RHS	
1	0-100m	-	-	Residential.		Road	
2	100m-200m		1 Electric Post 0.4m outside Proposed Drain at 175m chainage	Residential		Road	

3	200m-300m	-		Residential. Residential Fencing encroaches at 225m chainage.	Road
4	300m-400m	-	-	Road. Culvert at 320m chainage	Residential
5	400m-500m	-	-	Road	Residential
6	500m-600m	-		Road	Residential
7	600m-700m		-	Road	Residential
8	700m-803m	-		Road and partly Open	Road and partly Open
Drain – 6 Parendra Debnath to Ambedkar nagar (Part of Parendra Debnath house to NH-8 via Ambedkar Nagar J.B. School)					
Sl. No.	Chainage	Utilities, trees adjacent (Less than 0.5m) to/inside proposed Drain – impact zone		Nearby Land Use (Religious places & water bodies)	
		LHS	RHS	LHS	RHS
1	0-100m	-	-	Road.	Residential
2	100m-200m	1 Tree 0.6m outside proposed drain at 120m chainage	-	Road.	Residential

Tree felling detail – Kailashahr, Kumarghat, and Ambassa Roads

SI No	Chainage	Tree Species Local/ English Name	Scientific Name	Girth Size (in m)	IUCN Status
ULB	<u>Ambassa : Roads</u>				
Road no. 1: - Adhir Sikdar house to Sujit Das house via Partha raj Debbarman house					
1	100 m – 140 m	Jam	<i>Syzygium cumini</i>	0.5	NA
Road no. 5: - NH-8 to Kalpana Yadav house					
2	0 – 100 m	Chamar (RHS)	<i>Cerbera odollam</i>	2.5	NA
3	100 - 200 m	Sagaun (LHS)	<i>Tectona grandis</i>	1.35	NA
4	300 – 400 m	Kadam (LHS)	<i>Neolamarckia cadamba</i>	0.5	NA
5		Chamar	<i>Cerbera odollam</i>	1.9	NA
6		Simul	<i>Bombax ceiba</i>	1.2	NA
7		Gammer	<i>Gmelina arborea</i>	0.6	NA
8	400 – 500 m	Jam (LHS)	<i>Syzygium cumini</i>	1.3	NA
Road no. 6: - Dumdum Marak house to Laxmi Charan Debnath house					
9	0 – 100 m	Gammer	<i>Gmelina arborea</i>	0.8	NA
ULB	<u>Kailashahar: - Roads</u>				
Road 3: Veterinary hospital to Naba Jagrata Club west side of embankment at Kailashahar town					
10	200 – 300 m	Mehrook Tree	<i>Morinda tinctoria</i>	1.2	NA
11		Kul Tree	<i>Ziziphus mauritiana</i>	0.8	NA
ULB	<u>Kumarghat : - Roads</u>				
Road no. 2: From Ashram Palli ICDS to Samar Sukla Baidya house (Ward 3)					
13	100 – 200 m	Simul (LHS)	<i>Bombax ceiba</i>	1.2	NA
14		Mango (RHS)	<i>Magnifera Indica</i>	0.8	NA
15- 19		Sagaun/ Teak – 5 nos.	<i>Tectona grandis</i>	0.6-0.9	NA
20-21	200-300 m	Seagun/ Teak – 2 nos.	<i>Tectona grandis</i>	0.5-1.0	NA

Tree felling detail – Kailashahr, Kumarghat, and Ambassa Drains

SI No	Chainage	Tree Species Local/ English Name	Scientific Name	Girth Size (in m)	IUCN Status
ULB	Ambassa : Drains				
Drain no. 1: - NH to Kalpana Jadav House					
1	100 – 200 m	Kanthal	Artocarpus heterophyllus	0.7	NA
2	200 – 300 m	Mango	Magnifera Indica	0.5	NA
3	300 – 360 m	Krishnachura	Delonix regia	1.1	NA
Drain no. 3: - Ambassa Colony to Dhalai River (Part of NH-8 to Zila Parishad Office via Ramkrishna Ashram)					
4	0 – 100 m	Ghot	Zizyphus xylopara	0.6	NA
5	0 – 100 m	Kadam	Neolamarckia cadamba	0.4	NL
6	300 – 407 m	Chamar	Cerbera odollam	0.9	NA
ULB	Kailashahar : - Drains				
Drain no. 3: - Western side of road from netaji corner to crossing of border road					
7	300 – 400 m	Harra	Terminalia chebula	0.95	NA
8		Ghot	Zizyphus xylopara	0.5	NA
9	600 – 700 m	Mango	Magnifera Indica	1.22	NA
10		Kanthal	Artocarpus heterophyllus	0.8	NA
11		Mango	Magnifera Indica	0.95	NA
12		Krishnachura	Delonix regia	1.9	NA
13		Ghot	Zizyphus xylopara	0.6	
14	700 – 800 m	Tamarind	Tamarindus indica	1.2	NA
Drain no. 4: - Eastern side of border road to Culvert over Mora Chhera via crossing of Noopur Jamey Masjid Road					
15	200 – 300 m	Mango	Magnifera Indica	1.7	NA
ULB	Kumarghat : Drains				
Drain no. 3: - National Highway Eastern side of Road from nearby SDM Office to Cherra near Netaji Pally Road					
16	400 – 500 m	Mango	Magnifera Indica	0.5	NA
Drain no. 5: - National Highway Western Side of Road from nearby BDO Office to Culvert under National Highway nearby SDM Office and outfall to Deo river					
17	200 – 300 m	Jamun	Syzygium cumini	1.6	NA

Appendix 7: Drinking Water Standards

Group	National Standards for Drinking Water ^a			WHO Guidelines for Drinking-Water Quality, 4 th Edition, 2011 ^b	Applicable Per ADB SPS ^{c, d}
	Parameter	Unit	Max. Concentration Limits ^d		
Physical	Turbidity	NTU	1 (5)	-	1 (5)
	pH		6.5 – 8.5	none	6.5 – 8.5
	Color	Hazen units	5 (15)	none	5 (15)
	Taste and Odor		Agreeable	-	Agreeable
	TDS	mg/l	500 (2,000)	-	500 (2,000)
	Iron	mg/l	0.3	-	0.3
	Manganese	mg/l	0.1 (0.3)	-	0.1 (0.3)
	Arsenic	mg/l	0.01 (0.05)	0.01	0.01
	Cadmium	mg/l	0.003	0.003	0.003
	Chromium	mg/l	0.05	0.05	0.05
	Cyanide	mg/l	0.05	none	0.05
	Fluoride	mg/l	1 (1.5)	1.5	1 (1.5)
	Lead	mg/l	0.01	0.01	0.01
	Ammonia	mg/l	0.5	none established	0.5
Chemical	Chloride	mg/l	250 (1,000)	none established	250 (1,000)
	Sulphate	mg/l	200 (400)	none	200 (400)
	Nitrate	mg/l	45	50	45
	Copper	mg/l	0.05 (1.5)	2	0.05 (1.5)
	Total Hardness	mg/l	200 (600)	-	200 (600)
	Calcium	mg/l	75 (200)	-	75 (200)
	Zinc	mg/l	5 (15)	none established	5 (15)
	Mercury	mg/l	0.001	0.006	0.001
	Aluminum	mg/l	0.1 (0.3)	none established	0.1 (0.3)
	Residual Chlorine	mg/l	0.2 (1.0)	5	0.2
Micro Germs	E-coli	MPN/100ml	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample
	Total Coliform	MPN/100ml			

Note-

^a Bureau of India Standard 10500: 2012. Value within bracket indicated values permissible limits in absence of alternative source

^b Health-based guideline values.

^c Per ADB SPS, the government shall achieve whichever of the standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

^d Figures in parenthesis are maximum limits allowed in the absence of alternate source.

Appendix 8: Stakeholder Consultations

Summary of Consultation with Stakeholders- Kailashahar

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
13 th April 2022	ULB office, Kailashahar	6 M=5 F=1	Elected representatives, Chairperson of ULB	- Briefing on project objectives probable implementation procedures - Potential positive and negative impacts due to project implementation - Relevant information of the upcoming project and benefits of the project. - Adverse impacts on structures, livelihoods anticipated.	- The prime concern and apprehension of the ULB Chairperson regarding the project was when construction work will start. - The Chairperson of the ULB expressed need for the project and willingness to take it up; - Operation and maintenance of the facilities developed under the project and community participation - Waste water discharge in low lying area. - Socio-economic conditions likely impacted due to proposed drain improvement
13 th April 2022	Bimal Sinha Housing Complex- Ward no. 12	10 M=6 F=4	Community members	- Briefing on project objectives probable implementation procedures - Relevant information of the upcoming road and drain project and benefits of the project. - Information on the benefits of the subproject in terms of economic and environmental enhancement - People in general were very enthusiastic about the benefits of the subproject in terms of water logging and also an improvement in the environmental quality.	- People are fed up with water logging, frequent traffic jams and wanted that the subproject may be executed on a fast track so that this problem is eliminated. - Generally, all the people consulted were well aware about the proposed subproject. - Short term impact on air quality- dust generation, noise level, access problem, inconvenience for public and movement of vehicle.
19 th March 2023	ULB office, Kailashahar	19 M=13, F=6	Elected representatives, Engineers,	Briefing on project objectives probable implementation procedures	Residents expressed their views about the willingness to engage with the project and explore job opportunities.

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
			Chairperson of ULB, ADB Team	Discussion about requirement of the project and willingness of residents to pay for improved services of Storm water drainage, Benefits of road and storm water drainage.	- As regards the storm water drainage and road project, it has been told by the residents that it will improve the roads and condition of low laying areas. - It was told by the residents that the condition of storm water drainage condition is not up to the mark; the low-lying areas generally get flooded during rainy season. Short term impact on air quality- dust generation, noise level, access problem, inconvenience for public and movement of vehicle.
19 th March 2023	Durgapur Ward no. 15	17 M=12, F=5	Community Consultation	Detailed discussion about current level of service of Water supply and condition of storm water drainage in the town/ Present Road condition and storm water management problem. Tentative Project implementation period and possible inconveniences during the construction period shared during consultation with community present from the locality	- Few people have told that they are aware of the proposed subproject, - All the residents expressed their concerned about the poor drainage condition and road connectivity. Residents expressed their views about the willingness to engage with the project and explore job opportunities

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
					
Consultation at ULB office 13 th April 2022				Public Consultation at Bimoal Sinha Housing Complex 13 th April 2022	
					

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
Consultation at ULB office 19th March 2023 along with ADB Team					
					
Community consultation at Durgapur on 19th March 2023 along with ADB Team					

List of Participants in Consultation Meeting at ULB office

LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS
OF INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR
URBAN LOCAL BODIES IN TRIPURA

Name of the Town: - Kailashar

Ward No. =

Date: - 13/04

Place: =

[illegible]

List of Participants in Consultation Meeting at Bimal Sinha Housing Complex

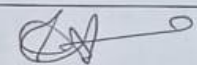
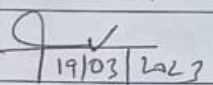
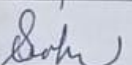
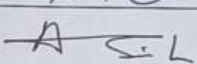
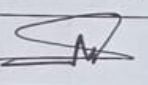
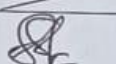
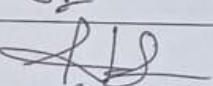
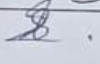
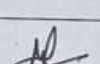
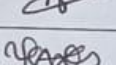
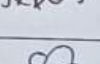
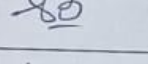
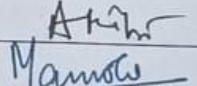
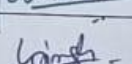
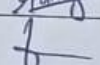
**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA**

Name of the Town: - Kailashahar

Ward No: -

Place: - Kailashahar WLB Office

Date: - 19/03/23

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
1.	Chupen Debbar	F	9436530825	
2.	Pradip Sarker, CEO,	M	9436992710	 19/03/2023
3.	Subrata Deb.	M	8418861186	
4.	Angsuman Singh	M	7085456573	
5.	Manish Ch. Das	M	9862603204	
6.	Bubhendu Meher Ray Choudhary	M	9485008364	
7.	Sourav Seal	M	7980272820	
8.	SUBRATA DEB	M	9485063812	
9.	Snehan Prut	M	9932313841	
10.	Aritro Bhattacharya	M	8981079145	
11.	Kalyan ASIS DAS	M	9836328867	
12.	S. K. Basu	M	9830439554	
13.	Dr. Anandendu Mitra	M	9830415953	
14.	Manmohan Telang	F	9425600906	
15.	Gowind Singh Rathore	M	9560967524	
16.	K. S. GHOSH	M	9831317118	

Place- Kailashahar Municipal Council Office, Dated- 19-03-2023

**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA**

Name of the Town: - *Kailashahar*

Ward No: - *15*

Place: - *Durgapur*

Date: - *19-03-2023*

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
①	<i>Mamsha Telling</i>	<i>F</i>	<i>9425600901</i>	<i>Mamsha</i>
②				
③	<i>Nibash Malakar</i>	<i>M</i>	<i>9612344802</i>	<i>Nibash</i>
④	<i>Rina Rani Malakar</i>	<i>F</i>	<i>8794090881</i>	<i>Rina Rani Malakar</i>
⑤	<i>Anjana Acharyee</i>	<i>F</i>	<i>9485142511</i>	<i>Anjana Acharyee</i>
⑥	<i>Bidyut Malakar</i>	<i>M</i>	<i>9436530008</i>	<i>Bidyut</i>
⑦	<i>Anima Malakar</i>	<i>F</i>	<i>8974612553</i>	<i>Anima</i>
⑧	<i>Saibash Malakar</i>	<i>M</i>	<i>6909230522</i>	<i>Saibash</i>
⑨	<i>Ruklu Sarker</i>	<i>M</i>	<i>8974632021</i>	<i>Ruklu</i>
	<i>Swapna Malakar</i>	<i>F</i>	<i>98362771784</i>	
10	<i>Kaewu Kanti Malakar</i>	<i>M</i>		
11	<i>Himangshu Chakraborty</i>	<i>M</i>	<i>6909230187</i>	
12	<i>Sushil Deb</i>	<i>M</i>	<i>7085457511</i>	
13	<i>Chaitanya Kumar</i>	<i>M</i>	<i>7085457511</i>	
14	<i>Sunil Paul</i>	<i>M</i>	<i>8974159914</i>	<i>Sunil</i>
15	<i>Bisof Acharyee</i>	<i>M</i>	<i>6909050317</i>	<i>Bisof</i>

Place- Durgapur, Ward No- 15, Dated- 19-03-2023

**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA**

Name of the Town: -

Ward No: -

Place: -

Date: -

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
18	NIMU MALAKAR	m	7005207506	NIMU MALAKAR
19	Pinak Malakar	m	8913001569	

Place- Durgapur, Ward No- 15, Dated- 19-03-2023

Summary of Focus Group discussion held at Kailashahar

Focus-group discussions with affected persons and other stakeholders were conducted to learn their views and concerns. General public and the people residing along the project activity areas were also consulted during visits to the project sites.

Summary of Outcome

Sl. no	Date and place of consultation	Persons consulted	Topics discussed during FGD	Outcome of FGD/ consultation
1	09.11.2021 Hawkers Market	Total=07 M-07 F-00	Discussed about present drainage system and its quality & proposed works and its advantages, their willingness to project work, temporary inconveniences during pipe laying works, road and drainage work, contractor's cooperation, willingness to pay for sustainability of the project	People are concerned about the drainage and poor road quality. People demand for better road and drainage system. People are supportive of the project
2	03.02.2022 Ward No-10, 14, 15, 17	Total=08 M-00 F-08	Present Status of Water Supply in the town. Proposed works water supply, road and drain under this project Quality of present Water Supply Environment & Health impacts of proposed projects	Generally, all the people consulted were well aware about the proposed subproject. People are supportive of the project. Short term impact on air quality- dust generation, noise level, access problem, inconvenience for public and movement of vehicle.
3	03.02.2022 Ward No-10, 11, 14, 15, 17 (Serial no.3 and 4 of above table)	Total=17 M-00 F-17	Present water supply system, road and drainage system. Awareness of the project –including Project Coverage area, Dust and noise pollution and disturbances during construction work,	People are concerned about the poor drainage issue. People demanded for the measures of dust suppression such as water sprinkler to control dust and noise during construction phase. People are supportive of the project.
4	03.02.2022 Ward No- 15, 14, 16	Total=7 M-00 F-7	Present Status of Water Supply, road and drainage status in the town, Awareness of the project-including Project Coverage area, Present drinking water problem-quantity and quality	People are supportive of the project and indicated their willingness to participate in the project to make It successful (especially women) People are aware of the proposed Project.
5	09.11.2021 Consultation with ULB representatives	Total=12 M-12 F-00	Present drinking water supply source and its condition, drainage system and road condition. Need of improvement of the present situation	The ULB representative expressed need for the project and willingness to take it up Kailashahar is operating the drainage system for the town, but capacity to be further built. People were briefed about the complaint redress mechanism.

