Environmental Management Plan – Addendum

August 2021

Cambodia: Provincial Water Supply and Sanitation Project − Siem Reap Replacement Interceptor Sewer Subproject

BBU Road trench stabilization and road rehabilitation, Sivutha Boulevard Road rehabilitation and footpath improvements

Prepared by the Ministry of Public Works and Transport for the Asian Development Bank.

CURRENCY EQUIVALENTS

(17 Aug. 2021)

Currency Unit	-	Riel R
R1.00	=	$0.000246
$1.00	=	R4,072

ABBREVIATIONS

ADB	Asian Development Bank
AH	Affected household
BOD	Biochemical oxygen demand (typically 5-day test and measure)
CEMP	Contractor's environmental management plan (during construction)
COD	Chemical oxygen demand
DPWT	Provincial Department of Public Works
EA	Executing Agency
EIA	Environmental impact assessment
EMP	Environment management plan
GRM	Grievance Redress Mechanism
IEE	Initial environmental examination
MEF	Ministry of Economy and Finance
MIH	Ministry of Industry and Handicraft
MISTI	Ministry of Industry, Science, Technology and Innovation
MOE	Ministry of Environment
MPWT	Ministry of Public Works and Transport
NGOs	Non-government organization
O&M	Operation and maintenance
PIAC	Project implementation assistance consultant
PIU	Project implementation unit
PDE	Provincial Department of Environment
PMU	Project management unit
PDPWT	Provincial Department of Public Works and Transport
PWSSP	Provincial Water Supply and Sanitation Project
RGC	Royal Government of Cambodia
$	United States dollar
UXO	Unexploded ordinance

WEIGHTS AND MEASURES

km	kilometer
kg	kilogram
ha	hectare
mg/L	milligram per liter
mm	millimeter

NOTE

In this report, "$" refers to US dollars.

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I. EXECUTIVE SUMMARY

1. This environmental management plan (EMP) addendum sets out the environmental management requirements for the BBU Road trench stabilization and road rehabilitation, Sivutha Boulevard road rehabilitation and footpath improvements variation of the Siem Reap Wastewater Subproject part of the Provincial Water Supply and Sanitation Project (PWSSP) in line with the requirements of the Royal Government of Cambodia (RGC) and the ADB Safeguard Policy Statement (SPS, 2009). The EMP addendum takes into account the design of the variation and site visits conducted in June 2021 and July 2021 and fully replaces and supersedes the former EMP in respect of the additional works.

2. The Policy, Legal and Administrative Framework describes the country's and ADB statutory requirements to be followed including the ADB Environmental Safeguards as defined in the SPS 2009, the national environmental assessment requirements, the national environmental policy and legislation, and the sub-decrees that specify applicable regulations and standards for environmental quality.

3. The additional works for the subproject can be divided into components as: (i) BBU Road (Route 267) trench stabilization and road rehabilitation (no footpaths, only kerb and gutter), (ii) Sivutha Boulevard upgrade (including rehabilitation, resealing, trench stabilization and parking arrangements), and (iii) Sivutha footpath rehabilitation. Under the "38 roads infrastructure development and rehabilitation for Siem Reap province" project in-ground infrastructure such as drainage improvements, collector sewers and household connections have been completed in Sivutha Boulevard as priority works prior to start of the additional works thus ensuring that the trench stabilization and road rehabilitation works under the subproject will not be dug up again. There is no overlap in BBU Road.

4. The subproject area is located in Svay Dankum Commune, Siem Reap Town. All road rehabilitation under the subproject will be conducted in the urban area of Siem Reap and there are no important biodiversity resources or protected sites near the subproject sites. The Sivutha Boulevard is in the high value tourist precinct with many restaurants, bars, and hotels, although currently with a low number of visitors. The section of the BBU Road is less dense and with lower rise buildings.

5. The institutional arrangements and responsibilities are as follows: MISTI is the Executing Agency, and the MPWT is the Implementing Agency. The PMU is established in the General Department of Public Works within MPWT and the PIU in the DPWT of Siem Reap. The Project Implementation Assistance Consultants (PIAC) are recruited to assist the PMU and PIU. The Contractor commenced in April 2019 and completed existing works in June 2020.

6. The environmental impact mitigation plan specifies the mitigation measures that applies to the scope of work and identifies potential environmental impacts, proposed mitigation measures, responsible parties, location, and timing of mitigation measures. The contractor is expected to develop specific Construction Environmental Management Plan (CEMP) which is a detailed plan that sets out the contractor's approach to mitigating and managing environmental risks and impacts.

7. The environmental monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the subproject.

8. The Consultations for the additional works were conducted in June 2021 with participation of the local/community people, businesses, residents, PIU and other relevant local authorities in

the subproject area. There were three consultation meeting with local authority and PIU, and one-to-one consultations with total of 125 participants/persons (of which 55 were female). Due to the COVID-19 pandemic travel and meeting restrictions the consultations were carried out in small groups with limited participants or one-to-one.

9. A well-structured and functioning Grievance Redress Mechanism (GRM) has been established at the local level on 18 November 2019 including a Provincial grievance redress committee (PGRC) in charge of the GRM for the subproject following standard government procedures to resolve grievances and complaints in a timely and satisfactory manner as required under the ADB SPS 2009. Details of the GRM and PGRC are included in the Project Information Booklets (PIBs) and have been distributed to affected communities.

10. Environmental monitoring reporting will include the Contractor's progress report, CEMP and EMP compliance report, quarterly CEMP and EMP progress and compliance report, and semi-annual environmental monitoring report following the ADB environmental safeguards monitoring report format.

11. The estimated cost of the EMP includes Contractor's cost for implementation of mitigation measures in accordance with the EMP integrated in the construction package and cost of the preparation, approval and application of Contractor's Environmental Management Plan (CEMP), update of the traffic management and health and safety plans, implementation of these two plans, and the environmental monitoring plan is estimated at $31,500 included in the Contractor's contract variation. Cost of the supervision of the EMP by the PIAC are integrated in the Consultancy contract and thus excluded from the cost of the EMP.

12. The EMP addendum, if implemented as directed, will mitigate impacts on the natural environment and affected people to an acceptable level. The key party for mitigation measure implementation is the construction contractor. The implementation of this EMP will be closely monitored and reported on by the relevant stakeholders in the project.

II. INTRODUCTION

13. This environmental management plan (EMP) addendum sets out the environmental management requirements for the BBU Road trench stabilization and road rehabilitation, Sivutha Boulevard road rehabilitation and footpath improvements variation of the Siem Reap Wastewater Subproject part of the Provincial Water Supply and Sanitation Project (PWSSP) in line with the requirements of the Royal Government of Cambodia (RGC) and the ADB Safeguard Policy Statement (SPS, 2009). The EMP addendum takes into account the design of the variation and site visits conducted in June 2021 and July 2021. The EMP addendum fully replaces and supersedes the former EMP in respect of the additional works.

14. An initial environmental evaluation (IEE) covering wastewater subprojects, including the Siem Reap subproject was disclosed on ADB website during project preparation in June 2017. Siem Reap subproject was awarded as a Design and Build Contract. An outline EMP, based on the IEE was developed in August 2018 and included as part of the bid invitation document and contract of the construction contractor. The contractor further submitted its EMP during construction (CEMP) in April 2019, which was finalized and approved on the 6th of June 2019. An updated EMP June 2019 EMP was taking into account the detailed engineering design completed by the contractor in February 2019 and approved in early April 2019, the CEMP and public consultations that took place in May 2019 for additional screening of potential impacts prior to the start of construction. Refer the table below for an overview of environmental safeguards documents.

Table 1: Overview of Environmental Safeguard Documents

Safeguard document	Date	Document status
Initial Environmental Examination	January 2017	Disclosed
Outline Environmental Management Plan	August 2018	Included in the bid invitation and contract
Environmental Management Plan	June 2019	Updated following completion of Detailed Engineering Design
Contractor's Environmental Management Plan	June 2019	Approved
EMP addendum (this document)	August 2021	Submitted for approval and disclosure

15. Under the PWSSP a failed interceptor sewer in Siem Reap City was replaced in 2019-2020 with a stronger 1,000 mm diameter pipeline along the Sivutha Road from the intersection with National Highway 6 to the Y-junction and roundabout near Pokambor Avenue then along the narrow BBU Road to the main pump station. The road goes through the city's bustling central street (Central Market and Old Market). The pipeline has failed and collapsed at seven locations. Based on geotechnical investigations and test pit excavations, the cause of failure was highly likely to be a combination inadequate compaction during backfilling of the trench and poor-quality pipe material.

16. The Contractor responsible for the replacement of the interceptor sewer in Siem Reap elected to use the micro-tunneling and pipe jacking method of pipeline construction. A design and build modality was adopted for the execution of the contract. The advantages of trenchless methods over open trenching include significantly faster construction time, significantly reduced traffic restrictions, reduced noise, and far less spoil stockpiles than conventional open trench installation. Construction of the 3.7 km replacement sewer started in mid-May 2019 and was completed in July 2020.

17. The trench stabilization and road resealing are outstanding works, but they are subject to approval of the variation. The road works are also dependent on the completion of the sewer and drainage connection project completion (being carried out by others under another project). Temporary re-seal has been applied to the roads while the concept for trench stabilization and road rehabilitation is being finalized so the road is fully operational. The variation includes BBU Road trench stabilization and road rehabilitation and Sivutha Boulevard road rehabilitation and footpath improvements.

18. In the interim period following completion of the replacement of the interceptor sewer in July 2020, the national government is implementing a USD150 million project in Siem Reap Province on road, sewerage and drainage improvement in the city center as part of large-scale beautification and improvement of Siem Reap for tourism under the project entitled "38 roads infrastructure development and rehabilitation for Siem Reap province". Within the City the works include the installation of rainwater drainage, sewage systems, flood protection systems, cable transmission systems and street lighting, as well as disabled-friendly sidewalks bike lanes, parking lots, traffic signs and markers, security camera systems, gardens and trees. The project started on 30th November 2020 and it is expected to be completed by end of 2021 or early 2022.

19. The parallel implementation of the two projects provided an opportunity to coordinate activities and avoid overlapping. In-ground infrastructure such as drainage improvements, collector sewers and household connections were completed in Sivutha Boulevard as priority works under the 38 roads project thus ensuring that the trench stabilization and road rehabilitation works under the subproject will not be dug up again. There is no overlap in BBU Road.

III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

20. This section describes the environmental assessment requirements of ADB, the environmental assessment requirements of Cambodia, the national environmental policies and legislation of Cambodia, and the relevant laws, regulations and guidelines.

A. Environmental Assessment Requirements of ADB

21. Safeguard requirements for all projects funded by ADB are defined in SPS 2009 which establishes an environmental review process to ensure that projects undertaken as part of programs funded through ADB loans are environmentally sound; are designed to operate in compliance with applicable regulatory requirements; and are not likely to cause significant environmental, health, or safety hazards. SPS 2009 is underpinned by the ADB Operations Manual, Bank Policy (OM Section F1/BP, October 2013). The policy also promotes adoption of international good practice as reflected the World Bank Group's Environmental, Health and Safety (EHS) Guidelines.

22. SPS 2009 environmental assessment requirements specify that:

- At an early stage of project preparation, the borrower/client will identify potential direct, indirect, cumulative, and induced environmental impacts on and risks to physical, biological, socioeconomic, and cultural resources and determine their significance and scope, in consultation with stakeholders, including affected people and concerned nongovernment organizations. If potentially adverse environmental impacts and risks are identified, the borrower/client will undertake an environmental assessment as early as possible in the project cycle.