Sl. no	Date and place of consultation	Persons consulted	Topics discussed during FGD	Outcome of FGD/ consultation
			Briefing on project objectives probable implementation procedures	
6	20.05.2022 Consultation with Honorable Vice-Chairperson, counsellors and DY-CEO of KMC	Total=12 M-12 F-00	Present drinking water supply source and its condition, road and drain condition. Need of improvement of the present situation Briefing on project objectives probable implementation procedures	The ULB representative expressed need for the project and willingness to take it up The Chairman of the ULB expressed need for the project and willingness to take it up The prime concern and apprehension of the ULB Chairman regarding the project was whether it will be a financial burden on the MC

Annexure
Photographs of Key Informants Interview and Focus Group discussion



Hawkers Market, Dated- 09-11-2021



Ward no – 10,14,15,17 Dated- 03-02-2022



Ward no – 14,17, Dated- 03-02-2022

Ward No – 15,14,16, Dated- 03-02-2022

Stakeholder Consultation



**Consultation with the Honorable
Chairperson & Counsellors of Kailashahar
Municipal Council Dated- 13-04-2022**



**Consultation with the Honorable Vice-
Chairperson & Counsellors of
Kailashahar Municipal Council Dated- 20-
05-2022**



**Consultation with representatives of
Kailashahar Municipal Council,
Dated- 09-11-2021**



**Consultation with Dy-CEO of KMC,
Dated- 20-05-2022**

Attendance Sheet of Focus Group Discussion (FGD)

2

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULR / Loc. :- Kailashahar Municipal Council Ward Nos. :- 10, 14, 15, 17

Sl no.	Name of the participant	Ward No.	Contact No.	F/W/Tra.	Signature	Remarks
①	Anita sen	14	9612301181	F	Anita sen	
②	Madhumita Deb	14	8258049846	F	Madhumita Deb	
③	Anita Sinha	17	8974285926	F	Anita Sinha	
④	Satyabama Sinha	14	9612227524	F	Satyabama Sinha	
⑤	Piyarun bibi	14	9862236894	F	Piyarun bibi	
⑥	Anamika Biswas	10	9402357067	F	Anamika Biswas	
⑦	Rinki Dhar	15	8794750078	F	Rinki Dhar	
⑧	Doli Rudrapal	15	8131086437	F	Doli Rudra Paul	

Ward no – 10,14,15,17 (03-02-2022)

③

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULR / Loc. :- Kailashahar Municipal Council Ward Nos. :- 10, 11, 14, 15, 17

Sl no.	Name of the participant	Ward No.	Contact No.	F/W/Tra.	Signature	Remarks
①	Rupa nama	15	6909051014	F	Rupa Nama	
②	Saswati Chakrabarti	10	8974484162	F	Saswati Chakrabarti Swopna Das (Nanda)	
③	Swapna Das (Nanda)	11	9089768370	F		
④	Bhabani Das	10	9436328574	F	Bhabani Das	
⑤	Manika Debnath	14	9862961919	F	Manika Debnath	
⑥	Anju Rani Sinha	17	9612834145	F	Anju Rani Sinha	
⑦	Karmi sinha	17	9436530552	F	Karmi sinha	
⑧	Papri Malakar	15	8416077417	F	Papri Malakar	

Ward No – 10, 11,14,15,17 (03-02-2022)

1

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the URB :- Kailashahar Municipal Council Ward Nos. :- 14, 17

Sl. no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
①	Puspita Debnath Das		7005655645	F	Puspita Das.	
②	Alaka sinha	17	9612525190	F	Aloka Sinha.	
③	Shabana Sinha	17	7085939073	F	Shabana Sinha	
④	Ruma talapatra Datta	14	9862808222	F	Ruma Rani Talapatra	
⑤	Chanda Deb(Sen)	14	8119093113	F	Chanda Deb(Sen)	
⑥	Krishna Sinha	17	9362822300	F	Krishna Sinha	
⑦	Mausami Sinha	17	8730850178	F	Mousumi Sinha	
⑧	Sujata Das (sen)	14	9612352229	F	Sujata Das (sen)	

Ward no – 14,17 (03-02-2022)

④

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the URB :- Kailashahar Municipal Council, Ward Nos. :- 15, 14, 16

Sl. no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
①	Mani Debnath	15	9436363262	F	Mani Debnath	
②	Barnali Roy Datta	14	8974484622	F	Barnali Roy Datta	
③	Sampa Subradhar	14	9402518010	F	Sampa Subradhar	
④	Bira Malakar	15	9862657617	F	Bira Malakar	
⑤	Anita malakar	14	9774686628	F	Anita Malakar	
⑥	Sabita Ghosh	16	7629000811	F	Sabita Ghosh	
⑦	Chinubani Ghose	16	8415866258	F	Chinubani Ghose	

Ward No – 15,14,16 (03-02-2022)

Summary of Consultation with Stakeholders- Kumarghat

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
7 th April 2022	ULB office, Kumarghat	17 M=09 F=08	Consultation with all honorable counsellor of Kumarghat MC	- Briefing on project objectives probable implementation procedures - Potential positive and negative impacts due to project implementation - Relevant information of the upcoming project and benefits of the project. - Information on perceived benefits from the proposed subproject including reduction in water logging in rainy seasons. - Availability of labour during construction time	- The prime concern and apprehension of the ULB Chairperson regarding the project was when construction work will start. - The Chairperson of the ULB expressed need for the project and willingness to take it up; - Operation and maintenance of the facilities developed under the project and community participation - People in general were very enthusiastic about the benefits of the subproject in terms of water logging and also an improvement in the environmental quality. - Socio-economic conditions likely impacted due to proposed drain improvement - Local Skilled worker are easily available in this area.
23 rd March 2023	ULB office, Kumarghat	12 M=11 F=01	Consultation with all honorable counsellor of Kumarghat MC, Engineers, ADB team	- Relevant information of the upcoming project and benefits of the project. - Potential positive and negative impacts due to project implementation - Relevant information of the upcoming project and benefits of the project.	- The local people of the ULB expressed need for the project and willingness to take it up; - Operation and maintenance of the facilities developed under the project and community participation - People in general were very enthusiastic about the benefits of the subproject in terms of water logging and also an improvement in the environmental quality.

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
					- Socio-economic conditions likely impacted due to proposed drain improvement - Local Skilled worker are easily available in this area.
23 rd March 2023	Sukanta Palli, Chakma Basti, Ward No- 09	16 M=7 F=9	Community consultation	- Briefing on project objectives probable implementation procedures - Relevant information of the upcoming road and drain project and benefits of the project. - Information on the benefits of the subproject in terms of economic and environmental enhancement - People in general were very enthusiastic about the benefits of the subproject in terms of water logging and also an improvement in the environmental quality.	- People are fed up with water logging, frequent traffic jams and wanted that the subproject may be executed on a fast track so that this problem is eliminated. - Generally, all the people consulted were well aware about the proposed subproject. - Short term impact on air quality- dust generation, noise level, access problem, inconvenience for public and movement of vehicle. - The proposed subproject road will provide better road connectivity to the nearby facilities.



Consultation at ULB office 7th April 2022



Stakeholder consultation at ULB office Kumarghat on 23rd march 2023 along with ADB Team



Community consultation at Sukanta Palli, Chakma Basti on 23rd April 2023 in presence of ADB Team

LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN LOCAL BODIES IN TRIPURA

Name of the Town: - Lumaght Ward No. -
 Date: - 02/04 Place: -

Sl No.	Name (in CAPITAL LETTER)	Contact No.	Signature
1	Biswjit Das	98578534	
2	Rante Lal Deb	9862200582	
3	Himant Das	8132022208	
4	Nidhee Bhushan Paul	8837872222	
5	Tulan Das	9366133502	
6	Gobinda Das	9862200371	
7	Shekharaj Chakraborty	9485060835	
8	Dipak Ch. D. B.	9366133502	
9	Lili Bhor.	8747456406	
10	Bima Deb (Dob)	9612741748	
11	Chyanti Rani Das Bhattacharya	7085530308	
12	Bijaya Sinha	8014410999	
13	Rina Rani Sarkar (Nana)	9612530304	
14	Pranati Suklabaidya	6909276552	
15	Anu malakar	8119905296	
16	Ramada Majumdar	8132022251	
17	Dipankar Goswami	7005354961	

List of Participants in Consultation Meeting at ULB office

Attendance Sheet

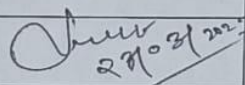
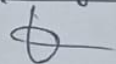
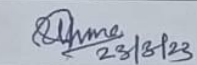
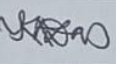
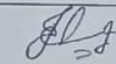
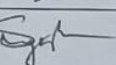
LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA

Name of the Town: - Kumarghat MC (ULB)

Ward No: -

Place: - Kumarghat MC

Date: - 23/03/2023

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
1.	KAUSHIK PURKAYASTHA	M	9436497952	
2.	Mamsha Debbarma	F	9425608906	Mamsha.
3.	Gourind Singh Rathore	M	9560967524	G Singh.
4.	K. S. Choudhary	M	9831317118	
5.	Sukumar Debbarma.	M	9862129334	
6.	KALYAN ASIS DAS	M	9836328867	
7.	Tanjanta Chakraborty	M	8761805667	
8.	DR. ARDHENDU MITRA	M	9830415953	A. Mitra
9.	Souvar Seal	M	7980272820	
10.	Sujay Chakraborty	M	9862246728	
11.	Vipin Negi	M	9690057783	Vipin Negi
12.	Prafulla P. Singh	M	8707001669	

Place- Kumarghat Municipal Council Office, Dated- 23-03-2023

**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA**

Name of the Town: - Kumar ghor

Ward No: - 09

Place: - Sukanta Palli Chakma Basti

Date: - 23-03-2023

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
①	Mamchi kelang	F	942560906	Mamchi
②	Gowin d Suroh Rethu ^m			Gowin
③	Jayanta Chakrabarty. M	M	8761805667	Jayanta
④	Ardhendu Misra	M	9830415953	Ardhendu
⑤	K.S. Chakma	M	9831317118	K.S. Chakma
⑥	Sitara Chakma ^m	F	9863206364	Sitara Chakma
⑦	Trimal Chakma	F	8974144082	Trimal
⑧	Swapna Chakma	F		Swapna Chakma
⑨	Kalpna Chakma	F	9863206364	Kalpna Chakma
⑩	Jhuma Chakma	F	8974144082	Jhuma Chakma
⑪	সত্যজিৎ চাকমা	F		সত্যজিৎ চাকমা
⑫	সমিতা চাকমা	F		সমিতা চাকমা
⑬	Lakmi Sobha Chakma	F	7005416238	Lakmi
⑭	Jinanti Chakma	F	8787347990	Jinanti Chakma
⑮	Susmita Narma	F	9362855113	Susmita Narma
⑯	Motilal Chakma	M		Motilal Chakma

Place: Sukanta Palli, Chakma Basti, Ward No- 09, Dated- 23-03-2023

Summary of Focus Group discussion Held at Kumarghat
Summary Outcome

Sl. no	Date and place of consultation	Persons consulted	Topics discussed during consultation	Outcome of consultation
1	12.04.2022 Ward No-7	Total=08 M-00, F-08	Discussed about: project objectives probable implementation procedures, present drinking water supply source and its conditions, road and drain conditions, potential positive and negative impacts due to project implementation, relevant information of the upcoming project and benefits of the project.	• The prime concern of stakeholders regarding the project when construction work will start. • They expressed need for the project and willingness to take it up • Operation and maintenance of the facilities developed under the project and community participation will largely succeed the project
2	12.04.2022 Ward No-1,5,8,9,12	Total=11 M-00, F-11	Discussed about: Awareness about the subproject and extent of the project impact and development, benefits of the subproject for the economic and social upliftment of community at large, possibility of local disturbances due to project construction work, water logging and drainage problem if any	• People are concerned about the poor supply and quality of water. • People are supportive of the project. • People agree with the proposed water supply works and understand that proposed works will improve economic, health and environmental conditions • People agreed that local disturbance is minimum in terms of the long-term benefit of the project • Water logging and drainage problems should be permanently mitigated
3	13.04.2022 Ward No-6	Total=21 M-00, F-21	Discussed about: Drinking water problem including Other Public Health related problems, encountered if any, Socio-Economic status, necessity of this project, employment potential in the project	• People are concerned about the insufficient quantum of available water and also its quality issue. They concerned on drainage condition. • People are mainly dependent on rubber plantation, some people are service holders (Govt & Private) • People demanded for the measures of dust suppression during implementation of the project • People are supportive of the project and interested to work as unskilled labour during project construction period
4	13.04.2022 Ward No- 15	Total=14 M-04, F-10	Discussed about: the subproject and extent of the project impact and development, benefits of the subproject for the economic and social	• People welcome the proposed water supply, road and drainage improvement project • They are aware of the benefits of the proposed Project.

Sl. no	Date and place of consultation	Persons consulted	Topics discussed during consultation	Outcome of consultation
			upliftment of community at large, overall impact of the project.	• People are aware of the socio-economic benefits out of the project as implementation of the project will create job opportunities in local scale • Stakeholders are aware of the overall positive impact of the project and hence they welcome the implementation of the project
5	12.04.2022 Meeting with project beneficiaries at Pabiacherra	Total=05 M-05, F-00	Discussed about: the subproject and extent of the project impact and development, benefits of the subproject for the economic and social upliftment of community at large, labour availability in the Project area or requirement of outside labour, possibility of Local disturbances due to Project Construction Work	• Beneficiaries became aware of the sub project in terms socio-economic benefits • All agreed that the project will have net positive impact on their livelihood and health • They agreed that the project would surely help in socio-economic upliftment • Stakeholders confirmed about availability of unskilled local labour • Stakeholders agreed to bear on the temporary local disturbance due to project construction work for permanent potable water solutions, improvement of road and drain
6	07.04.2022 Consultation with Honorable Chairperson	Total=04 M-04, F-00	Discussed about: the sub project and extent of the project impact and development, benefits of the subproject for the economic and social upliftment of community at large, labour availability in the Project area or requirement of outside labour, possibility of local disturbances due to Project Construction Work, water logging and drainage problem if any, drinking water problem, other problems, encountered, if any, ADB safeguard policy, Socio-Economic status, necessity of this project, employment potential in the project	• The prime concern and apprehension of the ULB Chairperson regarding the project when construction work will start. • The Honorable Chairperson person is aware about this sub projects, and willing to provide all types of support during execution of work. • He is also aware about the upliftment benefits of the community due to implementation of the project • As per his understanding, community is ready accept the disturbance during project construction for permanent benefits out of this project • Water logging and drainage problem should also be properly addressed also apart from this water supply project

Sl. no	Date and place of consultation	Persons consulted	Topics discussed during consultation	Outcome of consultation
				• Safeguard policy of ADB was acceptable to him and community as it has long term benefits • During construction phase local people may be hired which can increase their earning potential and eventually standard of living and provide assistance to all those persons • Employment generation potential was agreed by him

Photographs of Key Informants Interview and Focus Group discussion



Ward No-07, Dated-12-04-2022



Ward No- 06, Dated- 13-04-2022



Ward No- 15, Dated- 13-04-2022



Ward No- 01, 05, 08,09, 12, Dated- 12-04-22



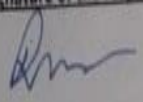
**Consultation with Honourable Chairperson of Kumarghat Municipal Council,
Dated- 07-04-2022**

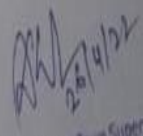
Annexure
Attendance Sheet of Focus Group Discussion (FGD)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULB / G.P. :- Kumarghat Ward Nos. :- 7

Sl no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
1	Soma Sarkar	7	8837220090	F	Soma Sarkar	
2	Gita Roy	7	9866432199	F	Gita Roy	
3	Sabita Das	7	8787431086	F	Sabita Das	
4	Riha Sutra Dhar	7	8181991804	F	Riha Sutra	
5	Gita Roy	7	9866432199	F	Gita Roy	
6	Balti Das	7	7005267561	F	Balti Das	
7	Kaberi Sarkar	7	9612513241	F	Kaberi Sarkar	
8	Tushi Deb (Anish)	7	8787431086	F	Tushi Deb	

Signature of the respective Surveyor 

Verified By the respective ULB staff  26/4/22
Kumarghat Gram Panchayat
Kumarghat, Unakch, Tripura

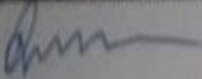
Name: -
Designation:-

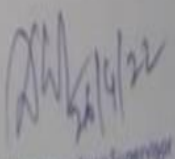
Ward No- 07 (12-04-2022)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULB / G.P. :- Khumraghat Ward Nos. :- 6

Sl no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
1	Mousumi Das	6	8787667776	F	Mousumi Das	
2	Arpita Deb	6	9366678923	F	Arpita Deb	
3	Poheli Bhattacharjee	6	8787407875	F	Poheli Bhattacharjee	
4	Ratna Das	6	2630097289	F	Ratna Das	
5	Manika Roy Saha	6	889137355188	F	Manika Roy Saha	
6	Shilpa Das	6	8731052924	F	Shilpa Das	
7	Sitabon Das	6	9742800893	F	Sitabon Das	
8	Kanika Suklabaidya	6	9962179968	F	Kanika Suklabaidya	
9	Shibani Das	6	8131821847	F	Shibani Das	
10	Manika Deb	6	9612791667	F	Manika Deb	
11	Satika Chandra	6	9936475001	F	Satika Chandra	
12	Kunti Rani Dasak (Deb)	6	9865515826	F	Kunti Rani Dasak (Deb)	
13	Manjushri Das	6	9862200371	F	Manjushri Das	
14	Kanika Banerjee	6	8415968267	F	Kanika Banerjee	
15	Nidhi Das	6		F	Nidhi Das	
16	Sybil Chandra (Deb)	6	9612535862	F	Sybil Chandra (Deb)	
17	Sonajit M. Das	6	9862555312	F	Sonajit M. Das	
18	Shilpa Das	6	9612766226	F	Shilpa Das	
19	Shilpa Das	6	8994682682	F	Shilpa Das	
20	Prithi Das	6	5366362227	F	Prithi Das	

Signature of the respective Supervisor


Verified By the respective Supervisor

Name :-
Designation:-

Ward No- 06 (13-04-2022)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura

Name of the ULL / G.P. :- Khamarhat

Ward Nos. :- 15

Sl no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
22	Bina Deb	15	9862109712	F	Bina Deb	
23	Rumpa Chakraborty	15	9866987119	F	Rumpa Chakraborty	
24	Pampa Das		9612946520	F	Pampa Das	
25	Pampa Das	15	9862110444	F	Pampa Das	
26	Baby Debnath	15	9866440559	F	Baby Debnath	
27	Kalpana Deb	15	9863201964	F	Kalpana Deb	
28	Bubli Bar (Deb)	15	9077700557	F	Bubli Bar (Deb)	
29	Wahid GTS	15				
30	Bina Deb	15				
31	Bubli Shil	15	8413047423	F	Bubli Shil	
32	Rishi Luit Das	15	8417162153	F	Rishi Luit Das	
33	Gobinda Das	15	9862200371	M	Gobinda Das	

Signature of the respective Surveyor

Verified By the respective ULL staff
Khamarhat Municipal Council
Khamarhat, Unakoti, Tripura

Name: -

Designation: -

Ward No-15, (13-04-2022)

Summary of Consultation with Stakeholders- Dharmanagar

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
12 th April 2022	ULB office, Dharmanagar	4 M=04 F=0	Consultation with Honorable Chairperson and CEO of Dharmanagar MC	- Briefing on project objectives probable implementation procedures - Potential positive and negative impacts due to project implementation - Relevant information of the upcoming project and benefits of the project. - Adverse impacts on structures, livelihoods anticipated.	- The prime concern and apprehension of the ULB Chairperson regarding the project was when construction work will start. - The Chairperson of the ULB expressed need for the project and willingness to take it up; - Operation and maintenance of the facilities developed under the project and community participation - Socio-economic conditions likely impacted due to proposed drain improvement
12 th April 2022	Near Rajbari Tri-Junction	5 M=5 F=0	Community members	- Briefing on project objectives probable implementation procedures - Relevant information of the upcoming ROB and drain project and benefits of the project. - Information on the benefits of the subproject in terms of economic and environmental enhancement - Information on the benefits of the subproject in terms of economic and environmental enhancement	- People wanted that an efficient traffic management plan shall be in place before the construction works are started so that problems like traffic congestion, air and noise pollution shall be contained to the minimum. - Generally, all the people consulted were well aware about the proposed subproject. - Short term impact on air quality- dust

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
					generation, noise level, access problem, inconvenience for public and movement of vehicle. In addition, people belong to labour force wanted that they shall be provided employment during the subproject execution.
12 th April 2022	Durgapur, Ward No-13	9 M=08 F=01	Community members	- Briefing on project objectives probable implementation procedures - Information on the benefits of the subproject in terms of economic and environmental enhancement - The people of Dharmanagar required proper traffic control to prevent accidents.	- Locals will be given preference in employment during construction - Socio-economic conditions likely impacted due to proposed drain improvement - Safety measures will be provided. Adequate signages will be provided.
20 th May 2023	ULB office, Dharmanagar	19 M=15 F=04	Consultation with Honorable Chairman, Dy Chairperson, SDM, CEO and Dy. CEO of Dharmanagar MC in presence of ADB consultant – safeguard team	- Awareness regarding Safeguard issues for Environmental, Gender and Social issues - Improvement of water supply facility in Dharmanagar town considering 30 years of population expansion - Improvement of Drainage systems in the Dharmanagar Municipality along the main road	- The prime concern and apprehension of the ULB Chairperson regarding the project was when construction work will start. - The Chairperson of the ULB expressed need for the drainage project and willingness to take it up; - Drainage system improvement is taken up from the Batashri