- The assessment process will be based on current information, including an accurate project description, and appropriate environmental and social baseline data;
- Impacts and risks will be analyzed in the context of the project's area of influence;
- Environmental impacts and risks will be analyzed for all relevant stages of the project cycle, including preconstruction, construction, operations, decommissioning, and post-closure activities such as rehabilitation or restoration; and
- The assessment will identify potential transboundary effects as well as global impacts;
- Environmental management plan. The borrower/client will prepare an EMP that addresses the potential impacts and risks identified by the environmental assessment.
- Consultation and participation. The borrower/client will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation.
- Information disclosure. Environmental information on the project, including the IEE and other safeguards information will be disclosed in accordance with ADB's Public Communications Policy (2011) and SPS (2009). This includes: (i) The EMP and IEE will be disclosed on ADB's project website (www.adb.org);
- Grievance redress mechanism. The borrower/client will establish a mechanism to receive and facilitate resolution of affected people's concerns, complaints, and grievances about the project's environmental performance.
- Monitoring. The borrower/client will monitor and measure the progress of implementation of the EMP.

B. Environmental Assessments Requirements of Cambodia

23. The Ministry of Environment (MoE) through its EIA Department regulates and monitors the EIA Process. The MoE is responsible for: (i) review and approval of IEIA/EIA reports in collaboration with other relevant ministries and (ii) monitoring the EMP implementation of Project Proponents/Owners throughout the different project phases. MoE operates at the municipal and provincial levels through its Provincial Department of Environment (PDoE).

24. Environmental assessment in Cambodia is governed by the following law and guideline document:

- Sub-decree on EIA Process No. 72 (1999) provides detailed guidelines for implementation of the EIA Process and its annex specifies the activities, which require the conduct of IEIA or EIA.
- Declaration on Guideline for Conducting IEIA and EIA Reports No. 376 (2009) specifies the basic contents of IEIA/EIA Reports.
- Prakas No 021 on Environmental Impact Assessment (EIA) specifies the appropriate level of impact assessment for types and sizes of projects.

C. National Environmental Policy and Legislation

25. Cambodia's main legal framework for addressing environmental protection, management of natural resources and public consultation is the Law on Environmental Protection and Natural Resource Management ('the Environment Law'), which was adopted in 1996.

26. The Environment Law has the following objectives:

- Protect and upgrade environmental quality and reduce pollution;
- Assess the impacts of proposed projects before approval;
- Ensure rational and sustainable use of the Kingdom's resources;
- Encourage public participation in environmental protection and natural resource management; and
- Reduce activities which impact negatively on the environment.

27. Specific regulations and standards for environmental quality are contained in three sub-decrees:

- Sub-decree on Solid Waste Management (1999);
- Sub-decree on Water Pollution Control (2009);
- Sub-decree on Air Pollution Control and Noise Disturbance (2000), and

28. A summary of other legislative and policy instruments relevant to the project is presented in Table 2. The key environmental quality standards applied to the EMP are listed and presented in detail in the Annex.

Table 2: Relevant Laws, Regulations and Guidelines

Law/Regulation/Guideline	Year	Summary
Royal Decree on the Protection of Natural Areas	1993	Classified 23 protected areas in Cambodia into four categories: (i) natural parks; (ii) wildlife sanctuaries; (iii) protected landscapes; and (iv) multiple-use areas. Designated the Tonle Sap (316,250 ha) as a multiple-use area or area necessary for the stability of the water, forestry, wildlife and fishery resources, for tourism, and for conservation of long-term existing natural resources with a view to assure sustainable economic development.
Law on the Protection of Cultural Heritage (NS/RKM/0196/26)	1996	Regulates the protection of national cultural heritage and cultural property in general against illegal destruction, modification, alteration, excavation, alienation, exportation or importation. Its Article 37 stipulates that in case of chance find of a cultural property during construction, work should be stopped and the person who found the property should immediately make a declaration to the local police, who shall, in turn, transmit the property to the Provincial Governor without delay.

Law/Regulation/Guideline	Year	Summary
Labour Law (1997) Decree No. CS/RKM/0397/01	1997	This law governs relations between employers and workers resulting from employment contracts to be performed within Cambodia. The key sections relevant to this project include: Chapter VIII Health and Safety of Worker. The key provisions relate to the quality of the premises; cleaning and hygiene; lodging of personnel, if applicable (such as workers camp); ventilation and sanitation; individual protective instruments and work clothes; lighting and noise levels in the workplace. Article 230: Work places must guarantee the safety of workers. However, the only specific occupational health and safety Prakas relates to the garment industry and brick manufacture. Chapter IX: Work-Related Accidents Article 248: All occupational illness, as defined by law, shall be considered a work-related accident. The law sets out how accidents should be managed in terms of compensation.
Sub-decree on Solid Waste Management (Sub-decree No. 36 ANK/BK),	1999	Article 1: Regulates solid waste management to ensure the protection of human health and the conservation of biodiversity through using appropriate technical approaches. Article 2: This sub-decree applies to all activities related to disposal, storage, collection, transport, recycling, dumping of garbage and hazardous waste. The authorities of the provinces and cities shall establish the waste management plan in their province and city for short, medium and long-term.
Sub-decree on Control of Air Pollution and Noise Disturbance (Sub-decree No. 42 ANK/BK	2000	Regulates air and noise pollution from mobile and fixed sources through monitoring, curb and mitigation activities to protect the environmental quality and public health. It contains the following relevant standards: (i)) ambient air quality standard (Annex 1); and (ii) maximum allowable noise level in public and residential areas (Annex 6). Article 3 A. “Source of pollution” is defined and separates mobile sources (including transport) and fixed sources such as factories and construction sites. Article 3 B. “Pollutant” is defined as smoke, dust, ash particle substance, gas, vapour, fog, odour, radio-active substance
Royal Decree on the Establishment and Management of Tonle Sap Biosphere Reserve (Royal Decree No. NS/RKT/0401/070)	2001	Establishes the Tonle Sap Biosphere Reserve (TSBR) in accordance with the statutory framework of the World Network of Biosphere Reserves. Divides the TSBR into 3 zones: (i) core areas; (ii) buffer zone and (iii) flexible transition zone. Core area: set aside for long term protection, human activity is limited to monitoring and research.

Law/Regulation/Guideline	Year	Summary
		Buffer zone: is area surrounding the core areas helping to protect the environment. It may accommodate education and training activities. Transition area: may contain a variety of agricultural activities and human settlements.
Law on Water Resources Management (NS/RKM/0607/016)	2007	Requires license/permit/written authorization for the: (i) abstraction & use of water resources other than for domestic purposes; (ii) extraction of sand, soil & gravel from the beds & banks of water courses, lakes, canals & reservoirs; (iii) filling of river, tributary, stream, natural lakes, canal & reservoir; and (iv) discharge, disposal or deposit of polluting substances that are likely to deteriorate water quality and to endanger human, animal and plant health (Articles 12 & 22).
Sub-decree on Water Pollution Control (Sub-decree No. 27 ANRK/BK)	2009	Regulates activities that cause pollution in public water areas in order to sustain good water quality so that the protection of human health and the conservation of biodiversity are ensured. Its Annexes 2, 4 and 5 provide the industrial effluent standards, including effluent from wastewater stabilization ponds, water quality standards for public waters for the purpose of biodiversity conservation, and water quality standards for public waters and health, respectively.
Prakas on Environmental Impact Assessment Classification for Development Projects	2020	Classification of the required level of environmental impact assessment for development projects including whether to have environmental protection contracts, initial environmental impact assessments, or full environmental impact assessment. Applies to all proposals of development projects including existing and on-going projects of private individuals or private companies, joint-venture companies, public companies or government ministries/agencies.

29. MPWT has confirmed, in consultation with MoE and in line with the Prakas on Environmental Impact Assessment Classification for Development Projects (2020), that there is no requirement for domestic environmental compliance for the subproject existing works (Siem Reap Trunk Sewer) and additional trench stabilization and road repaving works (CW01). The confirmation letter is included in Annex 2.

IV. ADDITIONAL INVESTMENTS UNDER THE VARIATION ORDER

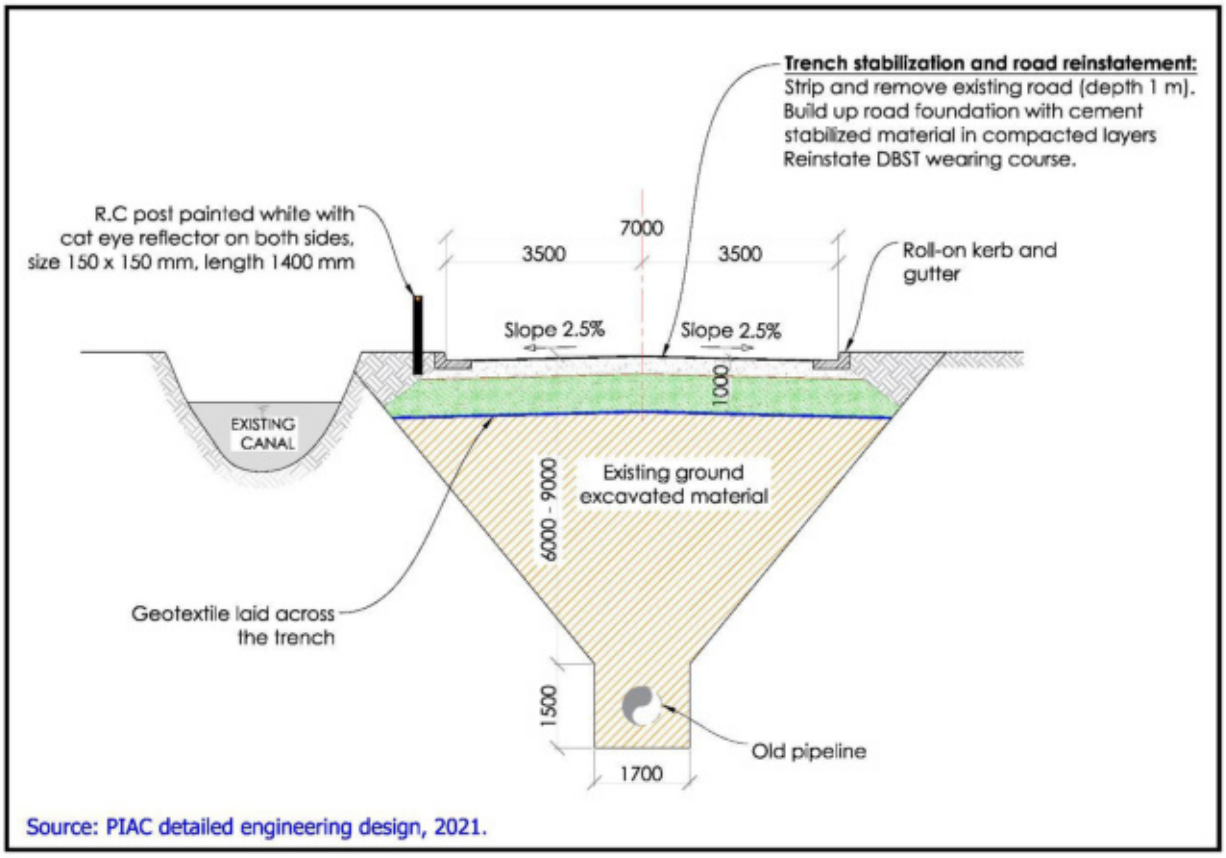
30. The additional works for the subproject can be divided into components as: (i) BBU Road (Route 267) trench stabilization and road rehabilitation (no footpaths, only kerb and gutter), (ii) Sivutha Boulevard upgrade (including rehabilitation, resealing, trench stabilization and parking arrangements), and (iii) Sivutha footpath rehabilitation. The location of the two road sections (BBU and Sivutha) to be rehabilitated are presented in the **Error! Reference source not found.** below as the blue urban/business road section (Sivutha Boulevard) and the yellow section of BBU Road (also known as Wat Chork Road or Route 267). The intervening 1.65 km section of BBU Road from the ring road to Neak Phoan roundabout will be upgraded under the 38 roads project and integrated into the heavy traffic city center bypass route.