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
					junction to Kakri River inside the Dharmanagar Municipality having length 1233m that will cover ward no. 13, 21,22,23 and adjoining ward 23. During improvement of drainage system, it will be ensured that the any environment and social impact will be mitigated



Consultation at ULB office



Public Consultation Near Rajbari Tri-Junction



Public Consultation at Durgapur, Ward No-13



Stakeholder consultation in Dharmanagar Municipal Council in presence of ADB Team on 20th May 2023

**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS
OF INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR
URBAN LOCAL BODIES IN TRIPURA**

Name of the Town: - Dharmnagar

Date: - 12/04

Ward No. —

Place: -

[illegible]

List of Participants in Consultation Meeting at ULB office

LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS
OF INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR
URBAN LOCAL BODIES IN TRIPURA

Name of the Town: - Dhanmonagar

Ward No. - 13

Date: - 12/04

Place: - Durgam Cheru

[illegible]

List of Participants in Consultation Meeting at Durgapur, Ward No-13

LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA

Name of the Town: - Dhanmangur

Ward No: -

Place: - ULB office

Date: - 20-5-2023

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
①	Manju Nath		7305398998	<i>Manju</i>
②	NITESH PATIL	M	9650621817	<i>Nitesh</i>
③	KENICHI HASHIMOTO	M	+81.90.5414.8752	<i>K. Hashimoto</i>
④	Manmohan Telang	F	942560090	<i>Manmohan</i>
⑤	Ganesh Singh Rathore	M	9560967524	<i>Ganesh</i>
⑥	Kali Singh Verma	M	9821317118	<i>K. Singh</i>
⑦	Dr. Ardhendu Mitra	M	9830415953	<i>A. Mitra</i>
⑧	Rakesh P. Saha	M	8707001669	<i>R. Saha</i>
9.	Dr. Sumit Pandey	M	9436330939	<i>S. Pandey</i>
10.	Prithwish Kr. Saha	M	8373003438	<i>P. Saha</i>
11.	Aritro Bhattacharya	M	8981079195	<i>A. Bhattacharya</i>
12.	Sharmistha Duttagupta	F	9871501428	<i>Sharmistha</i>
13.	Mitali Mukhopadhyay	F	9811089946	<i>Mitali</i>
14.	Sunodh R. Dha	M	9436777138	<i>S. Dha</i>
15.	Manojan Debbarma	M	9612615656	<i>M. Debbarma</i>
16.	Dr. Gauram Ray	M	7005569155	<i>G. Ray</i>

- ⑦ Anand Prasad - M. 7630873352
 ⑧ Sumit Pandey, CEO 7872684490
 ⑨ VIVEK - SDM - 974166469

Sumit Pandey Dy. CEO
Sumit

[Signature]

List of Participants in Consultation Meeting at ULB office in presence of ADB consultant on 20th May 2023

Summary of Focus Group discussion held at Dharmanagar

Focus-group discussions with affected persons and other stakeholders were conducted to learn their views and concerns. General public and the people residing along the project activity areas were also consulted during visits to the project sites.

Summary Outcome of Consultations

Sl. no	Date and place of consultation	Persons consulted	Topics discussed During consultation	Outcome of consultation
1	09.01.2022 Ward No-18	Total=12 M-03 F-09	Discussed about: present drainage system and proposed works and its advantages, their willingness to project work, temporary inconveniences during pipe laying works, contractor's cooperation, willingness to pay for sustainability of the project	• People are concerned about the drainage and duration of stagnation of water. • People agree with the proposed drainage works and understand that proposed works will improve health and environmental conditions of town and chances of waterborne diseases will be mitigated at some extent.
2	03.02.2022 Ward No-1	Total=09 M-00 F-09	Discussed about: Present Status of Water Supply in the town, road and drainage conditions. Proposed works under this project Quality of present Water Supply Environment & Health impacts of proposed projects	• People are concerned about the poor drainage. • People are supportive of the project. • People agree with the proposed drainage works and understand that proposed works will improve health and environmental conditions of town and chances of waterborne diseases will be mitigated at some extent.
3	03.02.2022 Ward No-2	Total=14 M-03 F-11	Discussed about: Present water supply system, Awareness of the project –including Project Coverage area, Dust and noise pollution and disturbances during construction work,	• People are concerned about the poor drainage issue. • People demanded for the measures of dust suppression during implementation of the project • People are supportive of the project.
4	03.02.2022 Ward No- 13	Total=10 M-09 F-01	Discussed about: Present Status of Water Supply, road and drainage system in the town, Awareness of the project-including Project Coverage area, Present drinking water problem-quantity and quality	• People are supportive of the project and indicated their willingness to participate in the project to make It successful • People are aware of the proposed Project. • Quality of present drainage is not good and sufficient; water stagnation is regular incident during rainy season.
5.	12.04.2022 – Thana corner	Total=05 M-05 F-00	Discussed about: Present drinking water supply source and its condition, drainage system	• The beneficiaries expressed need for the project and willingness to take it up • Content of iron in water reported by beneficiaries

Sl. no	Date and place of consultation	Persons consulted	Topics discussed During consultation	Outcome of consultation
			Need of improvement of the present situation Briefing on project objectives probable implementation procedures	• Dharmanagar is operating the drainage system for the town, but capacity to be further enhanced • People were briefed about the environmental & social impact of the project and long-term benefit of the project

Annexure
Photographs of Key Informants Interview and Focus Group discussion



Ward No-18, Dated-09-01-2022



Ward No- 01, Dated- 03-02-2022



Ward No- 02, Dated- 03-02-2022



Ward No- 13, Dated- 03-02-2022



Durgapur, Ward No- 13, Dated-12-04-2022



Near Rajbari Trijunction, Dated 12-04-2022



Dharmanagar Market, Dated- 08-11-2021

Stakeholder Consultation



Consultation with Dharmanagar Market Committee, Dated- 08-11-2021

Attendance Sheet of Focus Group Discussion (FGD)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULB / G.P. :- Dharmanagar

Ward Nos. :- 18

Sl. No.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
1	Prabal Saha	18	7005855207	M	P. C. Saha	
2	Namita Nath	18	807495060	F	Namita Nath	
3	Nabonita Das	18	9862636287	F	Nabonita Das	
4	Chanchala Talukdar Das	18	0612139477	F	Chanchala Talukdar (Das)	
5	Bono Das	18	7690851935	M	Bono Das	
6	Bivha Das	18	811894460	F	Bivha Das	
7	Gita Das	18	8856194629	F	Gita Das	
8	Babli Debnath	18	7005612347	F	Babli Das	
9	Rakhi Das	18	7005215226	F	Rakhi Das	
10	Gaulam ex Nath	18	8784833219	M	Gaulam ex Nath	
11	Piyali Deb Nath	18	7005013883	F	Piyali Deb Nath	
12	Seprali Deb Nath	18	9612171788	F	Seprali Deb Nath	

Ward No-18 (09-01-2022)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULB / G.P. :- Dharmanagar

Ward Nos. :- 1

Sl. No.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
1	Sipra Dhar	1	6909972004	F	Sipra Dhar	
2	Sampa pal (Das)	1	9366592320	F	Sampa Pal (Das)	
3	Mitali Das	1	6909470588	F	Mitali Rong Das (son)	
4	Putul Nama	1	7085734909	F	Putul Nama	
5	Priya Das	1	9362523726	F	Priya Das	
6	Babi Nama	1	6909822334	F	Babi Nama	
7	Swapna Paul	1	6033133689	F	Swapna Paul	
8	Archam Paul	1	9774899472	F	Archam Paul	
9	Baby Rani Paul	1	9366258062	F	Baby Rani Paul	

Ward No- 01 (03-02-2022)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura .

Name of the ULB / G.P. :- Dharmanagar

Ward Nos. :- 2

Sl no.	Name of the participant	Ward No.	Contact No.	F/W/Tra.	Signature	Remarks
1.	GOPAL GOODELA	2	986638838	M	Gopal Goode	
2.	MIHIR DAS	2	7005268268	M	Mihir Das	
3.	Joyanti Goswala	2	9862538838	F	Joyanti Goswala	
4.	Anjali Ghosh	2	9362118174	F	Anjali Ghosh	
5.	Manju Malakar	2	9485153086	F	Manju Malakar	
6.	Rumi Malakar	2			Rumi Malakar	
7.	Moyona Goswala	2	969263620784	F	Moyona Goswala	
8.	Rumi Malakar	2	7085244183	F	Rumi Malakar	
9.	Narayan Malakar	2	9436367497	M	Narayan Malakar	
10.	Sathi Malakar	2	9612301270	F	Sathi Malakar	
11.	Dipali Rani Das	2	9436726393	F	Dipali Rani Das	
12.	Bithi Dutta	2	6033193211	F	Bithi Dutta	
13.	Purnima Malakar	2	9862608411	F	Purnima Malakar	
14.	Kalpana Malakar Das	2	9774693488	F	Kalpana Malakar (Das)	
15.	Pranati Ghosh	2	7628930003	F	Pranati Ghosh	

Ward No- 02 (03-02-2022)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura .

Name of the ULB / G.P. :- Dharmanagar ULB

Ward Nos. :- 13

Sl no.	Name of the participant	Ward No.	Contact No.	F/W/Tra.	Signature	Remarks
1	Chitra Chakraborty	13	9862290437	F	Chitra Chakraborty	
2	Abdul Majid		9862703997	M	Abdul Majid	
3	Ankur Ali		841888118	M	Ankur Ali	
4	Rafik Uddin		9862982913	M	Rafik Uddin	
5	Sulaman Ahamed		7005804915	M	Sulaman Ahamed	
6	Abdul Karim		9862128977	M	Abdul Karim	
7	Mithu Chakraborty		9862618942	M	Mithu Chakraborty	
8	Sanjay Achary		9101564942	M	Sanjay Achary	
9	Rafel Ahmed		9486134595	M	Rafel Ahmed	
10	Goran Choudhury		6009233859	M	Goran Choudhury	

Ward No-13, (03-02-2022)

Summary of Consultation with Stakeholders- Ambassa

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
13 th September 2022	TRTC Para, Ward no.-5	7 M=3 F=4	Community members	- Briefing on project objectives probable implementation procedures - Relevant information of the upcoming ROB and drain project and benefits of the project. - Information on the benefits of the subproject in terms of economic and environmental enhancement - Information on the benefits of the subproject in terms of economic and environmental enhancement	- People wanted that an efficient traffic management plan shall be in place before the construction works are started so that problems like traffic congestion, air and noise pollution shall be contained to the minimum. - Generally, all the people consulted were well aware about the proposed subproject. - Short term impact on air quality-dust generation, noise level, access problem, inconvenience for public and movement of vehicle. - In addition, people belong to labour force wanted that they shall be provided employment during the subproject execution.
13 th September 2022	TRTC Para, Ward no.-6	7 M=04 F=3	Community members	- Briefing on project objectives probable implementation procedures - Information on the benefits of the subproject in terms of economic and environmental enhancement - The people of Ambassa required proper traffic control to prevent accidents.	- Locals will be given preference in employment during construction - Socio-economic conditions likely impacted due to proposed drain improvement - Safety measures will be provided. Adequate signages will be provided.
23 rd March 2023	Ambassa Municipal Council office	13 M=12, F=1	Stakeholder consultation with Chairperson, councilors, Engineers and ADB Team	- Relevant information of the upcoming project and benefits of the project. - Potential positive and negative impacts due to project implementation - Relevant information of the upcoming project and benefits of the project.	- In general, there is absence of a proper drainage network in the subproject areas - During the rainy season, the water from the drain's overflows causing flooding and this damages the roads and properties of the inhabitants.

Date	Location	No. of Participants	Participants	Topics Discussed	Issues
					• The overflowed water stagnates at many places which enhances the risk to health of the citizens • Socio-economic conditions likely impacted due to proposed drain improvement • Local skilled worker are easily available in this area.
23 rd March 2023	Shanti Para, Ward No- 04	24 M=21, F=3	Community members along with ADB Team	• Briefing on project objectives probable implementation procedures • Relevant information of the upcoming road and drain project and benefits of the project. • Information on the perceived benefits of the subproject in terms of economic and environmental enhancement • People in general were very enthusiastic about the benefits of the subproject in terms of water logging and an improvement in the environmental quality.	• People have to face a lot of problems like water logging, flooding, damages to properties due to water seepage and access & commuting related issues in absence of the proposed facility. • An efficient drainage network will solve the problems of flooding and water logging especially during rainy days. • Development of drainage system (especially where no proper drainage system exists) will ensure overall health and hygiene of the people and better aesthetics/infrastructure in the subproject area • The proposed subproject road will provide better road connectivity to the nearby facilities.



Public Consultation at TRTC Para, Ward no-05



Public Consultation at TRTC Para, Ward no-06



Stakeholder consultation at Ambassa MC on 23rd March 2023 along with ADB team



Community consultation at Shanti Para, Ward No- 04 on 23rd March 2023 along with ADB team

Attendance Sheet

**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN LOCAL
BODIES IN TRIPURA**

Name of the Town: - Ambassa

Ward No: 6

Place: - TRTC Pura

Date: -

[illegible]

List of Participants in TRTC Para, ward no.-5

**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA**

Name of the Town: - Ambassa

Ward No: -

Place: - Ambassa ULB Office

Date: - 23-03-2023

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
①	Gopal Datta	m	8413891014	Gopal Datta
②	Sankar Chakraborty	M	7085595581	Sankar Chakraborty
③	Sannirhan Ray	M	9436122775	Sannirhan Ray 23-03-2023
④	Gaurind Singh Rathore	M	9560967524	Gaurind Singh Rathore
⑤	Manmohan Telang	F	912560900	Manmohan Telang
⑥	K. S. Ghosh	M	9831317118	K. S. Ghosh
⑦	Jayant Chakraborty	M	8761805667	Jayant Chakraborty
⑧	KALYAN ASIS DAS	M	9836328867	KALYAN ASIS DAS
⑨	Sourav Seal	M	7980292820	Sourav Seal
⑩	Sukumar DebBarma	M	9862129339	Sukumar DebBarma 23/3/23
⑪	Vipin Negi	M	9690057783	Vipin Negi
⑫	Pradeep P. Sarmah	m	8707001669	Pradeep P. Sarmah
⑬	Sujat Chakraborty	M	7862246728	Sujat Chakraborty

Place- Ambassa Municipal Council Office, Dated- 23-03-2023

**LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF
INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN
LOCAL BODIES IN TRIPURA**

Name of the Town: - Ambassari

Ward No: - 04

Place: - Shanti para

Date: - 23-03-2023

Sl. No.	Name (CAPITAL LETTER)	Male / Female	Contact NO.	Signature
①	Gopal Saha	M	8413891014	
②	Sankar Bakraborty	M	7085595581	
③	Mamukhela	F	9425100906	
④	K.S. GHOSE	M	9831317118	
⑤	Samiran Ray	M	9436122775	 23.03.2023
⑥	Bijayan Debbarma	M	9366247424	
⑦	Laxmi bala Biswas	F	8732042575	
⑧	Jyotirmay Debbarma	M	8787758371	
⑨	Rati Ranjan Kalai	M	9366975185	
⑩	Ajit Lenka	M	8787607419	 23/03/23
⑪	Prasanna D/Karma	M	9436323181	
⑫	Bir K. Debbarma	M	9436941580	 23/03/23
⑬	Bhupendra Debbarma	M	9436515508	
⑭	Gustina Majumdar	M	8356836576	
⑮	Sujit Choudhury	M	8974218139	 23/03/23
⑯	Hirak Debbarma	M	7005179326	

Place- Shanti Para, Ward No-04, Dated- 23-03-2023

LOAN 6037 IND: PROJECT READINESS FINANCING FOR IMPROVING READINESS OF INTEGRATED URBAN PLANNING & INFRASTRUCTURE DEVELOPMENT FOR URBAN LOCAL BODIES IN TRIPURA

Name of the Town: - Ambasse

Ward No: - 04

Place: - Sharli Poru

Date: - 23-03-2023

[illegible]

Place- Shanti Para, Ward No-04, Dated- 23-03-2023

Summary of Focus Group discussion held at Ambassa

Focus-group discussions with affected persons and other stakeholders were conducted to learn their views and concerns. General public and the people residing along the project activity areas were also consulted during visits to the project sites.

Summary of Outcome

Sl. no	Date and place of consultation	Persons consulted	Topics discussed during consultation	Outcome of consultation
1	03.03.2022 Ward No- 1,2,5,6,9,10, 11,13,14	Total=70 M-00, F-70	- Discussed about: project objectives, probable implementation procedures, present drinking water supply source and its conditions, road and drainage conditions etc. - Potential positive and negative impacts due to project implementation, relevant information of the upcoming project and benefits of the project.	- Beneficiaries expressed their satisfaction about the upcoming road and drain project - The prime concern of stakeholders regarding the project when construction work will be started. - They expressed need for the project and willingness to take it up - Beneficiaries are well aware about the short term negative and long term positive impacts of the upcoming road and drain project. They expressed their believes only on sustainable positive long term impacts - Beneficiaries are confident about their socio-economic upliftment due to implementation of this project
2	12.04.2022 Meeting with project beneficiaries at ULB office	Total=32 M-28, F-04	- Discussed about: Project related information, All types of developmental activities in different sectors planned for Ambassa to get feedback from the participants and also to get an idea of the status of existing infrastructural facilities like existing conditions of roads, water supply, public amenities, drainage structures etc. - Briefed about the project, ADB safeguard framework and likely proposed project interventions (w/s, Drainage, SWM and other	- During the consultation it has come out that iron contamination is high in the water almost in every wards. - The drainage condition of this area not good. People of ward no. 07 & 11 informed that they suffer due to water stagnation in rainy season. - They were overall enthusiastic about the upcoming road and drain project. - Hopeful about improvement of internal roads, drainage and urban amenities in the town

Sl. no	Date and place of consultation	Persons consulted	Topics discussed during consultation	Outcome of consultation
			urban amenities), water scarcity especially in dry season.	
3	12.04.2022 Ward No-6 Meeting with Honorable Chairperson & Respected SDM of Ambassa	Total=04 M-03, F-01	- Briefing on project objectives probable implementation procedures - Present drinking water supply source and its condition, road and drain conditions - Potential positive and negative impacts due to project implementation - Relevant information of the upcoming project and benefits of the project - Potential positive and negative impacts due to project implementation	- The prime concern and apprehension of the ULB Chairperson regarding the project when construction work will start. - The Chairperson of the ULB expressed need for the project and willingness to take it up; - Operation and maintenance of the facilities developed under the project and community participation - Operation and maintenance of the facilities developed under the project and community participation

Focus Group discussion and Stakeholder consultations, Photo and Attendance



Dashamighat Market, Ambassa-Gandacherra Road



Dalubari Market



Dalubari



Ambassa Market area



Near Fish Market



Near Motor Stand



Kalibari Market
Consultation Photo and Signature Sheet



Ward No-01,02, Dated- 03.03.2022



Ward No-05,06, Dated- 03.03.2022



Ward No-13,09, Dated- 03.03.2022



Ward No-10,11,13,14, Dated- 03.03.2022

Attendance Sheet of Focus Group Discussion (FGD)

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULB / G.P. :- Ramtakuw BMR / Novodhya / Brishi / 805 St, Pong

Ward Nos. :- 1/2

Sl no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
1	Geayatki shaha	2	8119935522		Phimla Sukla Baidya	
2	Rubi Deb	37	878749435		Rubi Deb	
3	Aparna Sulabaidhya	1	9366196500		Aparna Das	
4	Ripali Das	1	8732861174		Ripali Das	
5	Saraswati Das	1	9036528102		Saraswati Das	
6	Hena Deb	1			Hena Deb	
7	Rashmi Rebnath	1	9436351228		Rashmi Rebnath	
8	Sampa Biswas (Das)	1	9436499441		Sampa Biswas (Das)	
9	Anjana Biswas	1	8414039537		Anjana Biswas	
10	Rakhi Rebnath	1	94866984		Rakhi Rebnath	
11	Saraswati Shaha	1	6009518812		Saraswati Shaha (Roy)	
12	Rita Chakraborty	1	9669995399		Rita Chakraborty	
13	Aparna Choudhury	1	9366835171		Aparna Choudhury	
14	Joyashree Paul	1	8974653979		Joyashree Paul	
15		1				
16		1				
17	Rupa Deb		8774218469		Rupa Deb	
18	Sumati Das	2	9402339537		Sumati Das	
19	Jumuna Deb	1	9485147014		Jumuna Deb	
20	Kabita Das	1			Kabita Das	

Pinki Nath
Signature of the respective Surveyor

Verified By the respective ULB staff

Name: -

Designation: -

Signature with Seal: - SUJIT CHOUDHURY
Assistant Town Supervisor
Ambassa Municipal Council

Ward No-01,02, Dated- 03.03.2022

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura.

Name of the ULB / G.P. :- Ambasha

Ward Nos. :- 5/6

Sl no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
①	Sabitri Das	5	9612533744	F	Sabitri Das	
②	Shilpi Deb	5	6033289127	F	Shilpi Deb (Chakrabarti)	
③	Dipti Deb	5	9436477329	F	Dipti Deb	
④	Anati Debnath	5	8414928857	F	Anati Debnath	
⑤	Surabala Das	5	9402117092	F	Surabala Das	
⑥	Bulki Das	5	8837401982	F	Bulki Das	
⑦	Silpi Deb	5	9612032548	F	Silpi Deb	
⑧	Nandita Das	5	9366169509	F	Nandita Das	
⑨	Maya Nath (Bharmik)	5	9366625679	F	Maya Nath (Bharmik)	
⑩	Sabita Debnath	5	9436710175	F	Sabita Debnath	
⑪	Sabita Chakrabarti	6	8414832802	F	Sabita Chakrabarti	
⑫	Bhanati Chakrabarti	5	8731893671	F	Bhanati Chakrabarti	
⑬	Maya Rani Sharma	6			Maya Rani Sharma	

Mamata Debnath
Signature of the respective Surveyor

SUNIT CHOUDHURY
Assist. Town Supervisor
Amli. Municipal

Verified By the respective ULB staff

Name :-

Designation :-

Signature with Seal :-

Ward No-05,06, Dated- 03.03.2022

Name of the Project :- Project Readiness for Infrastructure Development in 20 Towns of Tripura .

Name of the ULB / G.P. :-

Ward Nos. :- 13, 9

Sl no.	Name of the participant	Ward No.	Contact No.	F/M/Tra.	Signature	Remarks
1	Sima Rebnath	13	9812265662		Sima Rebnath	
2	Suchitra Pal	13	408548767		Suchitra Pal	
3	Ankita Pal	13	9612534840		Ankita Pal	
4	Rupu Deb	13	8414063543		Rupu Deb	
5	Sima Rudrapal	13	7005229708		Sima Rudrapal	
6	Kabita Pal (shi)	13			Kabita Pal	
7	Basanti Pal	13	9612872546		Basanti Pal	
8	Lilima Rudrapal	13	7005417429		Lilima Rudrapal	
9	Aparna Rebnath	13	9366289356		Aparna Rebnath	
10	Purkima Deb	13	8732861470		Purkima Deb	
11	Mohika Sharma	13			Mohika Sharma	
12	Bishaka Rudrapal	13	4005567227		Bishaka Rudrapal	
13	Kalpana Pal	13	8131062161		Kalpana Pal	
14	Nili shil	13	8787832547		Nili shil	
15	Roma Pal	13	8787832547		Roma Pal	
16	Grouni Pal	13	9436080714		Grouni Pal	
17	Preabhati Das	09	8729923372		Preabhati Das	
18	Pratashi Das	09	8414041929		Pratashi Das	
19	Manju Rani Pal	09			Manju Rani Pal	
20	Rashmani Majumder	09	7629045091		Rashmani Majumder	
21		13	9612872546			

Linki Nath
Signature of the respective Surveyor

Verified By the respective ULB staff

Name :-

Designation :-

Signature with Seal :- SUJIT CHOUDHURY
Assistant Town Supervisor
Ambassa Municipal Council

[illegible]

Ward No-10,11,13,14, Dated- 03.03.2022

INTERACTIVE WORKSHOP – ENVIRONMENT , SOCIAL SAFEGUARD- PART OF PRF Tripura Urban and Tourism Development Project (TUDDP)

Report of Orientation Workshop on ADB Safeguards Policy- Finance – Procurement – Institutional Arrangements for the Officials of Tripura Urban Planning and Development Authority (TUDA) & Project ULBs

Introduction

Government of Tripura initiated the Project Readiness Financing (PRF) of Integrated Urban Planning & Infrastructure Development for Urban Local Bodies in 20 towns¹ of the State under the loan no. 6037-IND assisted by the Asian Development Bank (ADB). The aim of the project is to plan, develop, implement and manage project activities and infrastructure assets for sustainable development and economic growth of the state as a whole. The project has two components viz URBAN and TOURISM. Urban infrastructure is looked after by TUDA whereas the Tourism part is under the TTDCL. The Urban Infrastructure Development subprojects are spread over 5 major components like Water supply, Storm water drainage, Septage management, Roads and Urban Amenities.

To achieve the project objectives efficiently, capacity building of the engineering and other non-engineering stakeholders is an inevitable part of the project. In the initial stage of preparation of DPR, Bid document and prior to the floating of tenders, DPR preparation and floating of tender documents, the technical and non-technical stakeholders, who are supposed to be directly or indirectly involved the Subprojects at all level needs to be oriented on the project prerequisites like, Safeguards Policy and measures to be followed, Financial modalities of externally aided projects, Procurement, Institutional arrangement structure etc. so as to enable project executing staffs to have a better understanding in discharge their roles and duties in a better way for assured quality services.

In this regard, a two days' workshop was organized with the joint effort of TUDA and PDMC where officials from all twenty project towns, TUDA and UDD have participated. The primary intent of the orientation workshop was to enhance the knowledge base of the ULB officials, TUDA officials and officials of UDD on the mentioned five disciplines, namely, a) Social safeguard, GRM and Gender, b) Environmental safeguards c) Financial modalities of externally aided projects, d) Procurement procedures, and e) Institutional arrangements.

Objective of the workshop

The specific objective of the workshop is to raise awareness on risks/issues, implications and arrangements of this project across various disciplines and creating a pathway to establish safeguard framework/plan and application of tools customizing to local conditions.

- ❖ The participants from ULBs and TUDA have a better understanding of the prerequisite parameters of an externally aided project
- ❖ Participants will be able to learn the process of continuous monitoring of the prerequisite parameters of safeguards, procurement process, contract management, financial implications, and institutional arrangements
- ❖ Avoid adverse impacts resulting from the project on environment and affected people, where ever possible
- ❖ Minimizing, mitigate and / or compensate for adverse project impacts on the environment and persons affected if efforts to avoid adverse impacts if not possible

- ❖ Helping borrowers / clients to strengthen the safeguard systems and build the capacity to manage social and environmental risks
- ❖ Reflect on their own supervision approach in a comprehensive perspective
- ❖ Exchange experiences or new ideas for guidance and suggestions to be used in the project
- ❖ Other objectives for the Orientation Workshop are to make the organization for creating a Field of Preparation.

Location and period of the workshop

The mentioned workshop was a residential workshop and was organized at Gitanjali Guest House, Bholagiri, Agartala. The workshop was organized for two days 19th and 20th December 2022

Total number of participants

The total number of participants were approximately 52 for the two days orientation workshop, comprising of 2 officials each from 20 ULBs and officials from TUDA/UDD.

Methodology of the workshop

The proposed orientation workshop has been conducted mostly in an interactive communication mode. The methodology followed during the orientation workshop are as under:

- ❖ Lecture
- ❖ Presentation
- ❖ Group discussions
- ❖ Subject related learning games etc.

Training Team & Organizing Team

The members of the organizing team comprised of Subject Experts and other support staffs of TUDA – PDMC including Social Safeguard Expert, Environmental Expert, Institutional Expert, Procurement and Finance Expert.

Outcome

The outcome of the two days “Orientation Workshop” related to the understanding of the participants. The outcomes are as under:

- Participants understood the different policies, procedures of Social & Environmental Safeguards
- Importance of social and environmental safeguards,
- Why gender in projects and basics of gender,
- Participants could also have an idea of the modalities of Institutional setups within the project
- Municipal Administration System
- Overview of urban scenario in Tripura
- Participants have learned Project accounting system under ADB and disbursement modalities
- Participants were made aware of the various Stages of procurement
- Types of procurement
- Methods of procurement under ADB project

Session Details – Day One

Session 1: Opening Session

The opening session is intended to welcome the participants and the trainer and the participants to get to know each other. The opening session was addressed by Dr. Tamal Majumder (TCS), Director, UDD, in which he welcomed all the participants and explained the importance of orientation workshop and the specific subjects as well. The opening session was followed by an address regarding the importance and

prerequisites in ADB funded projects by Dr. A.K. Aditya, Team Leader, PDMC. After the opening session, participants were addressed and educated regarding ADB Protocols and Guidelines by Mr. M. K. Gop. The session also provided a brief overview of the whole designed workshop schedule - the back ground, objectives, content and schedule of the course and highlights about the training methodology. The session was conducted in an interactive in nature.

manner and was more oriented towards learning from each other. The course handouts and reading materials are disseminated.

Session 2: Development Induced Social Issues, Social Safeguards & Impacts

The second session was intended to create an understanding of social impacts in implementation of urban infrastructure and development projects in urban areas and their positive and negative implications. It also aimed planners, implementors and decision makers to understand how and when to diagnose the social issues in the process of planning and designing infrastructure projects. The session was designed to assist the participants in distinguishing between “project benefitted people” and “project affected people” through discussions based on identified possible social issues due to urban infrastructure projects based on their experience. During the session, presentations were made deriving from national experience to supplement the learning efforts. It was discussed that development induced social issues will be inevitable unless appropriate social safeguards are not included into infrastructure development plans. This session was the foundation to understand the concept of social safeguards, grievance redressal mechanism and gender related issues and mainstreaming. The said session was so designed that a high level of active participation of the participants was observed although the session. The topics discussed under the session are as under:

- Understanding of Social Safeguard and its principles
- ADB's Safeguard Policy, 2009 & Scope of application
- Safeguard requirements 2 and safeguard requirements 3
- Policy Objectives & Scope of Policy application
- Understanding Involuntary Resettlement
- Eligible displaced persons & types of displacements
- Basic IR Principles
- Negotiated Land Acquisition
- Categorization of Projects
- IR Impacts, types and categorization of the same
- Who are Indigenous People (IP)
- Safeguards Compliance Flowchart
- IR impacts – what to consider?
- Grievance Redressal Mechanism (GRM / GRC) Structure & ADB's Accountability Mechanism
- Project stages for preparation of safeguard documents
- Case sharing for best practices of safeguard application in the field
- Consequences of not following safeguard norms on time
- Preparation of DDR and RP
- Process of land donation or negotiated land purchase
- Checklist for social safeguard and gender while visiting sites
- Gender – meaning, understanding and key concepts
- Considering gender in project designing and implementation
- Gender equality and equity
- Common perception regarding gender

Session 3: Environmental Safeguards and its applications

During the session in the respective subject matter, Environmental Safeguard Team– PDMC made an effort

to make the participants understand that Environment Safeguards aims at minimizing environmental impacts while executing the project activities in the field. Process of doing the same was discussed through implementation of Environmental Management Plan (EMP) proper awareness, and taking required mitigative measures. It was also shared with the participants that contractor has to continually comply with EMP strictly, proper solid waste/ waste water management, use of personal protective equipment's (PPE), continued supply of potable drinking water and First aid kits to workers/staffs and proper Health and Safety Plan (OHSP).

The report summarizes how ADB is structured and how it operates. ADB aims to improve environmental conditions of the rural and urban poor to enhance their chances for a better quality of life. We do this by working with governments and the private sector to fund land and water management systems; better resource management systems; cleaner energy production; expanded water supply, sanitation, and waste management services; and much more.

ADB's current strategies emphasize infrastructure investments with new approaches to focus on sustainability of their economic development. The impact of poor environmental quality and degraded resources on individuals, families, and communities poses a threat to the poor and increases the strain on those living on the margins of poverty. Most of the poor live in rural areas where they are highly dependent on ecosystems for their needs. Yet unsustainable exploitation and conversion is severely straining the forests, coastal systems, and lands from which they make their livings. And the very poorest tend to depend on the most marginal of areas, often contributing to resource degradation just to survive. As rural ecosystems become degraded, they lose their life-supporting functions—which sustain not only rural communities but urban populations. All queries of the respective ULBs were satisfactorily resolved regarding environmental concerns.

Topics discussed under Environment Safeguards are:

- Safeguard Requirement (ADB's Safeguard Policy Statement 2009)
- Importance of Safeguards (Prevent and mitigate harm to people and environment)
- Environmental Safeguards Policy Principles and requirements-ADB
- Major Rules and regulations for compliance
- Environmental Safeguard-Schedule and time frame of activities
- Details of Environmental Management plan (EMP)
- Activities during pre-construction phase (Statutory clearance, consent, NOC, Utility Shifting, selection of location, stockpile areas, disposal areas, material etc.)
- Environment safeguard requirement before start of project implementation
- Environment safeguard requirement during project implementation
- Project Implementation Phase EMP-site Environment Compliance
- Environmental Safeguard -Reporting

Session 4: Institutional Setups in Urban Scenario and Municipal Administration

This Session was focused on the urban scenario related to ULBs. Tripura urban sector has been facing crucial challenges like all other northeastern Indian cities. Geographical location and limited connectivity with India's main land are some permanent challenges. But those challenges can convert as value addition by improvement of governance efficiency. Natural resources, historical and tourist attractions are investment values for the urban sector. Those can be optimally utilized by attracting new urban investments and building new urban infrastructure. A few issues and challenges are mentioned below.

- Urban investments and improvement in the Physical Infrastructure of Cities.
- Reform linked investment strategy.
- Creating a self-sustainable service delivery mechanism and augmenting resources.
- Implementation of urban reforms addressing the causes and problems of the cities in the implementation of the reforms and suggest measures.

In addition to it the key objectives of creating Tripura Municipal Services were also discussed during the said session. In context of the same, the present scenario of ULBs, its staffing, institutional setting at ULBs, urban governance and administrative framework and the way forward was also a part of session.

Opening session

The opening session is starting with greeting of the guest of honour: -

- 1) Dr. Tamal Majumdar, Director of Urban Development,
- 2) Mr. Mihir Kanti Gop , Cheif planner TUDA & Project Coordinator PMU, TUDA , ADB project ,
- 3) Dr. Anup Kumar Aditya, Team Leader, PDMC.

After that the Expert of PDMC and the participants of the ULBs to get to know each other. The introduction will cover the background, work related to infrastructure development of the participants. In the of the workshop Dr. Tamal Majumder (Director of UDD) give his valuable inaugural speech related to ADB project followed Mr. Mihir Kanti Gop , Cheif planner TUDA & Project Coordinator PMU, TUDA , ADB project & Dr. Anup Kumar Aditya ,Team Leader , PDMC.

Orientation workshop session

Training/ Learning Objectives	Session Mode	Duration	Resource Person
Day One- 19.12.2022			
Registration for the Workshop cum training		Mins	
Welcome address to the participants and introductory session		Mins	Dr. Tamal Majumder (TCS), Director, UDD
Orientation on ADB Guidelines and Protocol	• Lecture • Discussion • Power Point presentation through Projector	Mins	Mr. M.K. Gop, Chief Planner, TUDA
Social Safeguards ➤ Orientation on the basic Safeguard Principles ➤ Project Categorizations ➤ Social Safeguard Reports and documentations ➤ Social Safeguard Requirements for project implementation ➤ Difference of DDR with RP/ IPP & SSMR ➤ Good practices of safeguard ➤ Consequence of bad safeguard practices	• Lecture • Discussion • Power Point presentation through Projector	120 Mins	Mr. Jayanta Chakraborty, Social Safeguard Expert, PDMC
➤ Uses & Importance of GRM & GRCs at various levels. ➤ Gender Equality & Social Inclusion	• Lecture • Discussion • Power Point presentation through Projector	60 Mins	Mr. Jayanta Chakraborty, Social Safeguard Expert, PDMC
Environmental Safeguards ➤ Orientation on the basic Safeguard Principles ➤ Project Categorizations ➤ Environmental Safeguard Reports and documentations	• Lecture • Discussion • Power Point presentation through Projector	120 Mins	Dr. Ardhendu Mitra, Environment Safeguard Expert, PDMC

➤ Environmental Safeguard Requirements for project implementation ➤ Different types of reports – IEE, SEMP & SEMR ➤ Good practices of safeguard ➤ Consequence of bad safeguard practices			
Feedback from participants		30 Mins.	All participants
Day Two- 20.12.2023			
Topic: ➤ Municipal Administration and overview of urban scenario in Tripura ➤ ULB governance/administration in Tripura and the role of urban staff in urban development and infrastructure ➤ Discussion follows with participants to share their existing scenario in respective ULBs. ➤ Discussion constitution/statutory obligations with reference to 74th CAA and Tripura Municipal Act, ➤ ULB as organisation, powers and functions of ULB and role of various functionaries ➤ Urban governance reforms – way forward	• Lecture • Discussion • Power Point presentation through Projector	2 Hours	Institutional Expert, PDMC
Finance: ➤ Modalities of project fund disbursement ➤ Project Accounting System	• Lecture • Discussion • Power Point presentation through Projector	2 Hours	Finance Expert, PDMC
➤ Procurement & its principles ➤ Various stages of procurement ➤ Types of procurement ➤ Procurement Methods ➤ Procurement Checklist ➤ Basics of contract management	• Lecture • Discussion • Power Point presentation through Projector	2 Hours	Procurement Expert, PDMC
Feedback from participants		15 Mins	All participants
Valedictory Session		5 Mins.	Official from TUDA

Closing session

After complete all the session by the experts of PDMC, Certificates are distribute to all them participants per procuration Mr. Mihir Kanti Gop , Chief planner TUDA & Project Coordinator PMU, TUDA , ADB project & Dr. Anup Kumar Aditya ,Team Leader , PDMC. And close up the workshop with vote of thanks by means of Mr. Mihir Kanti Gop , Chief planner TUDA & Project Coordinator PMU, TUDA , ADB project.





Attendance Sheet

ORIENTATION WORKSHOP ON SAFEGUARDS, FINANCE, PROCUREMENT & INSTITUTIONAL
ARRANGEMENTS - 2022

PDMC (TUDA)

Venue - Geetanjali State Guest House.