Figure 1: Subproject additional works road sections

31. The BBU Road (Route 267) works will include 750m section, 7m wide (no formal footpaths along this road) of the road from the ring road south to the Wat Chork pumping station. The scope of work is only trench stabilization and road rehabilitation (DBST pavement). The stabilization and rehabilitation works will remove a traffic hazard (sink holes) and will also provide a better road finish. The road was extensively damaged by the floods in late 2020. The road section is currently on soft soil due to lack of compaction causing sink holes. Due to the canal located next to the

road, water dissipates into the sandy soil underneath the road. Columns with rocky material will be placed every 5 meters to create a flow path and control groundwater inflow to the old trench.

Figure 2: Cross-section of planned works at BBU Road (Route 267)



32. Sivutha Road Upgrade will include rehabilitation of the 1.3 km long, 12 m wide road and footpath and parking improvements from the National Road 6 to the Roundabout in the high tourist value precinct, which currently has low numbers of visitors. The scope of work includes trench stabilization and road rehabilitation (AC pavement) and sidewalk improvement for both sides of the road (width 4.5m) with parking lots and street restaurant and street furniture. The benefits will be substantially more attractive and conducive street environment for visitors with improved safety for pedestrians. The footpath, based on cadastral information, is typically 5 m wide but the effective existing footpath varies from 2 m to 5.5 m. The variation is due to encroachments of sorts. The city has tightening up on and cleared encroachments including overhangs ahead of major road upgrade works and drainage works currently under implementation using national budget.

Figure 3: Cross-sections of planned trench stabilization & road rehabilitation at Sivutha Road

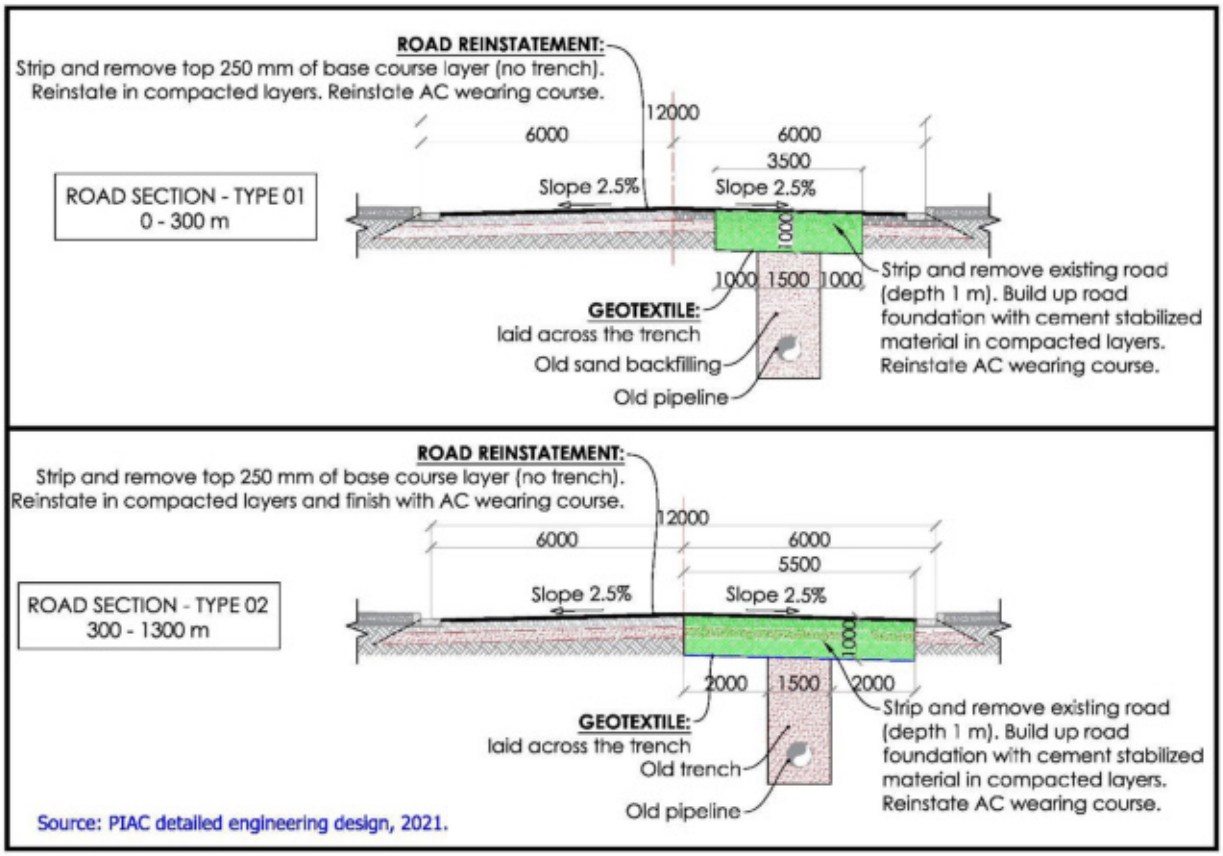
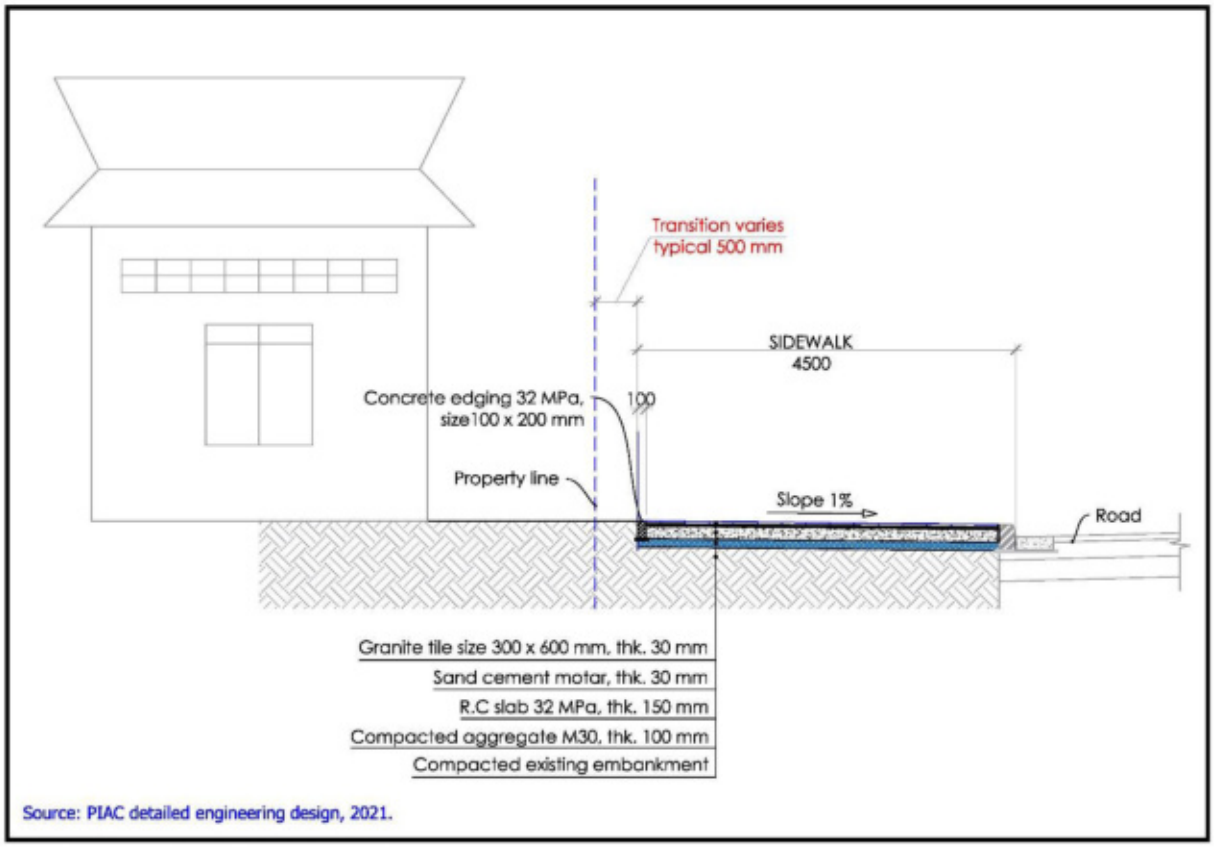


Figure 4: Cross-sections of planned footpath type-1 (trafficable)



A. Scope of Activities

33. The overall activities comprise of the BBU Road (Route 267) stabilization and rehabilitation works, the Sivutha Road Upgrade consisting of road rehabilitation and footpath improvements, and project implementation support and management.

34. To stabilize the old trench along the BBU Road (Route 267), the old pipeline will be filled with a cement-sand slurry along the entire length of BBU Road (2,400 m) to provide structural strength to the pipeline and avert further collapses of the road above. The activities include:

- Locate the old manholes where they are buried under the road.
- Ascertain that the old pipeline is isolated, with no inflow entering the pipe at the old manholes along BBU Road (or Road No. 267).
- Pump a controlled low-strength material (soil cement slurry) into the old pipeline to fill the voids.
- Inspect the manhole for any water flow after 24 hours and 48 hours.
- Seal the pipeline at each of manhole with a 300 mm thick mass concrete block to above the top of the old pipeline.

35. The variation covers rehabilitation of a 750 m section of the BBU Road (or Road No. 267) from the Wat Chork pumping station to the ring road intersection. The activities include:

- Excavate existing road foundation to a depth of 1 m. Care shall be taken not to damage any existing underground services. Any damage to such services shall be borne by the contractor.
- Inspect the exposed surface, dig out any soft spots and reinstate with compacted aggregate.
- Compact the subgrade and lay geotextile
- If suitable, stabilize the excavated material with cement, and re-lay in 100 mm layers and compact with plate vibrator to the top of the sub-base course level.
- Construct new compacted aggregate base course layer.
- Construct new roll-on kerb and channel on the west side of the road and install new drainage drop pits.
- On the canal side of the road construct new upright kerb with channel and provide smooth transition to the canal embankment and property access bridges crossing the canal. Any damage to the bridges shall be repaired by the contractor's at his own cost.
- Construct new double bitumen surface treated (DBST) wearing course across the full width of the road.
- Paint reflectorized thermoplastic road markings and install signposts.

36. The variation covers trench stabilization and rehabilitation of a 1,300 m section along the Sivutha Boulevard. The activities include:

- Excavate existing road foundation to a depth of 1 m above the old pipe trench.
- Compact the exposed subgrade and lay geotextile.
- If suitable, stabilize the excavated material with cement, and re-lay in 100 mm layers. Then compact with plate vibrator to the top of the sub-base course level.
- Construct new compacted aggregate base course layer.
- For the rest of the road carriageway, strip the existing asphalt cement wearing surface and the top 100 mm of the base course. Inspect and dig out any soft spots and reinstate with compacted aggregate.
- Use aggregate base course material to fill to the finished base-course level.
- Reinstate the asphaltic concrete wearing surface for the full width of the road.
- Paint reflectorized thermoplastic road markings.

37. The variation covers construction of new kerb and drainage gutter along both sides of the of Sivutha Boulevard, nominal 4.5 m wide footpaths with a total length of 2,700 m, and temporary protection road.

38. Construction of kerb and gutter along the Sivutha Boulavard will include bedding preparation, construction of cast in-situ concrete channel, installation of drainage drop pits with grated cover, placement of granite kerb and grout-filling of joints as specified and shown on the drawings. Activities include:

- Install granite mountable kerb on both sides of road.
- Construct reinforced concrete channel to be cast in-situ.
- Construct concrete edging at the property side of the footpath.
- Install drainage drop pits and connect to existing drainage manhole.