DATE- 19.12.2022

Sl./No	Name	Designation & ULB Name	Sex (Male / Female)	Contact No.	Signature.
1	Ratish Ch. Bisharwar	Jr. Ex, Bishalgarh M.C.	M	8974093128	
2	Subha Droni	Asst. DMC	m	9362122801	
3	Fatuekh Hossain	C.O., BMC	m	7005693783	
4	Prinayjit Bhattacharya	Deputy Comm. Bulana M.C.	M	9485067001	
5	En. Depankar Sharma	J.E., Ambikapur M.C.	M	7005353201	
6	En. Ananta Debnath	J.E., Chauri R.D. Block	F	9974579116	
7	Somali Paul	LDC, Chauri R.D. Block	F	9383133641	
8	Bishal Deb	Account Section	M	8787352526	
9	En. Subrata Chandra	J.E., Mohanpur M.C.	M	9436484762	
10	En. Abhijit Debnath	J.E., Jindania N.P.	M	7005639026	
11	Biswajit Das	Asstt. Manager (Finance), J.P.	M	7005248629	
12	En. Ananta Debnath	Junior Engineer, Ambikapur M.C.	M	9436505127	

Sl./No	Name	Designation & ULB Name	Sex (Male / Female)	Contact No.	Signature.
13	Abhijit Dasgupta	Accounts Secy, Ambikapur M.C.	M	8014477123	
14	En. Swapan Chandra	J.E., Raipur M.C.	M	7005278180	
15	En. Shubhajit Paul	Technical Section, R.M.C.	M	6009576328	
16	En. Gulab Ch. Ghosh	J.E., Kamarpur M.C.	M	9436584433	
17	Parimal Chandra Ghosh	Accountant, Belonia M.C.	M	9822610248	
18	En. Kamalesh Dasgupta	J.E., Belonia M.C.	M	7627966564	
19	Gopendra Biswas	Deputy Comm., Teliamura Municipal Council	M	9436488944	
20	En. Bijay Kumar Dasgupta	J.E., Teliamura Municipal.	M	7005553306	
21	En. Pratikam Saha	J.E., Melaghar Municipal.	M	9774119382	
22	En. Pranjit Dasgupta	J.E., Sonamug Nager, Melaghar	M	8837210671	
23	En. Chandra	Asstt. Comm., Sonamug Nager	M	9612472435	
24	Keshavram Saha	Accounts Incharge, S.N.P.	(M)	9436517198	
25	Ruma Pal Deb	Asstt. Comm. - Charge, S.N.P.	(F)	9485062654	
26	Subrata Deb	J.E., Kailashahar M.C.	(M)	8415861186	
27	Prinay Bhushan Paul	J.E., Kumhar M.C.	M	8837233816	
28	Prabulla Kumar Saha	Asstt. Comm., Asstt. J.C. Kailash M.C.	(M)	9402355912	
29	Raj Kumar Dasgupta	LDC, Cam. Cam.	(M)	8787761715	
30	Ananta Das	J.E. (U.M.C.)	(M)	8259093314	

Sl./No	Name	Designation & ULB Name	Sex (Male / Female)	Contact No.	Signature.
31	Tapan Sarkar	DAW UMC	Male	7629041426	[Signature]
32	Saikat Roy	Actt. Khowai MC	Male	9496514027	[Signature]
33	Subhojit Roy	Actt. DMC	Male	9862122801	[Signature]
34	Prasenjit Deb	Office Assistant (TUDA)	Male	8837341214	[Signature]
35	Mumoni Das	J.E., TUDA	Female	7005282094	[Signature]
36	Sujoy Chakraborty	Social Safeguard (Suby)	Male	9862246728	[Signature]
37	Rita Mandal	Environment Safeguard (Expert)	Female	985749939	[Signature]
38	Pradeep Sanyal	Social Safeguard	Male	8707001669	[Signature]
39	Jayanta Chakraborty	Social Safeguard & Gender Expert	M	8761805667	[Signature]
40	Atanu Chakraborty	Office Assistant, PDMC	M	8787832479	[Signature]
41	Susmita Dasgupta	Socio-Economic Safeguard (TUDA)	F	8132049723	[Signature]
*42	Rupak Deb	CMU (TULM), Panisagar NP	M	8118937105	[Signature]
*43	Prasanta Das	SBM Expert Panisagar NP	M	8131971297	[Signature]

ORIENTATION WORKSHOP ON SAFEGUARDS, FINANCE, PROCUREMENT & INSTITUTIONAL ARRANGEMENTS - 2022

**PDMC (TUDA)
Venue - Geetanjali State Guest House.**

DATE- 20/12/2022

Sl./No	Name	Designation & ULB Name	Sex (Male / Female)	Contact No.	Signature.
1	Prasenjit Chatterjee ✓	Accountant, Ambari MC	M	9485067039	[Signature]
2	Rupak Deb ✓	CMU (TULM) Panisagar NP	M	8118937105	[Signature]
3	Prasanta Das ✓	SBM Expert	M	8131971297	[Signature]
4	Amrita D/Banerjee ✓	J.E., Charidam Block	F	2974579116	[Signature]
5	Somali Paul ✓	LDC, Charidam Block	F	9883133641	[Signature]
6	Uridul Dey ✓	SA, Sabmor Nagar Panchayat	M	9612004652	[Signature]
7	Bishal Deb ✓	Account Section	M	8787352526	[Signature]
8	Dr. Subrata Chatterjee ✓	J.E., Mohanpur MC	M	9438189762	[Signature]
9	Dr. Prasenjit Das ✓	J.E., Amarpur NP	M	9436505127	[Signature]
10	Dr. Swapan Chakraborty ✓	J.E. Rourkela NP	M	7005278180	[Signature]
11	Dr. Shubhajit Paul ✓	Technical Section, RMC	M	6009576328	[Signature]
12	Dr. Bimal Ch. Ghosh ✓	J.E., Karmalpur NP	M	9436582423	[Signature]

Sl./No	Name	Designation & ULB Name	Sex (Male / Female)	Contact No.	Signature.
13	Parimal Chandra Saha ✓	Acctt. Belowe ML	M	9862610248	
14	Abhisit Dasgupta ✓	Account Sec Amarpur M.P.	M	8014437123	
15	Pranab Banerjee ✓	o/r	M	9005583306	
16	Gopendra Biswas ✓	Deputy Secy/Tellama M.C.	M	8887068546	
17	Abhijit Debnath ✓	Junior Engineer JNP	M	7005639006	
18	Srisajit Das ✓	Asstt. Manager/Finance	M	7005243629	
19	Fatekh Hassan ✓	CO, Bishalganj MC	M	7005693783	
20	Subhojit Das ✓	Actt. UMC	M	9862122801	
21	Tapan Sarkar ✓	Acctt. UMC	M	7627041426	
22	Ngay Chakrabarty ✓	Cashier SMC	M	9612472425	
23	Rajkumar Debbarma ✓	Deputy MC Cashier	(M)	8787761715	
24	Amanjit Ban. ✓	J.E. UMC	(M)	8259093214	
25	Subrata Deb ✓	JE, Kailashahar MC.	(M)	815861186	
26	Bijay Kumar Barui ✓	JE, Kuntal MC	(M)	8837233816	
27	Bafulla Kumar Deb ✓	Envier, I/C Accts Sec KSC MC	(M)	9402355912	
28	Ruma Pal Deb ✓	Acctt. in-charge Heli Sec.	(F)	9485062654	
29	Ratheshyam Saha ✓	Acctt. in-charge	(M)	9426517198	
30	Pranjit Barui ✓	J.E. Sonamug Mahan Ranchapet.	(M)	8837210671	
40	Jayanta Chakrabarty	Social Safeguard & Gender Expert	M	8761805667	
41	Atanu Chakrabarty ✓	Office Assistant, PDMC	M	8787832479	
42	Dr. K. Sriyam	Urban Governance IUIDA	M	9440136718	
43	Bilash Bhowmik	FMS, Dept. PDHC, TUSA	M	7830154226	
44	Pavan Parveek	Exec. TUSA-TTCL	M	9314600011	
45	Susmita Bhowmik	Socio Economic Survey - 700 - PDHC	F	8132049780	
46	En. Dipankar Chatterjee ✓	J.E. Ambani	M	7005353201	
47	Er. Kaam Nag ✓	J.E. Belowe	M	7629966569	
48	Er. Rajob Debbarma	J.E. Khawai	M	8416048223	

Appendix 9: Sample Grievance Form

(To be available in Bengali and English)

The _____ Project welcomes complaints, suggestions, queries, and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date	Place of registration	Project Town			
		Project:			
Contact information/personal details					
Name		Gender	Male Female	Age	
Home address					
Place					
Phone no.					
E-mail					
Complaint/suggestion/comment/question Please provide the details (who, what, where, and how) of your grievance below:					
If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of official registering grievance)	
Mode of communication: Note/letter E-mail Verbal/telephonic	
Reviewed by: (Names/positions of officials reviewing grievance)	
Action taken:	
Whether action taken disclosed:	Yes No
Means of disclosure:	

অভিযোগ নিবন্ধন ফর্মের নমুনা

..... প্রকল্পকে বাস্তবায়িত করার লক্ষ্যে অভিযোগ, পরামর্শ, অনুসন্ধান এবং মন্তব্যের জন্য স্বাগত।

আমরা অভিযোগকারীকে অভিযোগ সহ নাম জানাতে উৎসাহিত করি এবং আপনার সাহচর্যে এসে এর শোধন ও প্রতিক্রিয়া জানাতে সক্ষম হই।

অবশ্যই আপনি আপনার ব্যক্তিগত বিষয় বিস্তারিত ভাবে যুক্ত করতে ইচ্ছাপ্রকাশ করবেন। যে তথ্য আপনি দেবেন, তা অবশ্যই গোপন থাকবে। তাই অনুগ্রহ করে আপনার নাম লিখে / টাইপ করে জানান।

তারিখ	নিবন্ধনের জায়গা	প্রকল্পের শহর প্রকল্পঃ			
যোগাযোগের তথ্য / বিস্তারিত ব্যক্তিগত তথ্য					
নাম		লিঙ্গ	পুরুষ মহিলা	বয়স	
বাড়ীর ঠিকানা					
জায়গা / স্থান					
ফোন নং					
ই-মেল					
যেকোন অভিযোগ / পরামর্শ / মন্তব্য / প্রশ্ন অনুগ্রহ করে নিচে বিস্তারিতভাবে (কে, কি, কোথায় এবং কেমন করে) আপনার অভিযোগ জানান					
যদি কোন সংযুক্তি / চিরকুট / চিঠি অন্তর্ভুক্ত করতে চান, অনুগ্রহ করে সেখানে টিক দিন।					
আপনার অভিযোগ / মন্তব্যের হালনাগাদ (আপডেট) বা প্রতিক্রিয়া কিভাবে পেতে চান?					

Office ব্যবহারের জন্যঃ

অভিযোগ নিবন্ধনকারী আধিকারিকের নামঃ	
যোগাযোগ ব্যবস্থাঃ	
চিরকুট / চিঠি-	
ই-মেল-	
মৌখিক / টেলিফোন-	
নিবন্ধকৃত অভিযোগ পর্যালোচনাকারী আধিকারিকের নাম ও পদঃ	
অভিযোগের বিরুদ্ধে গৃহীত ব্যবস্থা-	
গৃহীত ব্যবস্থা প্রকাশ্যে আনা হয়েছে কি না	হ্যাঁ না
প্রকাশের উপায়	

Appendix 10: Guidelines for Workers Camps
(Based on IFC benchmark standards for workers accommodation)

Guidelines for Workers' Accommodation

1. Availability of sufficient number of clean rooms for the workers with adequate facilities of ventilation, Drinking water, Electricity/fan/light (natural and artificial lighting) etc. in each room.
2. Camps should not be subjected to periodic flooding nor located within 200 feet of swamps, pools, sink holes or other surface collections of water. All sites should be graded, ditches and rendered free from depressions in which water may become a nuisance.
3. Accessibility to an adequate and convenient supply of potable water to the workers. Depending upon the climate, weather conditions and accommodation standards, 80 to 180 litres per persons per day water should be available and drinking water should meet the national/WHO drinking water standards.
4. Camp site should be adequately drained to avoid the accumulation of stagnant water.
5. All tanks used for the storage of drinking water should be constructed and covered as to prevent water stored therein from becoming polluted or contaminated.
6. All sites should be adequate in size to prevent overcrowding of necessary structures.
7. Camps should have Crèche facility for children with necessary arrangements.
8. The grounds and open areas surrounding the shelters should be maintained in a clean and sanitary condition free from rubbish, debris, waste papers, garbage or other refuse.
9. Beds, cots, or bunks, and suitable storage facilities such as wall lockers for clothing and personal articles should be provided in every room used for sleeping purposes.
10. A separate bed for each worker should be provided. Double deck bunks are not advisable for the safety and hygiene reasons and their use should be minimized. If they are used there must be enough clear space between the lower and upper bunk of the bed. Standard range is 0.7 to 1.10 meters. Triple deck bunks are prohibited.
11. All heating, cooking, and water heating equipment should be installed in accordance with State and local ordinances, codes, and regulations governing such installations. If a camp is used during cold weather, adequate heating equipment should be provided.
12. If food is provided, it should cater for different cultural needs. Kitchens should be provided with facilities to maintain adequate personal hygiene including a sufficient number of washbasins designated for cleaning hands with clean running water and materials for hygiene drying.
13. All kitchen floors, ceiling and wall surface adjacent to or above food preparation and cooking areas should be built using durable, non-absorbent, easily cleanable, non-toxic materials.
14. No person with any communicable disease shall be employed or permitted to work in the preparation, cooking, serving, or other handling of food, foodstuffs, or materials used therein, in any kitchen or dining room operated in connection with a camp or regularly used by persons living in a camp.
15. There should be recreation facilities for the camp workers i.e. TV/sports/newspaper/magazine etc.
16. There should be facility of mosquito's prevention and control i.e. use of mosquito net/coil/electric repellent/pesticide etc.
17. Sanitary and toilet facilities should be constructed of the materials that are easily cleanable. Standard range of the toilets varies from 1 unit for 6 persons to 15 persons. For urinals, standards are 1 unit for 15 persons.
18. There is no need to provide separate urinals in any place where less than 50 workers are employed or where the latrines are connected to water borne sewage system.

19. Sanitary and toilet facilities should be designed to provide workers with adequate privacy including ceiling to floor partitions and lockable doors.
20. Separate toilet and bathing facilities should be available for Men and women. These facilities shall be distinctly marked "for men" and "for women" by signs printed in English and in the native language of the persons using the facilities, and/or marked with easily understood pictures or symbols.
21. Workers' gender, religious, cultural, and social backgrounds should be respected. Workers should be provided with the possibility of celebrating religious holidays and observances.
22. No pets, birds or livestock should be kept or fed unless approved by management or camp operator.
23. There should be proper arrangement of colour coded dustbins i.e. Green for wet/biodegradable wastes, blue for dry/non-biodegradable waste and red for safe disposal of domestic hazardous waste i.e. sanitary napkins and diapers.
24. There should be adequate facility for waste water management (i.e. septic tanks/soak pits) and for disposal of Municipal solid waste (i.e. composting).
25. The person in charge of managing the accommodations has a specific duty to report to the health authorities the outbreak of any contagious diseases, food poisoning and any other important casualties.
26. Guidance on the detrimental effects of the abuse of alcohol and drugs and other potentially harmful substances and the risk, concerns related to HIV/AIDS and other health risk related activities should be provided to the workers through group/individual orientations and should also be displayed at camps as visual boards.
27. Workers should have easy access to medical facilities and medical staff where possible female doctors/nurses should be available for female workers. Regular health check up should be done for the workers. First-AID Kit/Health care facilities should be available in the camps. There should be proper demarcation/display of First Aid facility and First Aider.
28. A specific fire safety plan should be prepared including training of fire wardens, periodic testing and monitoring of fire safety equipment.
29. All key contacts, emergency contact number, including nearby hospital should be posted in a prominent place and in all languages present e.g. at camp gate and throughout the camp.

Appendix 11: Guidelines for Prevention and Control Of Covid-19

Introduction:

Construction worksite and other workplaces are relatively close settings, with shared spaces like work area, pathways, Worker camp, Site office and material handling area etc. and COVID-19 infection can spread relatively fast among workers, staffs and visitors.

There is a need to prevent spread of infection and to respond in a timely and effective manner in case suspect case of COVID-19 is detected in these settings, so as to limit the spread of infection.

Principles of Worker Protection:

- Consistently practice social distancing.
- Cover coughs and sneezes.
- Maintain hand hygiene.
- Clean surfaces frequently.

Maximum Precaution for Persons/Labourers Reporting To Work:

- IF SICK, STAY HOME!
- IF SICK, GO HOME!
- IF SOMEONE SICK, SEND THEM HOME!

Covid-19 Typical Symptoms:

- Fever
- Cough
- Shortness of Breath
- Sore Throat

Morning and evening temperature screening of all persons at the worksite is done by EHS officer with Infrared Thermometer and register was also maintained.

Self-Attestation by Persons/Labour Prior To Work:

Prior to starting a work, each labour /worker will self-attest to the supervisor and the documents is collected by EHS Officer. It consists the following points,

- No signs of COVID-19 symptoms within the past 24 hours.
- No contact with an individual diagnosed with COVID-19. (contact means living with a positive person, being within 6 ft. of positive person OR sharing things of positive person).
- Not undergone quarantine or isolation (in case of any labourer /worker who has been quarantined or isolated previously, the engagement shall be only after obtaining the requisite clearance from trained and registered medical practitioner). The self-attestation would be verified by EHS officer deployed at site through discussions with laborers /workers and/or preliminary checks such as temperature checks, etc. prior to their engagement at site.
Persons/Labourers showing COVID-19 symptoms or not providing self-attestation will be directed to leave the work site and report to the fever clinic/quarantine Centre immediately. Labour not to return to the work site until cleared by fever clinic/quarantine Centre.

General Guidelines:

- No hand shake is permissible at site, office.
- Non-essential physical work that requires close contact between workers will not be carried out.
- Hand sanitizer is used before entry of the site.
- No unauthorized person will enter the work site other than mentioned by supervisor during start of work.
- All individual work group meetings/ talks will follow social distancing.
- Worksite had COVID-19 safety guidelines.
- All restroom /toilet facilities will be properly cleaned, and hand washing facilities provided with soap, hand sanitizer.
- Water bottle present at site will not be shared.
- Social Distancing will be maintained during breaks and lunch.
- Coughing or sneezing must cover with a personal handkerchief and then wash hands. Coughing or sneezing in hands was avoided.
- Avoid touching eyes, nose, and mouth with hands.
- If family member is feeling ill, stay home.
- Separate disposal bins were placed for collection of used masks/used hand tissues, etc.
- Spitting will be strictly prohibited.
-

Work-Site Prevention Practices:

- At the start of each day, confirmation will be taken from all employees that they are healthy and all workers will be informed about reusable and disposable PPE.
- Outside person(s) will be strictly prohibited at worksite.
- Use of eye protection (reusable safety goggles/face shields) is recommended.
- In work conditions where required **social distancing is impossible** to achieve, such employees will be supplied with appropriate PPE's.
- All employees will drive to work site in a single occupant vehicle.
- Workers will maintain separation of 6 feet from each other wherever possible.
- High contact surfaces will be properly disinfected in order to minimize the spread of germs in the areas that people touch frequently.
- The contactless temperature checks was done for the workers prior to site entrance and after site works to identify persons showing signs of being unwell with the COVID-19 symptoms.