39. Construction of temporary protection works along the Sivutha Boulavard ahead of wet season are required to prevent damage to the kerb and gutter. A 750 mm wide temporary buffer zone will be constructed ahead of the wet season to protect the permanent drainage assets and kerb. The activities include:

- Compaction of sub-grade
- Construction of temporary foundation works including base course and single bitumen surface treated (SBST) wearing surface.
- Install temporary sacrificial mass concrete slab on roadside of drainage channel. Slab to be removed during permanent road construction.

40. Footpath construction along the Sivutha Boulavard include removing temporary sand surface cover, cutting back to sub-base and re-compaction to design levels, construction of gravel base, concrete slab, mortar bedding and laying of granite paving tiles. Activities include:

- Remove temporary surface and compact sub-grade.
- Supply and install electrical wiring and conduit for street lights including connection to the electricity supply meter as instructed by EDC. Wiring and connection of street lights will be carried out by the City government.
- Construct concrete base and footing for street lights.
- For footpath zones:
    - Compact aggregate sub-base,
    - Place cast in-situ reinforced concrete foundation slab in trafficable footpath zones
    - Construct 100 mm wide concrete edging at the property side of the footpath
    - Lay 30 mm thick granite paving tiles on 30 mm thickness mortar bedding
    - Supply and place planter box granite edgings
- Supply and install street furniture such as information boards and direction signs, removable and lockable stainless-steel traffic control bollards, resting benches and commemorative plaque as specified.

41. The project support and management activities under the variation includes the following:

- Update CEMP including traffic management plan
- Provide effective traffic management in accordance with the traffic management plan including clear detour routes.
- Ensure advance notice is given to those affected by the construction works especially access, preferably a week ahead of starting the works in each construction section. Consult local residents and shops to ascertain their site access requirements.
- Carry out the work to enable through traffic flow at all times; Road excavation and work shall be carried out on only half of the road width at any one time. The contractor may need to identify or create temporary parking space for local residents living in the immediate zone of construction.
- Conduct sexually transmissible diseases workshop for workers.
- Implement the health and safety plan developed under the original contract.
- Implement the environmental management and monitoring developed under the original contract and modified to suit conditions.

B. Construction Schedule

42. Construction of the interceptor sewer in Siem Reap by micro-tunneling and pipe jacking method of pipeline construction started in mid-June 2019 and was completed in July 2020. The trench stabilization and road resealing, and installation of valve at pump station are outstanding works, but they are subject to approval of the variation. The road works are also dependent on the completion of the sewer and drainage connection project completion (being carried out by

others under another project). Temporary re-seal has been applied to the roads while the concept for trench stabilization and road rehabilitation is being finalized so the road is fully operational.

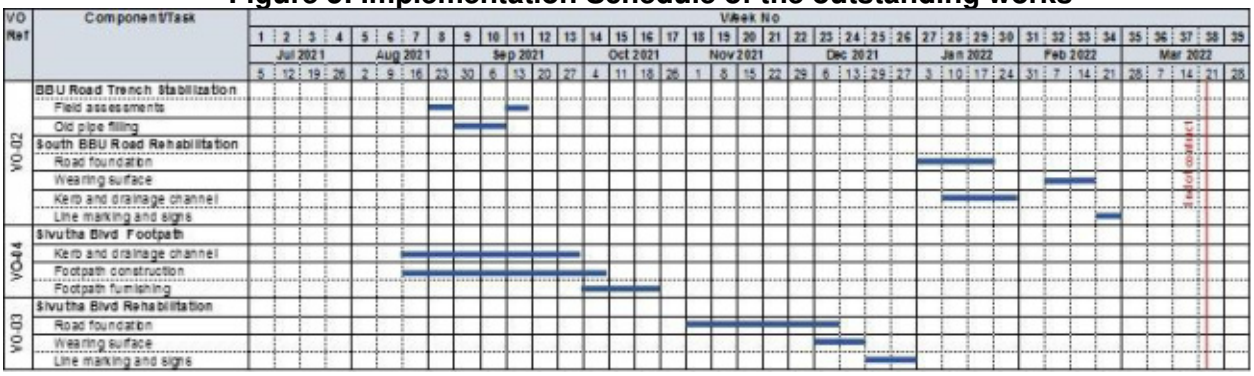
43. Initially the proposed rehabilitation of Sivutha Boulevard and BBU Road were to be carried out during the dry season between November 2020 and March 2021. However, the current ongoing work on stormwater drainage upgrade and property sewerage connections to the new trunk sewer along Sivutha Boulevard are progressing slower than expected due to unforeseen complications and coordination challenges with other service providers such as EDC and telecom. Consequently, the road rehabilitation work could not be started as planned. Therefore, some of the work will have to be carried out during the next dry season. In addition, extra caution is needed to allow for the constraints and impacts of the COVID-19 pandemic.

44. Based on the recent instruction that Sivutha Boulevard works must be completed before the end of December 2021, and being mindful that the wet season has commenced it is proposed that the BBU Road works be deferred to January 2022 to enable start of the high priority Sivutha Boulevard works as soon as the rains abate in November or possibly earlier.

45. From the notice to commence, the work for Sivutha Boulevard footpath improvements shall be completed in 10 weeks. In view of the delay to the start of the road excavation and rehabilitation works in Sivutha Boulevard and BBU Road to the start of the dry season (assumed beginning of November 2021) there is a window of opportunity to utilize the gap in construction activity and carry out the footpath improvement works in the wet season.

46. The BBU road rehabilitation will be started straight after the New Year and will be completed before the end of February 2022. A detailed construction schedule will be prepared after the actual commencement of the new work. An anticipated construction schedule is shown in Figure 5.

Figure 5: Implementation Schedule of the outstanding works



V. DESCRIPTION OF THE ENVIRONMENT

47. This section presents details of the prevailing environmental conditions categorized into the physical, biological and socio-economic environment.

A. Physical Resources

48. Topography, geology and soils. Siem Reap is located in the Tonlé Sap basin, on low lying land surrounding the Tonlé Sap great lake and its wetland periphery. The topography within project area is generally flat and is around 10 to 18 m above mean sea level (MSL). Underlying rock is generally sedimentary, deposited during the Mezozoic geological era (70 – 250 million years ago). The main rock types are consolidated shale, slate, sandstone, conglomerate and limestone. Intrusions of igneous granite like rock, of a type known as rhyolite, occur over the landscape, as small, generally conical shaped hills. Raised limestone outcrops also occur.

49. Soils around the Tonlé Sap basin include podzols, which developed under forest vegetation, and saturated hydromorphic soils which have developed under conditions of poor drainage.

50. Climate. Cambodia's climate is dominated by the monsoon which causes distinct wet season and dry season. The southwest monsoon typically brings the rainy season from May to October. The northeast monsoon brings drier and cooler air from early November to March, then hotter air prevails in April and early May. The southern part of the country typically has a two-month dry season whereas the northern areas have a four-month dry season although weather patterns have been changing and to say what is typical is now increasingly problematic. The air-flow is reversed during the winter, and the northeast monsoon sends back dry air. The southwest monsoon brings the rainy season from mid-May to mid-September or to early October, and the northeast monsoon flow of drier and cooler air lasts from early November to March.

51. Temperatures. Temperatures are fairly uniform throughout the country, with only small variations from the average annual temperature of around 28°C. In Cambodia January is the coldest month where temperatures as low as 12°C have been recorded and April is the warmest where temperatures can reach 42°C.

52. Rainfall Cambodia is rich in water resources the rainy season occurs from May to October. The annual rainfall is normally 1,200 to 1,900 mm in the lowland area around Tonle Sap Lake and Mekong River Basin, is about 2,500 to 3,000 mm, in the western mountainous area and the eastern plateau, and is about 80% of rainfall occurs during the southwest season.

53. Ambient Air and Noise. Air pollution has increased in the recent years mainly due to traffic from cars, buses and motorcycles, which has increased significantly. Dust levels increases inside the city during the dry season, because of the traffic in the small non-paved roads and tracks. The main source of noise emissions is traffic and is more significant in the centre of the city. Issues with air quality in and around the temples attributed to high levels of vehicle usage, and in the city associated with tourism activity at night time, have received attention in the local press. Regular, systematic monitoring of air quality, while mandated in the Sub-Decree on the Control of Air Pollution and Noise Disturbance, (2000), does not currently take place outside Phnom Penh.

54. Hydrology and Water Resources. The hydrologic setting of Cambodia is dominated by the Mekong River and Tonle Sap Lake system. The Tonle Sap Lake is the largest freshwater lake in Southeast Asia and situated in the center of the Cambodian central plain, with an elevation of 10–30 meters above sea level covering about 6% of the country (MoE, 2009). The Tonle Sap Lake

is connected to the Mekong via the bi-directional Tonle Sap River at Phnom Penh. The Tonle Sap River is the most important water flow in Cambodia because of its two different water regimes. During the wet season it functions as a big downstream reservoir for fish spawning and growing, and flood control, and during dry season water flows back from Tonle Sap Lake to bring more fish. (Environmental Program MRC, 2016). The Mekong River's annual flood pulse continues to support a natural fishery and an extensive and unique wetland environment. This makes the ecology of the Basin extraordinarily important in terms of its contribution to livelihoods and sustainable development.

55. The Siem Reap River is the main waterbody in the subproject area. The river is located near the road alignment at the roundabout that connects the Sivutha Boulevard with Road No267. The source of the Siem Reap river is the Kulen Mountain and the river discharge into the Tonle Sap Lake with a total length of 85 km. The water level of the Siem Reap River varies from month to month and is related to the amount of rainfall in the catchment area. The Kulen Mountain is located about 50 km from Siem Reap Town to the north-east and the Tonle Sap Lake is located about 20km from Siem Reap Town on the South and downstream side. The water level of the Tonle Sap Lake is seasonally fluctuating, reaching the highest level near the end of the rainy season in September at around 10 m MSL.

56. Water Quality. In Cambodia the Water Quality control and management is identified by Sub-decree on Water Pollution Control (Ministry of Environment (MoE), 1999). It consists of effluent discharge permit, monitoring of the pollution sources, procedures and penalty. Sub-decree also concerns to Public water areas refers to water areas that are for public use such as: Tonle, Stung (Rivers), Stream, Gully, Lake, Pond, Well, Sea, Peam (River) and include canal irrigation system and other waterways that are for public use and ground water.

B. Ecological Resources

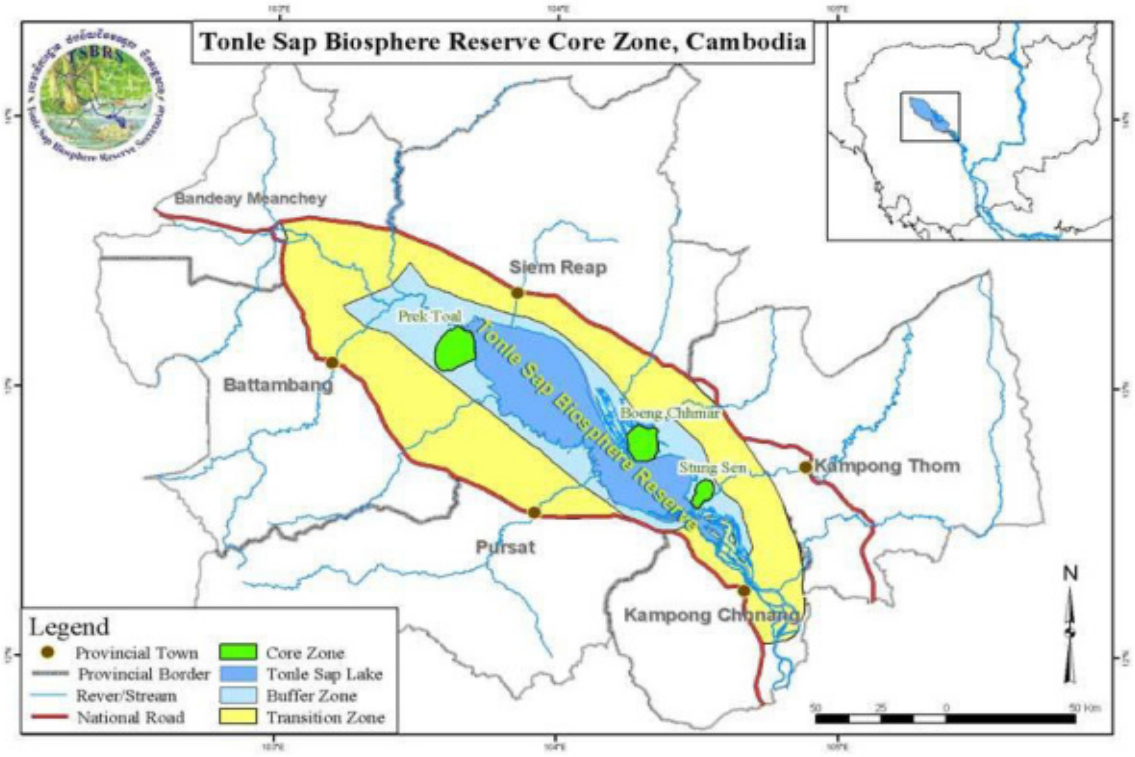
57. Siem Reap is the provincial capital and has been both expanding and increasing in population density. Ornamental trees were planted along main streets, but as older buildings are becoming replaced with large retail facilities, hotels and apartment blocks, trees are often removed, with greater emphasis placed on green spaces and parks within the towns. The town has been expanding outwards, into low density residential areas at the periphery and farmland immediately beyond.