Washing Facility:

- Worksites already have access to toilet and hand washing facility.
- At entrances and exits hand cleaning facilities is provided.
- All onsite workers help to maintain and keep work area clean.

Labour Camp

- follows a zero-tolerance policy on wearing of masks.
- Masks provided to all the persons/labourers for use at the camp site as well as at the worksite.

Toilet Facility

- The number of people using Toilet facility will be limited at any one time.
- Hands washing must be done before and after using the facilities.

Eating/snacks Arrangements

- Dedicated eating areas is marked on camp and workers also instructed to reduce food waste and contamination.
- Hand cleaning facilities or hand sanitizer is available at the entrance of worker dining room.
- Workers seated at a distance of 2 meters apart from each other while eating.
- Drinking water provided with proper cleaning measures and consists of tap mechanism.
- All areas used for eating is thoroughly cleaned at the end of each break and shift.

EHS Officer will ensure compliances with prevention issues at the labour camp.

Training

- All workers get training by EHS officer on above requirements before start of any construction activities.
- During construction period frequent visual and verbal reminders will be given to workers for improving compliance with hand hygiene practices and thus reduce rates of infection.

Emergency Contact

- Emergency contact number(s) at work site and labour camp for reporting COVID-19 symptoms is provided.

COVID-19 Safety Coordinator(s)		
Name	Title/Facility Location	Contact Information (office location, phone, email address)

Sequence of operation performed regarding COVID-19 safety performed at site:-

- Before entering the worksite for the first time the workers must fill and sign the self-declaration form and also submit the vaccination certificate.
- Before starting each day work the workers body temperature is monitored. If workers body temperature was found higher, then he was not allowed to work at site and he will be consult with doctor as per guidelines.
- Along with body temperature measurement workers hand also sanitized with hand sanitizer.
- With face mask workers, supervisors & officials were only allowed at worksite.
- If any situation suffocation problem is arise then the worker is instructed to maintain proper distance from others and work individually.
- During the work wherever possible social distance was maintained. But during construction activities where social distancing is not possible to maintain, there proper PPE's was used.
- During lunch or tiffin time the worker was instructed to clean his hand with hand wash and water.
- Worker camp areas and work location were disinfected time to time.
- Before leaving the worksite the workers body temperatures was again measured and noted on the register.

Appendix 12: IBAT Assessment Checklists of Project Towns

Kailashahar



Integrated Biodiversity Assessment Tool

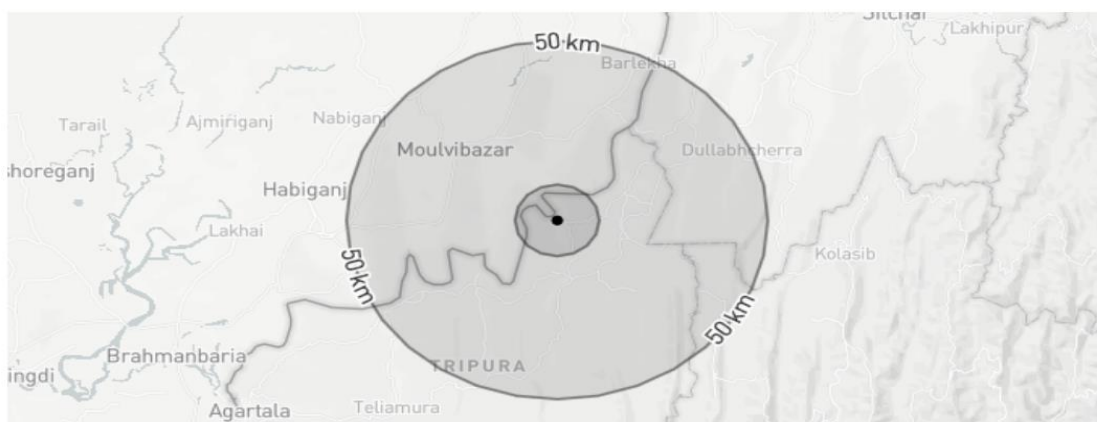
World Bank Group Biodiversity Risk Screen

KAILASHAHAR WATER SUPPLY

- **Country:** India
- **Location:** [24.3, 92]
- **IUCN Red List Biomes:** Marine, Freshwater, Terrestrial
- **Created by:** Govind Rathore

Overlaps with:

Protected Areas	1 km: 0	10 km: 0	50 km: 3	3
World Heritage (WH)	1 km: 0	10 km: 0	50 km: 0	0
Key Biodiversity Areas	1 km: 0	10 km: 1	50 km: 6	7
Alliance for Zero Extinction (AZE)	1 km: 0	10 km: 0	50 km: 0	0
IUCN Red List	40			
Critical Habitat	Likely			



Displaying project location and buffers: 1 km, 10 km, 50 km



This report is based on IFC Performance Standard 6 (PS6) but applies to World Bank Environmental and Social Standard 6 (ESS6)





About this report

The recommendations stated alongside any Protected Areas and Key Biodiversity Areas identified in this report are determined by the following:

Protected Areas:

- 'Highest risk. Seek expert help' is stated if the report identifies a designation that includes either 'natural' or 'mixed world heritage site'.
- 'Assess for Critical Habitat' is stated if the report identifies a Strict Nature Reserve, Wilderness Area or National Park as coded by IUCN protected area categories Ia, Ib and II.
- 'Assess for biodiversity risk' is stated if the report identifies any other type of protected area.

Key Biodiversity Areas:

- 'Highest risk. Seek expert help' is stated if the report identifies an Alliance for Zero Extinction site.
- 'Assess for Critical Habitat' is stated if the report identifies Critically Endangered or Endangered species OR species with restricted ranges OR congregatory species as coded in the IUCN Red List of Threatened Species.
- 'Assess for biodiversity risk' is stated if the report identifies any other type of Key Biodiversity Area.

IBAT provides initial screening for Critical Habitat values. Performance Standard 6 (PS6) defines these values for Critical Habitat (PS6: para. 16) and legally protected and internationally recognized areas (PS6: para. 20). PS6 will be triggered when IFC client activities are located in modified habitats containing "significant biodiversity value," natural habitats, Critical Habitats, legally protected areas, or areas that are internationally recognized for biodiversity. References to PS6 and Guidance Note 6 (GN6) are provided to guide further assessment and detailed definitions where necessary. Please see <https://www.ifc.org/ps6> for full details on PS6 and GN6.

This report identifies restricted range species according to the KBA Standard definition (hyperlink KBA Standard <https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf>):

Species having a global range size less than or equal to the 25th percentile of range-size distribution in a taxonomic group within which all species have been mapped globally, up to a maximum of 50,000 km². If all species in a taxonomic group have not been mapped globally, or if the 25th percentile of range-size distribution for a taxonomic group falls below 10,000 km², restricted range should be defined as having a global range size less than or equal to 10,000 km². For coastal, riverine and other species with linear distributions that do not exceed 200 km width at any point, restricted range is defined as having a global range less than or equal to 500 km linear geographic span (i.e. the distance between occupied locations furthest apart).

Note, sites supporting restricted range species can qualify as KBAs under criterion B2. These are sites that hold a significant proportion of the global population size of multiple restricted-range species, and so contribute significantly to the global persistence of biodiversity at the genetic and species level.

The report screens for known risks within a standard 50km buffer of the coordinates used for analysis. This buffer is not intended to indicate the area of impact. The report can be used to:

- Scope risks to include within an assessment of risks and impacts



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- Identify gaps within an existing assessment of risks and impacts
- Prioritize between sites in a portfolio for further assessment of risks and impacts
- Inform a preliminary determination of Critical Habitat
- Assess the need for engaging a biodiversity specialist
- Identify additional conservation experts or organizations to inform further assessment or planning

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment as described in PS6 and GN6. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

Please note, sensitive species data are currently not included in IBAT reports in line with the [Sensitive Data Access Restrictions Policy for the IUCN Red List](#). This relates to sensitive Threatened species and KBAs triggered by sensitive species.

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Priority Species

Habitat of significant importance to priority species will trigger Critical Habitat status (See PS6: para 16). IBAT provides a preliminary list of priority species that could occur within the 50km buffer. This list is drawn from the IUCN Red List of Threatened Species (IUCN RL). This list should be used to guide any further assessment, with the aim of confirming known or likely occurrence of these species within the project area. It is also possible that further assessment may confirm occurrence of additional priority species not listed here. It is strongly encouraged that any new species information collected by the project be shared with species experts and/or IUCN wherever possible in order to improve IUCN datasets.

IUCN Red List of Threatened Species - CR & EN

The following species are potentially found within 50km of the area of interest.
For the full IUCN Red List please refer to the associated csv in the report folder.

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Nilssonina nigricans</i>	Black Softshell Turtle	REPTILIA	CR	Decreasing	Terrestrial, Freshwater
<i>Indotestudo elongata</i>	Elongated Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Pangshura sylhetensis</i>	Assam Roofed Turtle	REPTILIA	CR	Decreasing	Terrestrial, Freshwater
<i>Manis pentadactyla</i>	Chinese Pangolin	MAMMALIA	CR	Decreasing	Terrestrial
<i>Manouria emys</i>	Asian Giant Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Aythya baeri</i>	Baer's Pochard	AVES	CR	Decreasing	Freshwater
<i>Houbaropsis bengalensis</i>	Bengal Florican	AVES	CR	Decreasing	Terrestrial
<i>Gyps bengalensis</i>	White-rumped Vulture	AVES	CR	Decreasing	Terrestrial



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Sarcogyps calvus</i>	Red-headed Vulture	AVES	CR	Decreasing	Terrestrial
<i>Ardea insignis</i>	White-bellied Heron	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Emberiza aureola</i>	Yellow-breasted Bunting	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Gyps tenuirostris</i>	Slender-billed Vulture	AVES	CR	Decreasing	Terrestrial
<i>Pelochelys cantorii</i>	Asian Giant Softshell Turtle	REPTILIA	CR	Decreasing	Terrestrial, Marine, Freshwater
<i>Cyrtodactylus montanus</i>		REPTILIA	CR	Unknown	Terrestrial
<i>Cuon alpinus</i>	Dhole	MAMMALIA	EN	Decreasing	Terrestrial
<i>Cuora amboinensis</i>	Southeast Asian Box Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Elephas maximus</i>	Asian Elephant	MAMMALIA	EN	Decreasing	Terrestrial
<i>Geoclemys hamiltonii</i>	Spotted Pond Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Hardella thurjii</i>	Crowned River Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Morenia petersi</i>	Indian Eyed Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Panthera tigris</i>	Tiger	MAMMALIA	EN	Decreasing	Terrestrial



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Varanus flavescens</i>	Yellow Monitor	REPTILIA	EN	Decreasing	Terrestrial
<i>Nilssoniana gangetica</i>	Indian Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Nilssoniana hurum</i>	Indian Peacock Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Nycticebus bengalensis</i>	Bengal Slow Loris	MAMMALIA	EN	Decreasing	Terrestrial
<i>Hoolock hoolock</i>	Western Hoolock Gibbon	MAMMALIA	EN	Decreasing	Terrestrial
<i>Platanista gangetica</i>	Ganges River Dolphin	MAMMALIA	EN	Decreasing	Freshwater
<i>Axis porcinus</i>	Hog Deer	MAMMALIA	EN	Decreasing	Terrestrial, Freshwater
<i>Trachypithecus phayrei</i> ssp. <i>phayrei</i>		MAMMALIA	EN	Decreasing	Terrestrial
<i>Cuora mouhotii</i>	Keeled Box Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Urogymnus polylepis</i>	Giant Freshwater Whipray	CHONDRICHTHYES	EN	Decreasing	Marine, Freshwater
<i>Perdicula manipurensis</i>	Manipur Bush-quail	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Sterna acuticauda</i>	Black-bellied Tern	AVES	EN	Decreasing	Terrestrial, Freshwater



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Haliaeetus leucoryphus	Pallas's Fish-eagle	AVES	EN	Decreasing	Terrestrial, Freshwater
Aquila nipalensis	Steppe Eagle	AVES	EN	Decreasing	Terrestrial
Leptoptilos dubius	Greater Adjutant	AVES	EN	Decreasing	Terrestrial, Freshwater
Laticilla cinerascens	Swamp Grass-babbler	AVES	EN	Decreasing	Terrestrial, Freshwater
Tor putitora		ACTINOPTERYGII	EN	Decreasing	Freshwater
Trachypithecus phayrei	Phayre's Leaf-monkey	MAMMALIA	EN	Decreasing	Terrestrial
Trachypithecus pileatus ssp. pileatus	Blond-bellied Langur	MAMMALIA	EN	Decreasing	Terrestrial

Restricted Range Species

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Pterorana khare	Indian Flying Frog	AMPHIBIA	LC OR LR/LC	Decreasing	Terrestrial, Freshwater
Bengala elanga	Bengala Barb	ACTINOPTERYGII	LC OR LR/LC	Unknown	Freshwater
Hemibagrus menoda		ACTINOPTERYGII	LC OR LR/LC	Unknown	Freshwater
Xenentodon cancila		ACTINOPTERYGII	LC OR LR/LC	Unknown	Freshwater



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Batasio batasio		ACTINOPTERYGII	LC OR LR/LC	Unknown	Freshwater
Psilorhynchus homaloptera	Homaloptera minnow	ACTINOPTERYGII	LC OR LR/LC	Unknown	Freshwater
Oreichthys cosuatis		ACTINOPTERYGII	LC OR LR/LC	Unknown	Freshwater
Oryzias dancena	Indian Ricefish	ACTINOPTERYGII	LC OR LR/LC	Stable	Marine, Freshwater
Pseudosphromenus cupanus	Spiketail Paradise Fish	ACTINOPTERYGII	LC OR LR/LC	Stable	Freshwater
Oryzias carnaticus	Spotted Ricefish	ACTINOPTERYGII	LC OR LR/LC	Unknown	Marine, Freshwater
Macrobrachium scabriculum		MALACOSTRACA	LC OR LR/LC	Unknown	Freshwater
Macrobrachium rude		MALACOSTRACA	LC OR LR/LC	Unknown	Freshwater
Macrobrachium rosenbergii	Giant River Prawn	MALACOSTRACA	LC OR LR/LC	Unknown	Freshwater
Acrocephalus orinus	Large-billed Reed-warbler	AVES	LC OR LR/LC	Unknown	Terrestrial, Freshwater
Pila olea		GASTROPODA	DD	Unknown	Freshwater
Lymnaea horae		GASTROPODA	DD	Unknown	Freshwater
Parreysia corbis		BIVALVIA	DD	Unknown	Freshwater
Parreysia annandalei		BIVALVIA	DD	Unknown	Freshwater



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Psilorhynchus amlicephalus		ACTINOPTERYGII	DD	Unknown	Freshwater
Pseudolaguia virgulata		ACTINOPTERYGII	DD	Unknown	Freshwater



Biodiversity features which are likely to trigger Critical Habitat

Protected Areas

The following protected areas are found within 1 km and 10 km and 50 km of the area of interest.

For further details please refer to the associated csv file in the report folder.

Area name	Distance	IUCN Category	Status	Designation	Recommendation
Barshijora Eco-Park	50 km	Not Reported	Proposed	Eco Park	Assess for biodiversity risk
Lawachara	50 km	II	Designated	National Park	Assess for critical habitat
Rema Kalenga	50 km	II	Designated	Wildlife Sanctuary	Assess for critical habitat

Key Biodiversity Areas

The following key biodiversity areas are found within 1 km and 10 km and 50 km of the area of interest.

For further details please refer to the associated csv file in the report folder.

Area name	Distance	IBA	AZE	Recommendation
Rajkandi Reserved Forest	10 km	Yes	No	Assess for biodiversity risk
Hail Haor	50 km	Yes	No	Assess for critical habitat
Hakaluki Haor	50 km	Yes	No	Assess for critical habitat
Innerline (West) and Katakhal Reserve Forests	50 km	Yes	No	Assess for critical habitat



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Area name	Distance	IBA	AZE	Recommendation
Innerline, Katakai and Barak Reserve Forests	50 km	No	No	Assess for critical habitat
Lawachara / West Bhanugach Reserved Forest	50 km	Yes	No	Assess for critical habitat
Rema-Kalenga Wildlife Sanctuary	50 km	Yes	No	Assess for biodiversity risk

Species with potential to occur

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
REPTILIA	111	22	6	8	8	3	85	1
MAMMALIA	107	27	1	10	16	8	71	1
AVES	430	27	7	6	14	22	381	0
CHONDRICHTHYES	1	1	0	1	0	0	0	0
ACTINOPTERYGII	73	4	0	1	3	5	60	4
LILIOPSIDA	64	2	0	0	2	0	60	2
MAGNOLIOPSIDA	105	3	0	0	3	1	96	5
MALACOSTRACA	22	0	0	0	0	2	13	7
INSECTA	106	0	0	0	0	1	105	0
GASTROPODA	64	0	0	0	0	0	55	9



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Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
AMPHIBIA	29	0	0	0	0	0	29	0
BIVALVIA	42	0	0	0	0	0	36	6
POLYPODIOPSIDA	3	0	0	0	0	0	3	0
ARACHNIDA	3	0	0	0	0	0	3	0



Recommended citation

IBAT PS6 & ESS6 Report. Generated under licence 30102-38077 from the Integrated Biodiversity Assessment Tool on 23 December 2022 (GMT). www.ibat-alliance.org

Recommended Experts and Organizations

For projects located in Critical Habitat, clients must ensure that external experts with regional expertise are involved in further assessment (GN6: GN22). Clients are encouraged to develop partnerships with recognized and credible conservation organizations and/or academic institutes, especially with respect to potential developments in natural or Critical Habitat (GN6: GN23). Where Critical Habitats are triggered by priority species, species specialists must be involved. IBAT provides data originally collected by a large network of national partners, while species information is sourced via the IUCN Red List and affiliated Species Specialist Groups. These experts and organizations are listed below. **Please note that this is not intended as a comprehensive list of organizations and experts. These organizations and experts are under no obligation to support any further assessment and do so entirely at their discretion and under their terms. Any views expressed or recommendations made by these stakeholders should not be attributed to the IFC or IBAT for IFC partners.**

Birdlife Partners

URL: <https://www.birdlife.org/worldwide/partnership/birdlife-partners>

Directory for Species Survival Commission (SSC) Specialist Groups and Red List Authorities

URL: <https://www.iucn.org/commissions/ssc-groups>

Kumarghat

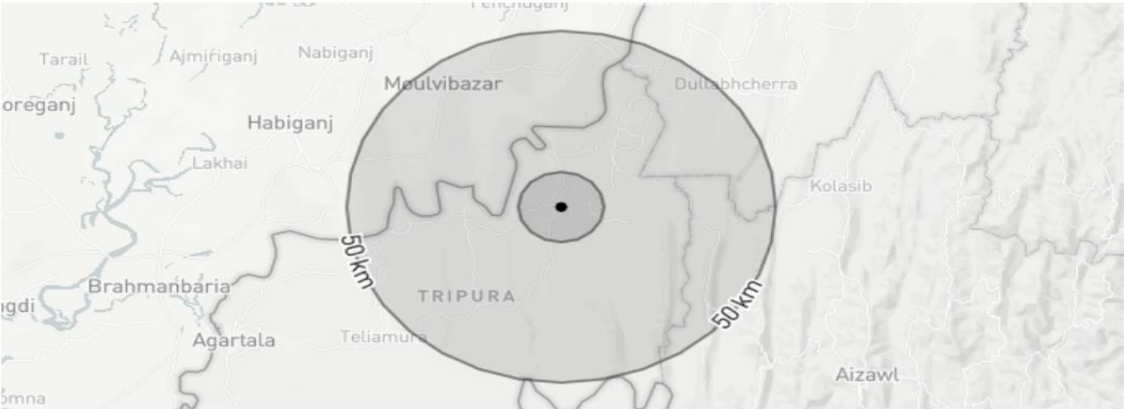


Integrated Biodiversity Assessment Tool
World Bank Group Biodiversity Risk Screen
KUMARGHAT ROADS AND DRAIN PROJECT

- Country: India
- Location: [24.2, 92]
- IUCN Red List Biomes: Marine, Freshwater, Terrestrial
- Created by: Govind Rathore

Overlaps with:

Protected Areas	1 km: 0	10 km: 0	50 km: 4	4
World Heritage (WH)	1 km: 0	10 km: 0	50 km: 0	0
Key Biodiversity Areas	1 km: 0	10 km: 0	50 km: 8	8
Alliance for Zero Extinction (AZE)	1 km: 0	10 km: 0	50 km: 0	0
IUCN Red List	39			
Critical Habitat	Likely			



Displaying project location and buffers: 1 km, 10 km, 50 km



This report is based on IFC Performance Standard 6 (PS6) but applies to World Bank Environmental and Social Standard 6 (ESS6)





About this report

The recommendations stated alongside any Protected Areas and Key Biodiversity Areas identified in this report are determined by the following:

Protected Areas:

- 'Highest risk. Seek expert help' is stated if the report identifies a designation that includes either 'natural' or 'mixed world heritage site'.
- 'Assess for Critical Habitat' is stated if the report identifies a Strict Nature Reserve, Wilderness Area or National Park as coded by IUCN protected area categories Ia, Ib and II.
- 'Assess for biodiversity risk' is stated if the report identifies any other type of protected area.