58. The Tonlé Sap lake has a unique annual cycle in which water from the Mekong river flows inwards continuously for approximately half of the year, and this water drains out steadily for the other half of the year. This has resulted in a correspondingly unique ecosystem dominated by species that are adapted to thrive in the substantial zone around the lake that endures major changes in dry and inundated conditions and has significant biodiversity conservation value. The lake, its wetland margin including unique "flooded forests" and a surrounding buffer zone form the Tonlé Sap Biosphere Reserve. Siem Reap lies outside the Tonlé Sap Biosphere Reserve, however, stormwater and wastewater from the town flows towards the reserve.

59. The Tonle Sap Biosphere Reserve has three core areas, namely Prek Toal in Battambang province and Boeung Chhma and Steung Sen in Kompong Thom province. Almost 100 species of water birds are found in these three areas which cover an area of more than 42,000 hectares. More than 400 species of fish have been identified in these areas which are also known for crocodiles, turtles, macaques, otters and water snakes. The core areas comprise 21,342 hectares in Preak Toal and 14,560 hectares in Boeung Chhma which are also an internationally recognized wetland under the Ramsar Convention. Both are important breeding and feeding grounds for

endangered species of large water birds. Steung Sen spans 6,355 hectares and features trees rare to the flood plain. The Ministry of Environment estimates less than 20,000 people live in or near these areas, about 10,000 in Prek Toal, about 2000 in Boeung Chhma and almost 7,000 in Steung Sen.

Figure 6: Map of Tonle Sap Biosphere Reserve



60. The subproject area is located in Svay Dankum Sangkat/Commune, Siem Reap Town. All road rehabilitation under the subproject will be conducted in the urban area of Siem Reap town and there are no important biodiversity resources, forest-wildlife resources, or protected ecological sites near the subproject site. The site is covered by houses, commercial areas, market, and business shops.

61. There is limited fishing activity in the Siem Reap River and connecting water bodies during high flow. In the Tonle Sap Lake there are more than 500 fish species which provides around 60 % of the commercial fisheries production of Cambodia.

C. Social Resources

62. Following the general population census in 2019, Siem Reap Province had a population of approximately 1 million, while the population of Siem Reap town was approximately 140,000, and the population of the Svay Dankum Commune was 47,670. The average size of households in Cambodia was stable between 2008 and 2019 at 4.6 persons. The subproject area is an important tourist destination and is fairly developed in terms of hotels, guest houses, restaurants, residence, and other associated services and facilities.

Table 3: Population, gender, and households in Siem Reap Province and Svay Dankum Commune

Area	Population	Gender ratio (M/F)	Households	Household size
Siem Reap Province	1,006,512	95.5	218,659	4.6
Svay Dankum commune	47,670	97.1	9,167	5.2

63. Items of Historical and Cultural Significance. The highly significant remnants of the Angkorian civilization, which occupied much of what is now north and northwest Cambodia from the ninth to the fifteenth centuries, generally lie outside the modern cities. They are important economic assets, supporting a major tourism industry of which the city of Siem Reap is the main hub, due to proximity to the Angkor Wat and to a lesser degree the Tonle Sap Lake. Siem Reap has over 300 hotels and guesthouses, supporting a large transitory tourist population which places significant demands on the city's infrastructure. Although there was a significant increase in recent years, the number of tourists/visitors have decreased significantly during the COVID-19 pandemic from March 2020 and still continuing in August 2021. It is expected that visitor numbers will bounce back.

64. The development of Siem Reap was strongly influenced by the French colonial era from 1867 to 1946 and buildings from that era are distinctive and remain in parts of town, though many of the larger administrative, commercial and residential buildings have been replaced during recent decades. Other items of cultural significance include colonial era buildings and monuments, many of which feature distinctive Khmer architecture and have been built since independence in 1946.

VI. INSTITUTIONAL ARRANGEMENTS & RESPONSIBILITIES

65. The management framework overseeing the implementation of the environmental management plan (EMP) and its addendum is defined as below:

66. **Ministry of Public Works and Transport (MPWT)** is the Implementing Agency for the wastewater and septage management improvement and for Siem Reap interceptor sewer replacement subproject.

67. A **Project Management Unit (PMU)** formed in the General Department of Public Works within MPWT for the wastewater/septage subprojects has staff, including Social Safeguards Officer and Environmental Safeguards Officer to execute and manage the Project, and oversees the implementation of the subproject in Siem Reap.

68. **The Project Implementation Agency (PIU)** is established in the Provincial Department of Public Works (DPWT) in Siem Reap with responsibility for daily oversight and supervision of subproject implementation. The PIU has, in accordance with the PAM, appointed a Social and Environmental Safeguards Officer.

69. Responsibilities of the PIU include: (i) monitoring and reporting monthly to PMU on project progress; (ii) contract supervision; (iii) liaison with PIAC and PMU in implementation of training programs; (iv) coordinating with other provincial agencies; and (v) community communication.

70. **Project Implementation Assistance Consultant (PIAC):** The PIAC assists the PMU ensuring that contractor prepare their respective contractor's EMP (C-EMP) based on the SPS-compliant EMP and actual site conditions and in evaluating the CEMP; guide the PMU and PIU in supervising, monitoring and reporting EMP implementation during construction and operation.

71. **Contractor:** The Contractor shall take all reasonable steps to protect the environment (both on and off the site) and to limit damage and nuisance to people and property resulting from pollution, noise, and other results of his operations. The Contractor shall ensure that emissions and discharges to surface water or of effluents comply with the limits prescribed in Cambodian environmental regulations.

72. Specific responsibilities of the Contractor include:

(i) Appoint an Environment, Health and Safety Officer to manage, monitor and report on EMP implementation;

(ii) Prepare site-specific CEMP containing the method statements for compliance with environmental management standards in the EMPs;

(iii) Allocate sufficient funding for proper and timely implementation of environmental mitigation and monitoring measures;

(iv) Conduct daily inspection of the site and ensure the implementation of the CEMP during the construction phase;

(v) Prepare/submit monthly reports on mitigation and monitoring activities to the PMUs through the PIAC;

(vi) Act as the local entry point for the project GRM, conduct immediate investigation of any complaint, report all complaints and their resolution to the PMUs. Ensure the timely and appropriate resolution of the complaint or incident in accordance with the GRM.

73. The PMU, PIU, designated PMU Environment Safeguards Officer and PIU Social and Environmental Safeguards Officer with assistance from the PIAC ensure that the EMP including its addendum is part of the construction contract, is implemented, and that the contractor abide by them.

74. The **ADB** is responsible for monitoring to ensure subproject meets the environmental safeguards of the SPS (2009). ADB is to review the project's progress reports and semi-annual environmental safeguards monitoring reports and undertaking review missions to ensure the project is implemented in line with project environmental safeguard requirements, SPS (2009) and Royal Government of Cambodia regulations and guidelines.

75. The **EA** is responsible for the overall conduct of the project and for the consolidation of all reports and project financial statement to MEF and ADB. Although MISTI as EA is overall responsible for consolidation of reports, the PMU of MPWT is directly responsible for the safeguards reporting to ADB.

76. The PIU supported by the PIAC Environment Consultants will provide environmental inputs for the quarterly project progress reports and prepare semi-annual safeguard monitoring reports. The PMU is responsible for submittal of reports to the EA and ADB.

77. As per paragraph 29, MPWT has confirmed, in consultation with MoE and in line with the Prakas on Environmental Impact Assessment Classification for Development Projects (2020), that there is no requirement for domestic environmental compliance for the subproject existing works (Siem Reap Trunk Sewer) and additional trench stabilization and road repaving works (CW01). The confirmation letter is included in Annex 2.

78. The roles and responsibilities for Environmental Management as updated from the PAM are summarized in Table 4 below:

Table 4: Roles and Responsibilities for Environmental Management

Entity	Environmental Roles and Responsibilities
EA	i. Responsible for the overall conduct of the project.
PMU	i. Responsible for project management, coordination, monitoring and supervision, including ensuring implementation of environmental mitigation and monitoring measures; ii. Ensure timely submission for Government approvals related to environmental management; iii. Ensure that the project's environmental management plans are incorporated in the bidding documents and contract documents for all civil works; iv. Ensure EMPs are updated following detailed engineering design, as necessary; v. Review the CEMPs prepared by the Contractors for compliance with standards set in the EMP, instruct revisions as necessary, and approve prior to commencement of construction vi. Ensure public disclosure of relevant project information and ongoing public consultation as per the EMP requirements; vii. Co-ordinate and report on the project specific safeguards GRM, ensure that necessary actions to resolve complaints are taken, documented and reported; viii. Ensure monitoring of environmental parameters specified in the EMPs; ix. Ensure compliance with loan covenants in accordance with agreed formats and frameworks; x. Oversee monthly environmental monitoring of the project and submit semi-annual environmental monitoring reports to ADB for disclosure on ADB's website;

Entity	Environmental Roles and Responsibilities
	xi. Oversee project compliance with relevant national and provincial requirements and co-ordinate with the relevant agencies; xii. Review and validate semi-annual environmental monitoring reports prepared with the assistance of the PIAC; xiii. Lead follow-up consultation meetings with relevant institutions, stakeholders and affected persons on environmental issues; xiv. With the assistance of the PIAC, undertake regular construction site inspections and oversee implementation of the CEMPs by contractors;
PIU	i. Responsible for monitoring and reporting monthly to PMU on project progress; ii. Responsible for liaison with PIAC and PMU in implementation of training programs; iii. Responsible for coordinating with other provincial agencies; iv. Responsible for community communication.
PIAC	i. Support PMUs with update of IEEs/EMPs following detailed engineering design; ii. Check Bill of Quantities to ensure Contractors made adequate provisions for environmental mitigation and monitoring; iii. On behalf of PMUs and working with PIUs supervise the civil works packages and implementation of EMP mitigation and monitoring measures.
PIAC Environment Specialists (International and National)	i. Review the detailed designs prepared for each subproject for compliance with the EMPs prepared during the PPTA. Update the IEEs and EMPs to reflect changes, modifications and additions that have potential impacts during construction and operation phases of the subprojects. ii. Examine the CEMPs prepared by contractors for compliance with the EMP and advise PMU of revisions that need to be incorporated prior to approval and commencement of civil works; iii. Ensure that all associated project facilities have the required permits prior to commencement of civil works; iv. Brief PIAC engineering and PIU supervision staff on EMP provisions and provide checklists to ensure that they will be able to adequately supervise on a day-to-day basis the contractors and subcontractors about proper and timely implementation of mitigation measures specified in the EMP; v. Monitor implementation of environmental mitigation measures and environmental performance of contractors based on the EMP schedule and assist MPWT in the preparation of semi-annual environmental monitoring reports for submission to ADB; vi. Undertake training for the MPWT/PMU and PIU staff on environmental management and monitoring, to build their capacity in these areas. The training will be implemented through on-the-job training and workshops based on the provisions of the EMP; and vii. Ensure that the affected stakeholders and sensitive receptors (e.g. hospitals, schools, and temples) are regularly updated on project activities and are aware of the multiple entry points to the project safeguards GRM.
Construction Contractor	i. Appoint an Environment, Health and Safety Officer to manage, monitor and report on EMP implementation; ii. Prepare site-specific CEMP containing the method statements for compliance with environmental management standards in the EMPs; iii. Allocate sufficient funding for proper and timely implementation of environmental mitigation and monitoring measures; iv. Conduct daily inspection of the site and ensure the implementation of the CEMP during the construction phase;

Entity	Environmental Roles and Responsibilities
	v. Prepare/submit monthly reports on mitigation and monitoring activities to the PMUs through the PIAC; and vi. Act as the local entry point for the project GRM, conduct immediate investigation of any complaint, report all complaints and their resolution to the PMUs. Ensure the timely and appropriate resolution of the complaint or incident in accordance with the GRM.
ADB	i. Monitor and supervise the overall environmental performance of the project, review the semi-annual environmental monitoring reports and disclose the reports on ADB website in accordance with ADB Public Communications Policy (2011); and ii. Conduct missions to review environmental compliance and provide advice on corrective actions.

VII. ENVIRONMENTAL IMPACT MITIGATION PLAN

79. The relevant EMP mitigation measures that applies to the scope of work under the variation are specified in Table 5. The plan includes potential environmental impacts, proposed mitigation measures, responsible parties, location, and timing of mitigation measures.

80. The contractor is expected to develop specific Construction Environmental Management Plan (CEMP) which is a detailed plan that sets out the contractor's approach to mitigating and managing environmental risks and impacts.

Table 5: Environmental Impact Mitigation Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Activity reporting	Responsibility	
				Supervision	Implementation
		PRE-CONSTRUCTION			
Disclosure, engagement of community through consultation	No community impacts	1. Consultation of community based on final detailed designs, including distribution of PIB	Once	PMU	PIU supported by PIAC
Unexploded ordnance clearance	Injured worker or public	2. Seek clearance for unexploded ordnance (UXO) at all relevant sites of subproject implementation and materials extraction.[1]	Once	PMU	CMAC / PIU
CEMP	All	3. The Contractor will update the CEMP and ensure nomination of: • Contractor environment, H&S officer(s) • Contractor GRM focal point and community liaison (Contractor Community Liaison and Consultation Specialist) 4. The CEMP will include: • Community and occupational H&S Plan • Emergency response • COVID-19 response plan • Traffic management plan	Once	PIAC	Contractor
GRM	Dissemination	5. Contractor to nominate 'Contractor focal point' for GRM and put in place complaints register and complaints form. 6. Erect sign boards with project details and GRM procedures/contact details at the construction sites.	Once	PIU supported by PIAC	Contractor

[1] MPWT will secure UXO clearance document before works commence.,

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Activity reporting	Responsibility	
				Supervision	Implementation
		CONSTRUCTION			
Disclosure, engagement of community through consultation	No community impacts	7. Ensure advance notice is given to those affected by the construction works especially access, preferably a week ahead of starting the works in each construction section. Consult local residents and shops to ascertain their site access requirements.	Weekly	PIU supported by PIAC	Contractor
Transportation, construction, loading and unloading	Accessibility, traffic congestion and road safety	8. Provide effective traffic management in accordance with the traffic management plan including clear detour routes. Ensure routes for vehicles are not blocked and signage is provided to reduce speeds and show drivers in advance of any changes to road surface or traffic direction and detour directions to improve traffic flow. 9. Provide suitable safety measures including signage, flag controls, adequate lighting, fencing, traffic cones, road diversions to minimize risk of adverse interactions between construction works and traffic flows. 10. Where risks occur given changes to traffic lanes or road closures, additional lighting will be provided to allow visibility of the changes at night. 11. Carry out the work to enable through traffic flow at all times; Road excavation and work shall be carried out on only half of the road width at any one time. The contractor may need to identify or create temporary parking space for local residents living in the immediate zone of construction. Should side roads unexpectedly be temporarily closed due to construction, the contractor will ensure emergency access. 12. Ensure adequate pedestrian and vehicular access to enter buildings and properties, particularly commercial premises during opening hours. 13. Ensure business and residents have daily access. 14. The contractor to maintain uninterrupted traffic access by keeping at least one lane open. 15. Contractor to open works equivalent to one-day's work at the time to minimize disturbance.	Daily	PIU supported by PIAC	Contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Activity reporting	Responsibility	
				Supervision	Implementation
Excavation activities, Construction activates	Damage to existing facilities and trees, disruption of utilities	16. The contractor should work together with the relevant departments to ensure that any expected disruption to public assets will be communicated prior to construction. 17. Investigate above-ground and underground structures, facilities, and utilities (power transmission poles, telecom poles, underground pipelines, etc.) before excavation. 18. If any underground utility is damaged, it is necessary to close the upstream valve immediately, contact the owner, maintain and treat timely. 19. Contractor responsible to reinstate any damaged pavement and driveways. 20. The contractor will be responsible for the removing, rebuilding, reinstallation and maintenance of affected public assets. 21. Restoration of any damage will be at the expense of the contractor. 22. Contractor responsible to reinstate, repair damages or compensate owners for any damages and agree this directly with the owners. 23. Maintain existing trees and undertake only required and approved clearing.	daily	PIAC, PMU, PIU	Contractor
Transportation of construction material and spoils, Production of construction materials, Construction activities	Air quality and dust emissions	24. Conduct dust suppression by water spraying on road surfaces and where required. 25. Establish dust screens around construction site and at sensitive receptors. 26. Cover trucks carrying dry construction materials, such as soil, with tarpaulins or other suitable cover. 27. Position any stationary emission sources away from sensitive receptors including schools and residential areas. 28. Locate asphalt and concrete batching facilities 500 m downwind from the nearest residence and fitted with necessary equipment such as bag house filters to reduce fugitive dust emissions.	daily	PIAC, PMU, PIU	Contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Activity reporting	Responsibility	
				Supervision	Implementation
		29. Maintain construction vehicles and machinery to a high standard to minimize emissions. 30. Provide sufficient PPE such as face mask, gloves and protective clothes to protect workers.			
Transportation; Operation equipment and vehicle	Construction noise and vibration	31. Maintain all exhaust systems in good working order; undertake regular equipment maintenance. 32. Restrict construction activities using heavy/noisy machinery work at night. 33. All construction workers will use appropriate personal protective equipment (PPE) incl. ear defenders when operating machinery. 34. Ensure mobile noise barriers are available. Establish temporary noise barriers around excessively noisy activity areas. Evaluate the need for a noise barrier or acoustic fence at the sensitive receptors.	daily	PIAC, PMU, PIU	Contractor
Excavation	Spoils generation /disposal	35. Spoil disposal will only be to local authorities approved areas or agreed with the community/landowner. No disposal of agriculturally productive land or within 50 m of water course.	daily	PIAC, PMU, PIU	Contractor
Construction activities	Generation of solid and liquid wastes	36. Provide garbage bins and facilities at site for storage of construction waste and domestic solid waste. 37. Separate solid waste into hazardous, non-hazardous and reusable waste streams and store temporarily on site in secure facilities with weatherproof flooring and roofing. 38. Prohibit dumping of waste, burning of waste, storage of waste near water bodies or disposal in water bodies. 39. Undertake regular collection and disposal of wastes to sites approved by local authorities.	daily	PIAC, PMU, PIU	Contractor
Construction activities; Production construction materials	Pollution due to spills of fuel and other hazardous substances, Water quality	40. Store fuel and hazardous substances in paved areas with embankment. If spills or leaks do occur, undertake immediate clean up. Undertake refueling on sealed surface. No refueling near the drainage canal. 41. Ensure availability of spill clean-up materials (e.g., absorbent pads, etc.) specifically designed for petroleum	daily	PIAC, PMU, PIU	Contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Activity reporting	Responsibility	
				Supervision	Implementation
		products and other hazardous substances where such materials are being stored. 42. Train relevant construction personnel in handling of fuels and spill control procedures. 43. Ensure all storage containers are in good condition with proper labelling. 44. Store hazardous materials above flood level. 45. Discharge of oil contaminated water shall be prohibited. 46. Use silt fence at drainage canal during construction works at the canal. 47. Provide adequate toilet facilities and collect septage for disposal at WWTP.			
Construction activities; Produce construction materials; Transportation activities	Occupational and community health and safety	48. Implement the Occupational and Community Health and Safety Plan, including: • Engagement of H&S qualified officer • Daily toolbox meetings (safety briefings) • Conduct orientation for all workers on safety and environmental hygiene, sexually transmissible diseases, risks due to COVID19 and protective measures. • Provide first aid kits that are readily accessible by workers. • Specify appropriate/required personnel safety equipment such as safety boots, helmets, gloves, protective clothes, masks, goggles, and ear protection and provide this to workers. • Maintain site accident record book where all minor and major accidents and incidents are recorded along with subsequent corrective actions taken. 49. Contractor to implement a "No-Alcohol, No-Gambling and No-Dangerous Drug Policy" at the construction site.	daily	PIAC, PMU, PIU	Contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Activity reporting	Responsibility	
				Supervision	Implementation
		50. Contractor to ensure that there is no employment of child laborers and trafficked workers in own organization and by subcontractors. 51. The emergency response plan to detail preventative and response measures for all types of incidents covered in the emergency plan, including: Injury and Accidents; Spillage; Fire; COVID19; Other Incidents. 52. Plan and execute work in compliance with country-specific COVID-19 risk management regulations and directives including directions of the General Department of Labor, Ministry of Labor, and Vocational Training. 53. Conduct workplace risk assessment to identify low, medium or high exposure risk to COVID-19. Prepare an action plan for prevention and mitigation of the spreading of COVID-19 and a COVID-19 response plan.			
Project Completion	All	54. Verify at contractor' handover that all sites used by the contractor during construction have been restored and returned to original owner/user after completion of construction.[2]	once	PIAC, PMU, PIU	Contractor

[2] As the Contractor will use local labour, there will be no need for a worker's camp and thus the site demobilization will be limited.

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Activity reporting	Responsibility	
				Supervision	Implementation
		OPERATION			
Operation	Decreased working condition of road and pavement due to inadequate maintenance	55. Footpath and road maintenance to be integrated in the city's road cleaning and maintenance program.	once	MPWT	PDPWT

VIII. MONITORING PLAN

81. Environmental monitoring activities of the civil work include: (1) monitoring the EMP compliance, and (2) monitoring of environmental impacts caused by the Sub-project activities. Environmental impact monitoring will be implemented with major concentration on the construction phase.

(i) Environmental Performance Monitoring is conducted to evaluate compliance with standard operating procedures, national standards on environment and technical specifications. The main purpose of environmental performance monitoring is to ensure that all proposed mitigation measure will be applied by the contractors during the construction time.

(ii) Environmental impact monitoring is conducted to evaluate the impacts by the sub-project activities on ambient environmental quality.

82. Responsibilities and budget for environmental impact monitoring during the construction and operation phases are identified as follows.