Key Biodiversity Areas:

- 'Highest risk. Seek expert help' is stated if the report identifies an Alliance for Zero Extinction site.
- 'Assess for Critical Habitat' is stated if the report identifies Critically Endangered or Endangered species OR species with restricted ranges OR congregatory species as coded in the IUCN Red List of Threatened Species.
- 'Assess for biodiversity risk' is stated if the report identifies any other type of Key Biodiversity Area.

IBAT provides initial screening for Critical Habitat values. Performance Standard 6 (PS6) defines these values for Critical Habitat (PS6: para. 16) and legally protected and internationally recognized areas (PS6: para. 20). PS6 will be triggered when IFC client activities are located in modified habitats containing "significant biodiversity value," natural habitats, Critical Habitats, legally protected areas, or areas that are internationally recognized for biodiversity. References to PS6 and Guidance Note 6 (GN6) are provided to guide further assessment and detailed definitions where necessary. Please see <https://www.ifc.org/ps6> for full details on PS6 and GN6.

This report identifies restricted range species according to the KBA Standard definition (hyperlink KBA Standard <https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf>):

Species having a global range size less than or equal to the 25th percentile of range-size distribution in a taxonomic group within which all species have been mapped globally, up to a maximum of 50,000 km². If all species in a taxonomic group have not been mapped globally, or if the 25th percentile of range-size distribution for a taxonomic group falls below 10,000 km², restricted range should be defined as having a global range size less than or equal to 10,000 km². For coastal, riverine and other species with linear distributions that do not exceed 200 km width at any point, restricted range is defined as having a global range less than or equal to 500 km linear geographic span (i.e. the distance between occupied locations furthest apart).

Note, sites supporting restricted range species can qualify as KBAs under criterion B2. These are sites that hold a significant proportion of the global population size of multiple restricted-range species, and so contribute significantly to the global persistence of biodiversity at the genetic and species level.

The report screens for known risks within a standard 50km buffer of the coordinates used for analysis. This buffer is not intended to indicate the area of impact. The report can be used to:

- Scope risks to include within an assessment of risks and impacts



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- Identify gaps within an existing assessment of risks and impacts
- Prioritize between sites in a portfolio for further assessment of risks and impacts
- Inform a preliminary determination of Critical Habitat
- Assess the need for engaging a biodiversity specialist
- Identify additional conservation experts or organizations to inform further assessment or planning

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment as described in PS6 and GN6. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

Please note, sensitive species data are currently not included in IBAT reports in line with the [Sensitive Data Access Restrictions Policy for the IUCN Red List](#). This relates to sensitive Threatened species and KBAs triggered by sensitive species.

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Macrobrachium rude		MALACOSTRACA	LC OR LR/LC	Unknown	Freshwater
Macrobrachium rosenbergii	Giant River Prawn	MALACOSTRACA	LC OR LR/LC	Unknown	Freshwater
Acrocephalus orinus	Large-billed Reed-warbler	AVES	LC OR LR/LC	Unknown	Terrestrial, Freshwater
Pila olea		GASTROPODA	DD	Unknown	Freshwater
Lymnaea horae		GASTROPODA	DD	Unknown	Freshwater
Parreysia corbis		BIVALVIA	DD	Unknown	Freshwater
Parreysia annandalei		BIVALVIA	DD	Unknown	Freshwater
Badis chittagongis		ACTINOPTERYGII	DD	Unknown	Freshwater



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Psilorhynchus amplicephalus		ACTINOPTERYGII	DD	Unknown	Freshwater
Pseudolaguvia virgulata		ACTINOPTERYGII	DD	Unknown	Freshwater



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Biodiversity features which are likely to trigger Critical Habitat

Protected Areas

The following protected areas are found within 1 km and 10 km and 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance	IUCN Category	Status	Designation	Recommendation
Barshijora Eco-Park	50 km	Not Reported	Proposed	Eco Park	Assess for biodiversity risk
Lawachara	50 km	II	Designated	National Park	Assess for critical habitat
Pablakhali	50 km	II	Designated	Wildlife Sanctuary	Assess for critical habitat
Rema Kalenga	50 km	II	Designated	Wildlife Sanctuary	Assess for critical habitat

Key Biodiversity Areas

The following key biodiversity areas are found within 1 km and 10 km and 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance	IBA	AZE	Recommendation
Gumti Wildlife Sanctuary	50 km	Yes	No	Assess for critical habitat
Hail Haor	50 km	Yes	No	Assess for critical habitat
Hakaluki Haor	50 km	Yes	No	Assess for critical habitat



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Area name	Distance	IBA	AZE	Recommendation
Innerline (West) and Katakhal Reserve Forests	50 km	Yes	No	Assess for critical habitat
Innerline, Katakhal and Barak Reserve Forests	50 km	No	No	Assess for critical habitat
Lawachara / West Bhanugach Reserved Forest	50 km	Yes	No	Assess for critical habitat
Rajkandi Reserved Forest	50 km	Yes	No	Assess for biodiversity risk
Rema-Kalenga Wildlife Sanctuary	50 km	Yes	No	Assess for biodiversity risk

Species with potential to occur

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
REPTILIA	110	21	6	7	8	4	84	1
MAMMALIA	106	27	1	10	16	7	72	0
AVES	442	25	6	6	13	21	396	0
ACTINOPTERYGII	85	5	0	2	3	5	68	7
CHONDRICHTHYES	1	1	0	1	0	0	0	0
LILIOPSIDA	63	2	0	0	2	0	59	2
MAGNOLIOPSIDA	68	1	0	0	1	1	61	5



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Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
MALACOSTRACA	24	0	0	0	0	2	14	8
INSECTA	106	0	0	0	0	1	105	0
GASTROPODA	64	0	0	0	0	0	55	9
AMPHIBIA	30	0	0	0	0	0	30	0
BIVALVIA	44	0	0	0	0	0	38	6
POLYPODIOPSIDA	3	0	0	0	0	0	3	0
ARACHNIDA	3	0	0	0	0	0	3	0



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Recommended citation

IBAT PS6 & ESS6 Report. Generated under licence 30102-38078 from the Integrated Biodiversity Assessment Tool on 23 December 2022 (GMT). www.ibat-alliance.org

Recommended Experts and Organizations

For projects located in Critical Habitat, clients must ensure that external experts with regional expertise are involved in further assessment (GN6: GN22). Clients are encouraged to develop partnerships with recognized and credible conservation organizations and/or academic institutes, especially with respect to potential developments in natural or Critical Habitat (GN6: GN23). Where Critical Habitats are triggered by priority species, species specialists must be involved. IBAT provides data originally collected by a large network of national partners, while species information is sourced via the IUCN Red List and affiliated Species Specialist Groups. These experts and organizations are listed below. **Please note that this is not intended as a comprehensive list of organizations and experts. These organizations and experts are under no obligation to support any further assessment and do so entirely at their discretion and under their terms. Any views expressed or recommendations made by these stakeholders should not be attributed to the IFC or IBAT for IFC partners.**

Birdlife Partners

URL: <https://www.birdlife.org/worldwide/partnership/birdlife-partners>

Directory for Species Survival Commission (SSC) Specialist Groups and Red List Authorities

URL: <https://www.iucn.org/commissions/ssc-groups>

Dharamanagar

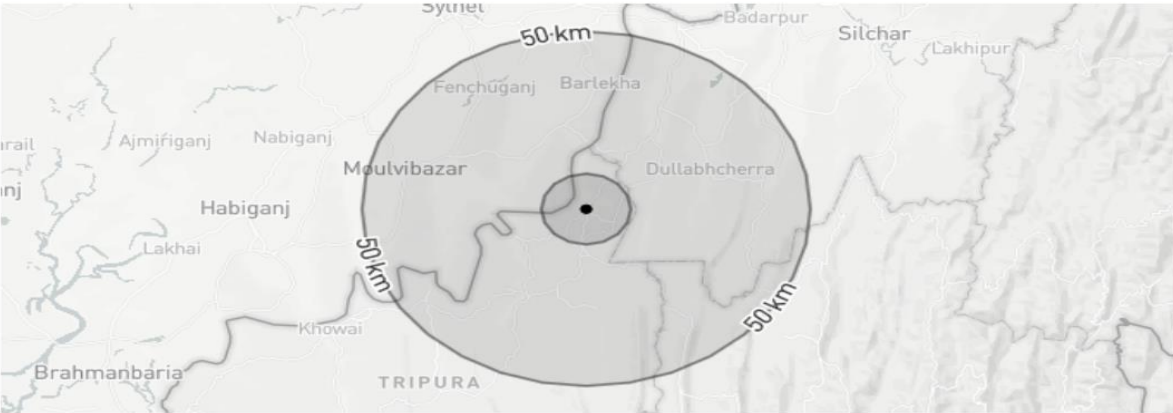


Integrated Biodiversity Assessment Tool
PROXIMITY REPORT
DHARMANAGAR SUB PROJECTS

Country: India
Location: [24.4, 92.2]
Date of analysis: 12 January 2023 (GMT)
Buffers applied: 1 km | 10 km | 50 km
IUCN Red List Biomes: Marine, Freshwater, Terrestrial
Generated by: Govind Rathore
Organisation: ADB

Overlaps with:

Protected Areas	2
Key Biodiversity Areas	8
IUCN Red List	82



Displaying project location and buffers: 1 km, 10 km, 50 km



About this report

This report presents the results of [30102-38584] proximity analysis to identify the biodiversity features and species which are located within the following buffers: 1 km, 10 km, 50 km.

This report is one part of a package generated by IBAT on 12 January 2023 (GMT) that includes full list of all species, protected areas, Key Biodiversity Areas in CSV format, maps showing the area of interest in relation to these features, and a 'How to read IBAT reports' document.

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

Please note, sensitive species data are currently not included in IBAT reports in line with the [Sensitive Data Access Restrictions Policy for the IUCN Red List](#). This relates to sensitive Threatened species and KBAs triggered by sensitive species.

Data used to generate this report

- UNEP-WCMC and IUCN, 2023. Protected Planet: The World Database on Protected Areas (WDPA)[On-line], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net - January 2023.
- BirdLife International (on behalf of the KBA Partnership), 2022. Key Biodiversity Areas - November 2022.
- IUCN, 2022. IUCN Red List of Threatened Species - December 2022.
- IUCN. The IUCN Red List of Threatened Species. Version 2019-3. (2019). <https://www.iucnredlist.org>
- IUCN. Threats Classification Scheme (Version 3.2). (2019)
- Strassburg, B.B.N., Iribarrem, A., Beyer, H.L. et al. Global priority areas for ecosystem restoration. Nature 586, 724–729 (2020). <https://doi.org/10.1038/s41586-020-2784-9>



Protected Areas

The following protected areas are found within 1 km, 10 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Within buffer of
Barshijora Eco-Park	50 km
Lawachara	50 km

Key Biodiversity Areas

The following key biodiversity areas are found within 1 km, 10 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance
Bauwwa Beel	50 km
Hail Haor	50 km
Hakaluki Haor	50 km
Innerline (West) and Katakhal Reserve Forests	50 km
Innerline, Katakhal and Barak Reserve Forests	50 km
Lawachara / West Bhanugach Reserved Forest	50 km
Rajkandi Reserved Forest	50 km
Son Beel	50 km

IUCN Red List of Threatened Species

The following threatened species are potentially found within 50km of the area of interest.





For the full IUCN Red List please refer to the associated csv in the report folder.

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Nilssonia nigricans</i>	Black Softshell Turtle	REPTILIA	CR	Decreasing	Terrestrial, Freshwater
<i>Indotestudo elongata</i>	Elongated Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Pangshura sylhetensis</i>	Assam Roofed Turtle	REPTILIA	CR	Decreasing	Terrestrial, Freshwater
<i>Manis pentadactyla</i>	Chinese Pangolin	MAMMALIA	CR	Decreasing	Terrestrial
<i>Manouria emys</i>	Asian Giant Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Aythya baeri</i>	Baer's Pochard	AVES	CR	Decreasing	Freshwater
<i>Houbaropsis bengalensis</i>	Bengal Florican	AVES	CR	Decreasing	Terrestrial
<i>Gyps bengalensis</i>	White-rumped Vulture	AVES	CR	Decreasing	Terrestrial
<i>Sarcogyps calvus</i>	Red-headed Vulture	AVES	CR	Decreasing	Terrestrial
<i>Ardea insignis</i>	White-bellied Heron	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Emberiza aureola</i>	Yellow-breasted Bunting	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Gyps tenuirostris</i>	Slender-billed Vulture	AVES	CR	Decreasing	Terrestrial



Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Cyrtodactylus montanus		REPTILIA	CR	Unknown	Terrestrial
Cuon alpinus	Dhole	MAMMALIA	EN	Decreasing	Terrestrial
Cuora amboinensis	Southeast Asian Box Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Elephas maximus	Asian Elephant	MAMMALIA	EN	Decreasing	Terrestrial
Hardella thurjii	Crowned River Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Morenia petersi	Indian Eyed Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Panthera tigris	Tiger	MAMMALIA	EN	Decreasing	Terrestrial
Varanus flavescens	Yellow Monitor	REPTILIA	EN	Decreasing	Terrestrial
Nilssonsonia gangetica	Indian Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Nilssonsonia hurum	Indian Peacock Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Nycticebus bengalensis	Bengal Slow Loris	MAMMALIA	EN	Decreasing	Terrestrial
Hoolock hoolock	Western Hoolock Gibbon	MAMMALIA	EN	Decreasing	Terrestrial
Platanista gangetica	Ganges River Dolphin	MAMMALIA	EN	Decreasing	Freshwater



Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Axis porcinus</i>	Hog Deer	MAMMALIA	EN	Decreasing	Terrestrial, Freshwater
<i>Trachypithecus phayrei</i> ssp. <i>phayrei</i>		MAMMALIA	EN	Decreasing	Terrestrial
<i>Cuora mouhotii</i>	Keeled Box Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Perdica manipurens</i>	Manipur Bush-quail	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Sterna acuticauda</i>	Black-bellied Tern	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Haliaeetus leucoryphus</i>	Pallas's Fish-eagle	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Aquila nipalensis</i>	Steppe Eagle	AVES	EN	Decreasing	Terrestrial
<i>Leptoptilos dubius</i>	Greater Adjutant	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Laticilla cinerascens</i>	Swamp Grass-babbler	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Tor putitora</i>		ACTINOPTERYGII	EN	Decreasing	Freshwater
<i>Trachypithecus phayrei</i>	Phayre's Leaf-monkey	MAMMALIA	EN	Decreasing	Terrestrial
<i>Trachypithecus pileatus</i> ssp. <i>pileatus</i>	Blond-bellied Langur	MAMMALIA	EN	Decreasing	Terrestrial
<i>Crocodylus palustris</i>	Mugger	REPTILIA	VU	Stable	Terrestrial, Freshwater



Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Helarctos malayanus</i>	Sun Bear	MAMMALIA	VU	Decreasing	Terrestrial
<i>Lutrogale perspicillata</i>	Smooth-coated Otter	MAMMALIA	VU	Decreasing	Terrestrial, Marine, Freshwater
<i>Macaca arctoides</i>	Stump-tailed Macaque	MAMMALIA	VU	Decreasing	Terrestrial
<i>Neofelis nebulosa</i>	Clouded Leopard	MAMMALIA	VU	Decreasing	Terrestrial
<i>Panthera pardus</i>	Leopard	MAMMALIA	VU	Decreasing	Terrestrial
<i>Prionailurus viverrinus</i>	Fishing Cat	MAMMALIA	VU	Decreasing	Terrestrial, Freshwater
<i>Rhinoceros unicornis</i>	Greater One-horned Rhino	MAMMALIA	VU	Increasing	Terrestrial, Freshwater
<i>Trachypithecus pileatus</i>	Capped Langur	MAMMALIA	VU	Decreasing	Terrestrial
<i>Ursus thibetanus</i>	Asiatic Black Bear	MAMMALIA	VU	Decreasing	Terrestrial
<i>Macaca leonina</i>	Northern Pig-tailed Macaque	MAMMALIA	VU	Decreasing	Terrestrial
<i>Arctictis binturong</i>	Binturong	MAMMALIA	VU	Decreasing	Terrestrial
<i>Rusa unicolor</i>	Sambar	MAMMALIA	VU	Decreasing	Terrestrial
<i>Aonyx cinereus</i>	Asian Small-clawed Otter	MAMMALIA	VU	Decreasing	Terrestrial, Marine, Freshwater



Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Pangshura tecta	Indian Roofed Turtle	REPTILIA	VU	Decreasing	Terrestrial, Freshwater
Liotelphusa quadrata		MALACOSTRACA	VU	Unknown	Freshwater
Wallago attu		ACTINOPTERYGII	VU	Decreasing	Freshwater
Ophiophagus hannah	King Cobra	REPTILIA	VU	Decreasing	Terrestrial
Elaphe taeniura	Cave Racer	REPTILIA	VU	Decreasing	Terrestrial
Python bivittatus	Burmese Python	REPTILIA	VU	Decreasing	Terrestrial
Ortygornis gularis	Swamp Francolin	AVES	VU	Decreasing	Terrestrial, Freshwater
Aythya ferina	Common Pochard	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Mulleripicus pulverulentus	Great Slaty Woodpecker	AVES	VU	Decreasing	Terrestrial
Buceros bicornis	Great Hornbill	AVES	VU	Decreasing	Terrestrial
Aceros nipalensis	Rufous-necked Hornbill	AVES	VU	Decreasing	Terrestrial
Rhyticeros undulatus	Wreathed Hornbill	AVES	VU	Decreasing	Terrestrial
Columba punicea	Pale-capped Pigeon	AVES	VU	Decreasing	Terrestrial



Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Gallinago nemoricola	Wood Snipe	AVES	VU	Decreasing	Terrestrial, Freshwater
Sterna aurantia	River Tern	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Clanga clanga	Greater Spotted Eagle	AVES	VU	Decreasing	Terrestrial, Freshwater
Leptoptilos javanicus	Lesser Adjutant	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Turdus feae	Grey-sided Thrush	AVES	VU	Decreasing	Terrestrial
Pellorneum palustre	Marsh Babbler	AVES	VU	Decreasing	Terrestrial
Clanga hastata	Indian Spotted Eagle	AVES	VU	Decreasing	Terrestrial
Arctonyx collaris	Greater Hog Badger	MAMMALIA	VU	Decreasing	Terrestrial
Tropidophorus assamensis	North-Eastern Waterskink	REPTILIA	VU	Unknown	Terrestrial, Freshwater
Oryza malampuzhaensis		LILIOPSIDA	VU	Decreasing	Terrestrial
Lissemys punctata	Indian Flapshell Turtle	REPTILIA	VU	Decreasing	Terrestrial, Freshwater
Xenochrophis cerasogaster	Painted Keelback	REPTILIA	VU	Decreasing	Freshwater



Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Schizothorax plagiostomus	Snow Trout	ACTINOPTERYGII	VU	Decreasing	Freshwater
Capricornis sumatraensis	Mainland Serow	MAMMALIA	VU	Decreasing	Terrestrial
Hoolock hoolock ssp. hoolock	Western Hoolock Gibbon	MAMMALIA	VU	Decreasing	Terrestrial
Paris polyphylla	Love Apple	LILIOPSIDA	VU	Decreasing	Terrestrial
Dalbergia thomsonii		MAGNOLIOPSIDA	VU	Unknown	Terrestrial
Bagarius bagarius		ACTINOPTERYGII	VU	Decreasing	Freshwater



Recommended citation

IBAT Proximity Report. Generated under licence 30102-38584 from the Integrated Biodiversity Assessment Tool on 12 January 2023 (GMT). www.ibat-alliance.org

How to use this report

This report provides an indication of the potential biodiversity-related features - protected areas, key biodiversity areas and species - close to the specified location. It provides an early indication of potential biodiversity concerns, and can provide valuable guidance in making decisions. For example, this information can be helpful when assessing the potential environmental risk and impact of a site, categorising investments/projects, preparing the terms of reference for an impact assessment, focusing attention on key species of conservation concern and sites of known conservation value, and reviewing the results of an impact assessment.