- Construction phase

- All mitigation measures that belong to the contractor's responsibilities shall be implemented by the Contractor. The costs are included in the civil contract between construction contractor and PMU.
- The contractor shall bear the costs for environmental monitoring required to document compliance with environmental standards (included in Annex 4) during the construction phase, including sample taking and analysis, and preparing reports.

- Operation phase

- During the operation and maintenance phase, the works operation and management unit will provide budget for implementing mitigation measures, capacity strengthening training, and staff salary.

83. The environmental monitoring plan for the EMP is provided in the Table 6 below. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the subproject. The monitoring plan focuses on the construction and post construction operation of the subproject components, and consists of environmental indicators, the sampling locations & frequency, method of data collection, and responsible parties, and estimated costs are tabled separately. The first response to any complaint or issue will be enforcement of management and mitigation measures. If an issue persists monitoring by the Ministry of Environment will be commissioned by the PIAC at the expense of the contractor.

Table 6: Environmental Monitoring Plans

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility Supervision / Implementation	
					Supervision	Implementation
Construction						
1. Disclosure of GRM and construction activities and schedules	All project sites	Confirm GRM and construction schedules are disclosed to the public	Prior to commencement of works	Once	PIAC	Contractor
2. Implementation of construction phase environmental mitigation measures Note: Implementation of EMP measures monitoring should be done at least weekly by the contractors, and monthly by PIAC	Work area	Site visit, interviews with local residents, coordination with concerned agencies	Quarterly (on a regular basis) Random checks and to validate complaints	For each event	PIAC	Contractor
3. Affected surface water quality TSS, heavy metals (As, Cd, Pb,) total & fecal coliform, pH, DO, COD, BOD5, temperature, NH3, and other nutrient forms of N & P compared to standards specified in Sub-decree on Water Pollution Control, 1999 (No. 27 ANK.BK)	Rivers or streams close to construction/workers camp	Field sampling Using field and analytical methods approved by MOE; upstream and downstream.	In response to complaints and in cases of discharge adopt the following procedures. First response: enforcement of management and mitigation measures If issue persists monitoring by Ministry of Environment commissioned by the PIAC at the expense of the Contractor.	For each event	PIAC	Contractor
4. Implementation of construction phase environmental mitigation measures	Work area	Site visit, interviews with local residents, coordination	Quarterly (on a regular basis) Random checks and to validate	For each event	PIAC	Contractor

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility Supervision / Implementation	
					Supervision	Implementation
Note: Implementation of EMP measures monitoring should be done at least weekly by the contractors, and monthly by PIAC		with concerned agencies	complaints			
5. Disclosure of GRM and construction activities and schedules	All project sites	Confirm GRM and construction schedules are disclosed to the public	Prior to commencement of works	Once	PIAC	Contractor
6. Noise in dB(A) compared to standards specified in Sub decree on the Control of Air Pollution and Noise Disturbance, 2000 (No. 42 ANK.BK)	Work area	Noise measurement	In response to complaints adopt the following procedures. First response: Enforcement of management and mitigation measures enforced If issue persists monitoring by Ministry of Environment commissioned by the PIAC at the expense of the Contractor.	For each event	PIAC	Contractor
7. Total suspended particulate/dust compared to standard specified in Sub decree on the Control of Air Pollution and Noise Disturbance, 2000 (No.42 ANK.BK)	Work area	Field sampling	In response to complaints adopt the following procedures. Initial response: Management and Mitigation measures enforced If issue persists monitoring by Ministry of Environment commissioned by the	For each event	PIAC	Contractor

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility Supervision / Implementation	
					Supervision	**Implementation**
			PIAC at the expense of the Contractor.			
8. Other parameters to be sampled, as appropriate, to validate complaints and pollution event(s) due to project activities	Locations to validate complaints or where pollution occurred due to the project (e.g., fuel spill)	Field sampling	In response to complaints	For each event	PIAC	Contractor
A) Public comments and Complaints B) Incidence of worker or public accident or injury	A) Using hotline number placed at construction areas B) At all construction areas	A) Information transferred by telephone hotline number posted at all construction sites. B) regular reporting by contractors/PIU	A) Continuous Public input B) Continuous	Quarterly	A & B) & daily observations:	
					PIAC	Contractor

IX. PUBLIC CONSULTATION PROCESS

84. The public consultation conducted in relation to the additional works is presented in Table 7 below:

Table 7: Public consultation process

Activity	Participant	Expected result	Schedule	Cost
Pre-construction				
Consultations in preparation of the additional works	PIAC, PIU	Assessment of potential impacts, identification of avoidance and mitigation measures	June 2021	Included in project costs
Consultation of community based on final detailed design, including distribution of PIB	PIAC, PIU	Information about general project schedule, traffic and access, and GRM provided to local residents.	August 2021 or prior to construction	Included in project costs
Construction phase				
Provide advance notice to those affected by the construction works especially access, one week ahead of starting the works in each construction section. Consult local residents and shops to ascertain their site access requirements	Contractor	Information about specific project schedule provided and access requirements obtained	During the construction phase	Included in the contractor's bid

85. The Environmental Safeguard and the Social Safeguards and Resettlement Specialists organized and conducted consultations in June 2021. The consultations for the subproject additional works were carried out from 8th to 13th June 2021 with participation of the local/community people, businesses, residents, PIU and other relevant local authorities in the subproject area. The details of participants are provided in the Table 9 below. There were three consultation meeting with local authority and PIU, and one-to-one consultations with total of 125 participants/persons (of which 55 were female). Due to the COVID-19 pandemic travel and meeting restrictions the consultations were carried out in small groups with limited participants or one-to-one.

Table 8: Consultation/Stakeholder Meetings Conducted

No	Date	Activity	Participants
1	8th – 9th June 2021	Site checking	6 (M 6 / F 0)
2	8th–13th June 2021	Consultation (one-to-one) with local people	125 (M 70 / F 55)
3	10th June 2021	Meeting with city hall	3 (M 3 / F 0)
4	10th June 2021	Meeting with local authorities	2 (M 2 / F 0)
5	11th June 2021	Meeting with PIU and site checking	4 (M 4 / F 0)
Total			140 (M 85 / F 55)

86. The consultation meetings discussed the proposed project sections and the scope of works with the participants and also explained the grievance redress mechanism and expected time schedule. After explanation of the subproject sections the participants expressed their concerns, suggestions and questions. Below are the findings of the discussions during the one-to-one consultation with residents and business owners along the roads are summarized.

87. The one-to-one consultations consisted of respondent's working predominantly as shop owners or sellers (71%) or as service providers (22%). More than 90% of the respondents expected that the construction would impact daily traffic and cause traffic jams. Less than 5% expected access issues to the properties and less than 5% expected adverse impacts on the environment. The high percentage of respondents in sales and services demonstrate the importance of commerce in the area with high share of female employment and entrepreneurship.

88. The respondents requested a range of support, management measures and steps to be taken during construction. The key issues were speeding up construction (25%), providing sufficient detours (23%, providing contact point for urgent issues or complaints (19%), providing information before start of construction (12%), traffic management to avoid traffic jams (11%), and facilitation and support when they have requests/suggestions/comments (10%).

89. When questioned on the opinion about the road upgrade and footpath improvement, the respondents stated that this is a first priority for them (54%), that it is good (26%), or that it is very good/important (20%). This demonstrates that the respondents are overwhelmingly positive of the additional works.

90. When asked of their views in case the additional works would impact their property or assets, 56% of the respondent's state that the project is welcome and that as priority they want the road rehabilitated and a footpath with enough width for a proper side walk, 23% indicate that they will move out of the construction zone and not require compensation as the local authorities advised them of the upcoming road improvement a long time ago, while 20% indicate they will move outside the footpath during construction. Although no impacts are anticipated, great care has been taken to avoid all impact to structures and to mitigate disturbances, it is an indication that any accidental impacts can be resolved quickly in cooperation of the contractor, the PIU and PIAC.

91. When asked about the peak business hours for businesses along the alignment, 51% of the respondents indicated morning, 28% indicated that they have no preference, 12% indicated evening, and 9% indicated afternoon. Even though initial indication of the peak business hours has been collected, a more detailed consultation with the individual houses or businesses will be organized prior to construction by the contractor and PIAC to ascertain the optimal time for construction. The full results are presented in Annex 5.

92. Consultations will continue to take place throughout construction of the subproject and any concern will be reported upon in the environmental and social safeguards monitoring reports.

X. GRIEVANCE REDRESS MECHANISM

93. A well-structured and functioning Grievance Redress Mechanism (GRM) has been established at the local level by MPWT on 18 November 2019 following standard government procedures to resolve grievances and complaints in a timely and satisfactory manner as required under the ADB SPS 2009. GRM objective is to receive and facilitate resolution of complaints or grievances of households and people in a timely fashion following through a process of conciliation; and, if that is not possible, to provide clear and transparent procedures for appeal.

94. Grievance redress mechanism addresses both informally and formally raised grievances. Informally, an AP can approach the Contractor (during construction) or the Operator (during operation) directly to lodge complaint either by him/herself or with assistance from a third party of his/her choice.

95. A Provincial grievance redress committee (PGRC) was established for the Siem Reap Province by MPWT on 18 November 2019. The PGRC is in charge of the GRM for the subproject. The committee's contact details are included in Table 9. The PGRC has the power, at the administrative level, to make binding decisions on the resolution of eligible complaints. Details of the GRC are included in the Project Information Booklets (PIBs) and distributed to affected communities during the consultations. The GRM guidelines, including procedures and forms in Khmer language are distributed as an attachment to the PIB. The PGRC comprises the members presented in the following table.

Table 9: Provincial Grievance Redress Committee (GRC)

No.	Name	Position	Telephone
1	Pin Prakod	Vice Governor, Siem Reap province, Chair	095-666-678
2	Sok Thol	Administrator Director, Siem Reap province, Vice Chair	012-902-299
3	Ky Vavin	Director, Provincial Department of Public Work and Transport, Siem Reap province, Vice Chair	012-831-385
4	Khud Vudyarith	Director, Water Supply Authority, Siem Reap province, member	012-827-474
5	Hen Puthy	Vice Director Administrator, Siem Reap province, member	012-931-714
6	Nuon Puthyra	Governor, Siem Reap province, member	012-981-515
7	Hy Say	Director, Provincial Department of Land Management, Urban Planning and Construction, member	012-569-798
8	Nuon Krisna	Director, Provincial Department of Water Resource and Meteorology, member	012-890-133
9	Sok Seyha	Director, Provincial Department of Post and Telecommunication, member	012-940-683
10	Sun Kong	Director, Provincial Department of Environment, member	012-755-550
11	Ngov Seng Kak	Director, Provincial Department of Tourism, member	012-509-008
12	Eung Sophorn	Director, Director of Inter-Sector Provincial Department, member	011-876-393
13	Hea Hav	Sang Svay Dangkum Chief, member	092-904-199

96. The contact points for the project-specific GRM are presented in the Table 10.

Table 10: Local Entry Points for the Project-Specific GRM

Name and GRM level	Organization	Position	Contact
Mr. Sok Thol, Third level	Siem Reap province	Administrator Director (Vice Chair)	Tel: 012-902 299
Mr. Seang Keum Than, Third level	Siem Reap City Hall	Administrator Vice Director	Tel: 012 390 571
Mr. Hiep Me, Third level	Project Implementation Unit	PIU, Chair	Tel: 012 870 830
Mr. Say Pich Chenda, Third level	Project Implementation Unit	PIU, Vice Chair	Tel: 012 851 486
Hea Hav, Second level	Svay Dangkum commune	Chief	Tel: 092-904-199
TBN	Contractor	Contractor Community Liaison and Consultation Specialist	TBA
Mr. Chan Narith, First level	Project Consultant Office	Social Safeguards and Resettlement Specialist	Tel: 070 566 998

97. The grievances will be handled thorough a 4 Step formal approach detailed below.

First Step (Village or Commune Level): APs/ AHs can present their complaints or grievances verbally or in writing to the Village or Commune Chief or Contractor and project directly. The Village or Commune Chief will be obliged to provide immediate written confirmation of receiving the complaint and also to advise project. If after 15 days the aggrieved APs do not hear from the Village or Commune Chief, or if they are not satisfied with the decision taken by the first stage, they may bring the complaint to the District Office.