The report does not provide details of potential indirect, downstream or cumulative impacts. Furthermore, the report should be regarded as a "first-step", providing a set of conservation values sourced from global data sets, and is not a substitute for further investigation and due diligence, especially concerning national and/or local conservation priorities.

Ambassa

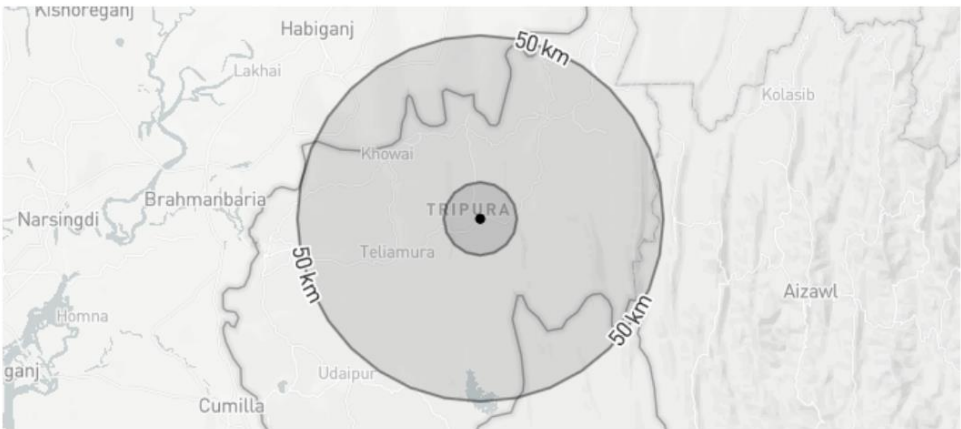


Integrated Biodiversity Assessment Tool
PROXIMITY REPORT
AMBASSA PROJECTS

Country: India
Location: [23.9, 91.8]
Date of analysis: 12 January 2023 (GMT)
Buffers applied: 1 km | 10 km | 50 km
IUCN Red List Biomes: Marine, Freshwater, Terrestrial
Generated by: Govind Rathore
Organisation: ADB

Overlaps with:

Protected Areas	4
Key Biodiversity Areas	5
IUCN Red List	80



Displaying project location and buffers: 1 km, 10 km, 50 km



About this report

This report presents the results of [30102-38577] proximity analysis to identify the biodiversity features and species which are located within the following buffers: 1 km, 10 km, 50 km.

This report is one part of a package generated by IBAT on 12 January 2023 (GMT) that includes full list of all species, protected areas, Key Biodiversity Areas in CSV format, maps showing the area of interest in relation to these features, and a 'How to read IBAT reports' document.

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

Please note, sensitive species data are currently not included in IBAT reports in line with the [Sensitive Data Access Restrictions Policy for the IUCN Red List](#). This relates to sensitive Threatened species and KBAs triggered by sensitive species.

Data used to generate this report

- UNEP-WCMC and IUCN, 2023. Protected Planet: The World Database on Protected Areas (WDPA)[On-line], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net - January 2023.
- BirdLife International (on behalf of the KBA Partnership), 2022. Key Biodiversity Areas - November 2022.
- IUCN, 2022. IUCN Red List of Threatened Species - December 2022.
- IUCN. The IUCN Red List of Threatened Species. Version 2019-3. (2019). <https://www.iucnredlist.org>
- IUCN. Threats Classification Scheme (Version 3.2). (2019)
- Strassburg, B.B.N., Iribarrem, A., Beyer, H.L. et al. Global priority areas for ecosystem restoration. Nature 586, 724–729 (2020). <https://doi.org/10.1038/s41586-020-2784-9>



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Protected Areas

The following protected areas are found within 1 km, 10 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Within buffer of
Lawachara	50 km
Pablakhali	50 km
Rema Kalenga	50 km
Satchari	50 km

Key Biodiversity Areas

The following key biodiversity areas are found within 1 km, 10 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance
Gumti Wildlife Sanctuary	50 km
Hail Haor	50 km
Lawachara / West Bhanugach Reserved Forest	50 km
Rajkandi Reserved Forest	50 km
Rema-Kalenga Wildlife Sanctuary	50 km

IUCN Red List of Threatened Species

The following threatened species are potentially found within 50km of the area of interest.

For the full IUCN Red List please refer to the associated csv in the report folder.



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Nilssononia nigricans</i>	Black Softshell Turtle	REPTILIA	CR	Decreasing	Terrestrial, Freshwater
<i>Indotestudo elongata</i>	Elongated Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Manis pentadactyla</i>	Chinese Pangolin	MAMMALIA	CR	Decreasing	Terrestrial
<i>Manouria emys</i>	Asian Giant Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Aquilaria malaccensis</i>	Agarwood	MAGNOLIOPSIDA	CR	Decreasing	Terrestrial
<i>Aythya baeri</i>	Baer's Pochard	AVES	CR	Decreasing	Freshwater
<i>Gyps bengalensis</i>	White-rumped Vulture	AVES	CR	Decreasing	Terrestrial
<i>Ardea insignis</i>	White-bellied Heron	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Emberiza aureola</i>	Yellow-breasted Bunting	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Gyps tenuirostris</i>	Slender-billed Vulture	AVES	CR	Decreasing	Terrestrial
<i>Pelochelys cantorii</i>	Asian Giant Softshell Turtle	REPTILIA	CR	Decreasing	Terrestrial, Marine, Freshwater
<i>Cyrtodactylus montanus</i>		REPTILIA	CR	Unknown	Terrestrial





Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Sterna aurantia</i>	River Tern	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
<i>Clanga clanga</i>	Greater Spotted Eagle	AVES	VU	Decreasing	Terrestrial, Freshwater
<i>Leptoptilos javanicus</i>	Lesser Adjutant	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
<i>Clanga hastata</i>	Indian Spotted Eagle	AVES	VU	Decreasing	Terrestrial
<i>Arctonyx collaris</i>	Greater Hog Badger	MAMMALIA	VU	Decreasing	Terrestrial
<i>Tropidophorus assamensis</i>	North-Eastern Waterskink	REPTILIA	VU	Unknown	Terrestrial, Freshwater
<i>Oryza malampuzhaensis</i>		LILIOPSIDA	VU	Decreasing	Terrestrial
<i>Lissemys punctata</i>	Indian Flapshell Turtle	REPTILIA	VU	Decreasing	Terrestrial, Freshwater
<i>Xenochrophis cerasogaster</i>	Painted Keelback	REPTILIA	VU	Decreasing	Freshwater
<i>Schizothorax plagiostomus</i>	Snow Trout	ACTINOPTERYGII	VU	Decreasing	Freshwater
<i>Beilschmiedia assamica</i>		MAGNOLIOPSIDA	VU	Unknown	Terrestrial
<i>Capricornis sumatraensis</i>	Mainland Serow	MAMMALIA	VU	Decreasing	Terrestrial



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Macaca leonina	Northern Pig-tailed Macaque	MAMMALIA	VU	Decreasing	Terrestrial
Arctictis binturong	Binturong	MAMMALIA	VU	Decreasing	Terrestrial
Rusa unicolor	Sambar	MAMMALIA	VU	Decreasing	Terrestrial
Aonyx cinereus	Asian Small-clawed Otter	MAMMALIA	VU	Decreasing	Terrestrial, Marine, Freshwater
Pangshura tecta	Indian Roofed Turtle	REPTILIA	VU	Decreasing	Terrestrial, Freshwater
Wallago attu		ACTINOPTERYGII	VU	Decreasing	Freshwater
Ophiophagus hannah	King Cobra	REPTILIA	VU	Decreasing	Terrestrial
Elaphe taeniura	Cave Racer	REPTILIA	VU	Decreasing	Terrestrial
Python bivittatus	Burmese Python	REPTILIA	VU	Decreasing	Terrestrial
Ortygornis gularis	Swamp Francolin	AVES	VU	Decreasing	Terrestrial, Freshwater
Aythya ferina	Common Pochard	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Mulleripicus pulverulentus	Great Slaty Woodpecker	AVES	VU	Decreasing	Terrestrial
Buceros bicornis	Great Hornbill	AVES	VU	Decreasing	Terrestrial
Gallinago nemoricola	Wood Snipe	AVES	VU	Decreasing	Terrestrial, Freshwater



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Trachypithecus phayrei	Phayre's Leaf-monkey	MAMMALIA	EN	Decreasing	Terrestrial
Trachypithecus pileatus ssp. pileatus	Blond-bellied Langur	MAMMALIA	EN	Decreasing	Terrestrial
Crocodylus palustris	Mugger	REPTILIA	VU	Stable	Terrestrial, Freshwater
Helarctos malayanus	Sun Bear	MAMMALIA	VU	Decreasing	Terrestrial
Lutrogale perspicillata	Smooth-coated Otter	MAMMALIA	VU	Decreasing	Terrestrial, Marine, Freshwater
Macaca arctoides	Stump-tailed Macaque	MAMMALIA	VU	Decreasing	Terrestrial
Neofelis nebulosa	Clouded Leopard	MAMMALIA	VU	Decreasing	Terrestrial
Panthera pardus	Leopard	MAMMALIA	VU	Decreasing	Terrestrial
Prionailurus viverrinus	Fishing Cat	MAMMALIA	VU	Decreasing	Terrestrial, Freshwater
Trachypithecus pileatus	Capped Langur	MAMMALIA	VU	Decreasing	Terrestrial
Ursus thibetanus	Asiatic Black Bear	MAMMALIA	VU	Decreasing	Terrestrial
Dipterocarpus costatus		MAGNOLIOPSIDA	VU	Decreasing	Terrestrial
Dipterocarpus turbinatus		MAGNOLIOPSIDA	VU	Decreasing	Terrestrial



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<i>Axis porcinus</i>	Hog Deer	MAMMALIA	EN	Decreasing	Terrestrial, Freshwater
<i>Trachypithecus phayrei</i> ssp. <i>phayrei</i>		MAMMALIA	EN	Decreasing	Terrestrial
<i>Cuora mouhotii</i>	Keeled Box Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
<i>Amblyceps arunchalensis</i>		ACTINOPTERYGII	EN	Unknown	Freshwater
<i>Urogymnus polylepis</i>	Giant Freshwater Whipray	CHONDRICHTHYES	EN	Decreasing	Marine, Freshwater
<i>Perdica manipurens</i>	Manipur Bush-quail	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Asarcornis scutulata</i>	White-winged Duck	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Sterna acuticauda</i>	Black-bellied Tern	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Haliaeetus leucoryphus</i>	Pallas's Fish-eagle	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Aquila nipalensis</i>	Steppe Eagle	AVES	EN	Decreasing	Terrestrial
<i>Leptoptilos dubius</i>	Greater Adjutant	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Laticilla cinerascens</i>	Swamp Grass-babbler	AVES	EN	Decreasing	Terrestrial, Freshwater
<i>Tor putitora</i>		ACTINOPTERYGII	EN	Decreasing	Freshwater



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Cuon alpinus	Dhole	MAMMALIA	EN	Decreasing	Terrestrial
Cuora amboinensis	Southeast Asian Box Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Elephas maximus	Asian Elephant	MAMMALIA	EN	Decreasing	Terrestrial
Hardella thurjii	Crowned River Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Morenia petersi	Indian Eyed Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Panthera tigris	Tiger	MAMMALIA	EN	Decreasing	Terrestrial
Varanus flavescens	Yellow Monitor	REPTILIA	EN	Decreasing	Terrestrial
Nilssonia gangetica	Indian Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Nilssonia hurum	Indian Peacock Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Nycticebus bengalensis	Bengal Slow Loris	MAMMALIA	EN	Decreasing	Terrestrial
Hoolock hoolock	Western Hoolock Gibbon	MAMMALIA	EN	Decreasing	Terrestrial
Platanista gangetica	Ganges River Dolphin	MAMMALIA	EN	Decreasing	Freshwater



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Nilssononia nigricans</i>	Black Softshell Turtle	REPTILIA	CR	Decreasing	Terrestrial, Freshwater
<i>Indotestudo elongata</i>	Elongated Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Manis pentadactyla</i>	Chinese Pangolin	MAMMALIA	CR	Decreasing	Terrestrial
<i>Manouria emys</i>	Asian Giant Tortoise	REPTILIA	CR	Decreasing	Terrestrial
<i>Aquilaria malaccensis</i>	Agarwood	MAGNOLIOPSIDA	CR	Decreasing	Terrestrial
<i>Aythya baeri</i>	Baer's Pochard	AVES	CR	Decreasing	Freshwater
<i>Gyps bengalensis</i>	White-rumped Vulture	AVES	CR	Decreasing	Terrestrial
<i>Ardea insignis</i>	White-bellied Heron	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Emberiza aureola</i>	Yellow-breasted Bunting	AVES	CR	Decreasing	Terrestrial, Freshwater
<i>Gyps tenuirostris</i>	Slender-billed Vulture	AVES	CR	Decreasing	Terrestrial
<i>Pelochelys cantorii</i>	Asian Giant Softshell Turtle	REPTILIA	CR	Decreasing	Terrestrial, Marine, Freshwater
<i>Cyrtodactylus montanus</i>		REPTILIA	CR	Unknown	Terrestrial



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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Hoolock hoolock ssp. hoolock	Western Hoolock Gibbon	MAMMALIA	VU	Decreasing	Terrestrial
Paris polyphylla	Love Apple	LILIOPSIDA	VU	Decreasing	Terrestrial
Dalbergia thomsonii		MAGNOLIOPSIDA	VU	Unknown	Terrestrial
Bagarius bagarius		ACTINOPTERYGII	VU	Decreasing	Freshwater



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Recommended citation

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How to use this report

This report provides an indication of the potential biodiversity-related features - protected areas, key biodiversity areas and species - close to the specified location. It provides an early indication of potential biodiversity concerns, and can provide valuable guidance in making decisions. For example, this information can be helpful when assessing the potential environmental risk and impact of a site, categorising investments/projects, preparing the terms of reference for an impact assessment, focusing attention on key species of conservation concern and sites of known conservation value, and reviewing the results of an impact assessment.

The report does not provide details of potential indirect, downstream or cumulative impacts. Furthermore, the report should be regarded as a “first-step”, providing a set of conservation values sourced from global data sets, and is not a substitute for further investigation and due diligence, especially concerning national and/or local conservation priorities.



Appendix 13: Sample Environmental Site Inspection Report

Project Name Contract Number

NAME: _____ DATE: _____ TITLE: _____ DMA: _____ LOCATION: _____ GROUP: _____

WEATHER:	Project Activity Stage	Survey	
		Design	
		Implementation	
		Pre-Commissioning	
		Guarantee Period	

	Compliance
Compliance marked as Yes / No / Not applicable (NA) / Partially Implemented (PI)	
EHS supervisor appointed by contractor and available on site	
Construction site management plan (spoils, safety, schedule, equipment etc.,) prepared	
Traffic management plan prepared	
Dust is under control	
Excavated soil properly placed within minimum space	
Construction area is confined; no traffic/pedestrian entry observed	
Surplus soil/debris/waste is disposed without delay	
Construction material (sand/gravel/aggregate) brought to site as & when required only	
Tarpaulins used to cover sand & other loose material when transported by vehicles	
After unloading , wheels & undercarriage of vehicles cleaned prior to leaving the site	
No chance finds encountered during excavation	
Work is planned in consultation with traffic police	
Work is not being conducted during heavy traffic	
Work at a stretch is completed within a day (excavation, pipe laying & backfilling)	
Pipe trenches are not kept open unduly	
Road is not completely closed; work is conducted on edge; at least one line is kept open	
Road is closed; alternative route provided & public informed, information board provided	
Pedestrian access to houses is not blocked due to pipe laying	
Spaces left in between trenches for access	
Wooden planks/metal sheets provided across trench for pedestrian	
No public/unauthorized entry observed in work site	
Children safety measures(barricades, security)in place at works in residential areas	
Prior public information provided about the work, schedule and disturbances	
Caution/warning board provided on site	
Guards with red flag provided during work at busy roads	
Workers using appropriate PPE (boots, gloves, helmets, ear muffs etc)	
Workers conducting or near heavy noise work is provided with ear muffs	
Contractor is following standard & safe construction practices	
Deep excavation is conducted with land slip/protection measures	

	Compliance
First aid facilities are available on site and workers informed	
Drinking water provided at the site	
Toilet facility provided at the site	
Separate toilet facility is provided for women workers	
Workers camps are maintained cleanly	
Adequate toilet & bath facilities provided	
Contractor employed local workers as far as possible	
Workers camp set up with the permission of PIU	
Adequate housing provided	
Sufficient water provided for drinking/washing/bath	
No noisy work is conducted in the nights	
Local people informed of noisy work	
No blasting activity conducted	
Pneumatic drills or other equipment creating vibration is not used near old/risky buildings	

Signature

Name

Position

Name

Position