Second Step (District Level): The District office has 15 days within which to resolve the complaint to the satisfaction of all concerned. If the complaints cannot be solved in this stage, the district office will bring the case to the Provincial Grievance Redress Committee.

Third Step (Provincial Level): The Provincial Grievance Redress Committee meets with the aggrieved party and tries to resolve the complaint. Within 30 days of the submission of the grievance, the Committee must make a written decision and submit a copy of the same to the project, and the AH.

Fourth step (Court of Law): If the complainant does not hear from the PGRC or is not satisfied, he/she can bring the case to Provincial Court. The Court will make a written decision and submit copies to the executing agency. If any party is still unsatisfied with the Provincial Court judgment, he/she can bring the case to a higher-level court. However, MPWT where is the project located are responsible for participating/witnessing in all steps.

98. At any time, an AP may contact ADB (Southeast Asia Department) directly, including the ADB Cambodia Resident Mission.

99. If the above steps are unsuccessful, persons who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism[3]. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB operational policies and procedures. The Accountability Mechanism is a last resort mechanism. Project-affected persons are encouraged to first address the issue with available grievance mechanisms at the project level, and they are required to make good faith efforts to address the issue with the relevant ADB operations department prior to submitting complaints to the Accountability Mechanism.
In addition, the grievance redress mechanism dealing with the environmental impacts during construction will resume operation with grievance logs maintained at the contractor's office and records kept on the grievances received per type and their status. The information about both mechanisms have been circulated during various consultations and will be provided prior to and during construction of the investments under the variation order. The Contractor Focal is responsible for community liaison and the Contractor's main contact point for environmental issues as well as social.

XI. REPORTING

100. Environmental monitoring reports will be prepared semi-annually by the PMU supported by the PIAC and submitted to the ADB. Table 11 gives reporting requirements.

Table 11. Reporting Requirements

Report	Frequency	Purpose	From	To
Contractor's progress report	Monthly	EMP implementation progress and monitoring results	Contractor	PIAC
CEMP and EMP compliance report	Monthly	CEMP and EMP compliance	PIAC - Site engineer	PIAC – Environmental specialists
CEMP and EMP progress and compliance report	Quarterly	CEMP / EMP Implementation and compliance	PIAC – National environmental specialist	PIAC – International environmental specialist
Environmental monitoring report (environmental safeguards monitoring report format)	Semi-annual	Full CEMP and EMP implementation and adherence to environmental covenants/conditions	PMU	ADB

XII. ESTIMATED COST OF THE EMP ADDENDUM

101. **Implementation of EMP by Contractor:** The cost for organization, training, dissemination, procurement, operation of equipment, and labor for implementation of mitigation measures in and out of the site in accordance with the EMP and project bidding and contractual document requirements is integrated in the construction package.

[3] https://www.adb.org/site/accountability-mechanism/how-file-complaint

102. Environmental protection and monitoring of compliance with the Environmental management Plan (EMP) for the proposed works including the preparation, approval and application of Contractor's Environmental Management Plan (CEMP), update of the traffic management and health and safety plans, implementation of these two plans, and the environmental monitoring plan is $31,500 and will be part of the Contractor's contract variation[4]. Any required control monitoring by the Ministry of Environment to document compliance with environmental standards (included in Annex 4) in case of complaints, will be commissioned by the PIAC at the expense of the Contractor.

103. **Supervision of EMP Implementation by PIAC:** The cost for PIAC to supervise EMP implementation in accordance with the EMP and the project bidding and contractual documents is integrated in the contract of the PIAC and thus excluded from the cost of the EMP.

XIII. CONCLUSION

104. The EMP addendum, if implemented as directed, will mitigate impacts on the natural environment and affected people to an acceptable level. The key party for mitigation measure implementation is the construction contractor. The implementation of this EMP will be closely monitored and reported on by the relevant stakeholders in the project.

105. A robust GRM is established, as outlined in this EMP addendum. It will ensure that all unplanned impacts which cause grievances for affected people are managed swiftly and a satisfactory outcome brought about.

[4] Contract No.: MPWT/PWSSP/ICB/CW1, dated 12 November 2018 as amended:

Annex 1: COVID-19 Protection and Mitigation Measures

1 Construction Site Working Conditions Mitigation Measures for COVID-19	
1. Form a joint team to plan and organize return to work	• Develop or convene a joint occupational safety and health committee with members representing the employer and workers. • Train team members on the basic principles for the formulation and implementation of occupational safety and health preventive and control measures. • Develop and communicate a work plan on safe working for COVID-19. Such plan should be fully aligned with any government regulations and guidelines on COVID-19 prevention and control, or in the absence thereof, with international good practice guidelines as may be updated from time to time.
2. Risk assessment to decide when to work, who works and how	• Undertake a risk assessment to determine the preventive and control measures. • Ensure preventative measures are in place before resuming or beginning construction work.
3. Adopt engineering, organizational and administrative measures	• Avoid physical interaction and maintain physical distancing requirements as prescribed by national policy, or in the absence thereof, international good practice. • Ventilate enclosed workplaces including work camps and communal spaces. • Avoid concentration of workers - limit the capacity of common areas such as work camp dining rooms and changing rooms to allow the minimum separation of 2 m and organize one-way systems. This includes sleeping areas which must be a minimum of 2 m between beds. • Put in place training and information on COVID-19 and measures required for its management. • The construction site is to be segregated to the extent possible in zones or other methods to keep different crews physically separated at all time. • Stagger break and lunch schedules to minimize the number of people in close proximity to one another.
4. Regularly clean and disinfect	• Increase the frequency of cleaning and disinfection, in particular heavily trafficked areas and common areas, including work camps. • All door handles, railings, ladders, switches, controls, eating surfaces, shared tools and equipment, taps, toilets, and personal areas are wiped down at least twice a day with a disinfectant. • Discourage the sharing of items such as cups, glasses, plates, tools.
5. Promote personal hygiene	• Provide workers with the conditions and means necessary for frequent hand washing (soap, water or alcohol gel) with a posted hand washing protocol at site entries, exits, bathrooms, communal areas, offices, and any other areas with commonly touched surfaces. • Inform workers of the need to avoid physical contact when greeting, and avoid touching eyes, nose and mouth. • Inform workers of the need to cover the mouth and nose with a disposable handkerchief when coughing or sneezing or the crook of their arm. • Dispose of tissues in a lined and covered waste bin and wash hands afterwards.
6. Provide PPE and inform workers of its correct use	• Identify appropriate PPE related to the tasks and health and safety risks faced by workers according to the results of risk assessment and the level of risk, and provide it to workers free of charge and in sufficient number, along with instructions, procedures, training and supervision.

	• Non-medical face-coverings (such as homemade cloth masks) should be worn as mitigation for catching and transmitting the virus, but are not to be treated as substitutes for proper handwashing.

7. Health surveillance and insurance	• Before entering the site, staff and visitors must confirm that they are not currently exhibiting flu-like symptoms.
	• Monitor the health status of workers, develop protocols for cases of suspected and confirmed COVID-19. The protocol will state that:
	  • Workers with symptoms or confirmed cases must be isolated within the construction camp or stay at home for 7 days after symptoms started.
	  • If symptoms persist after 7 days the person must isolate until the symptoms stop.
	  • People who have been in close contact with the person with confirmed COVID-19 be quarantined for 14 days.
	• All workers in quarantine or isolation must be provided with adequate food, water, medical assistance and sanitation.
	• Identify workers who have had close contact with people infected with
	• COVID-19 and follow national medical guidance.
	• Communicate confirmed cases of COVID-19 infection to the appropriate authorities.
	• All workers should be provided with health insurance that includes
	• COVID-19 treatment

8. Consider other hazards, including psychosocial	• Promote a safe and healthy working environment free from violence and harassment. • Encourage health promotion and wellbeing in the workplace through enough rest, balance of physical and mental activity and adequate work- life balance. • Implement prevention and control measures for the use and storage of chemicals, particularly those used for disinfection during COVID-19.
9. Review emergency preparedness plans	• Develop an emergency plan adapted to COVID-19 and regularly review it.
10. Review and update preventive and control measures as the situation evolves	• Periodically monitor prevention and control measures to determine whether they have been adequate to avoid or minimize risk, and identify and implement corrective actions for continuous improvement. • Establish and maintain records related to work-related injuries, illnesses and incidents, worker exposures, monitoring of the work environment and workers' health.
Source: Adapted from: ILO, WHO, Canada Construction Association, and UK Government.	

Annex 2: Confirmation of no national environmental compliance procedure required

KINGDOM OF CAMBODIA
Nation Religion King
ព្រះរាជាណាចក្រកម្ពុជា

Ministry of Public Works and Transport

Project Management Unit
No.2874 PMU/MPWT/PWSSP/21

Date: 24 August, 2021

Mr. Srinivas Sampath
Director, Urban Development and Water Division
Southeast Asia Department
Asian Development Bank
6 ADB Avenue, Mandaluyong City,
1550 Metro, Manila, Philippines,
Tel: (632) 632-5279; Fax: (632) 636-2018

Subject: ADB Loan 3630-CAM (COL)/CKH1188 CFA)/Grant No. 0561-CAM (EF)
Provincial Water Supply and Sanitation Project (PWSSP)
- **Confirmation on No Requirement for Domestic Environmental Compliance for Siem Reap Trunk Sewer (Existing Works) and Its Additional Trench Stabilization and Road Repaving Works**

Dear Mr. Srinivas Sampath,

According to MoE's Prakas on Environmental Impact Assessment Classification for Development Projects (2020) and consultation with MoE, we would like to confirm that there is no requirement for domestic environmental compliance for existing works (Siem Reap Trunk Sewer) and additional trench stabilization and road repaving works (CW01). In this regard, please kindly find this confirmation letter for your records.

Thank you and we look forward to the smooth implementation of the project.

Yours sincerely

H.E. Suy San
Secretary of State
Ministry of Public Works and Transport

CC:
Ms. Allison Woodruff, Project Officer, ADB HQ
Mr. Non Wattanak, Deputy Director, MEF
Ministry of Environment

Attachement:
MoE's Prakas on Environmental Impact Assessment Classification for Development Projects (2020)

Road 598, Chraing Chamres II, Russey Keo, Phnom Penh, Cambodia. Tel: (855) 23 426110

KINGDOM OF CAMBODIA
NATION RELIGION KING

Ministry of Environment
No. 021 PRK.BST.

PRAKAS
ON
ENVIRONMENTAL IMPACT ASSESSMENT CLASSIFICAON
FOR DEVELOPMENT PROJECTS

Minister of Environment

- Having seen the Constitution of the Kingdom of Cambodia;
- Having seen the Royal Decree No. NS/RKT/0918/925 dated 06 September 2018 on the Appointment of the Royal Government of the Kingdom of Cambodia;
- Having seen the Royal Kram No. NS/RKM/0618/012 dated 28 June 2018, promulgating the Law on the Organization and Functioning of the Council of Ministers;
- Having seen the Royal Kram No. NS/RKM/0196/21 dated 24 January 1996, promulgating the Law on the Establishment of the Ministry of Environment;
- Having seen the Royal Kram No. NS/RKM/1296/36 dated 24 December 1996, promulgating the Law on the Environmental Protection and Natural Resource Management;
- Having seen the Royal Kram No. NS/RKM/0208/007 dated 15 February 2008, promulgating the Law on Protected Areas;
- Having seen the Sub-decree No. 135 ANKR.BK dated 05 July 2016 on the Organization and Functioning of the Ministry of Environment;
- Having seen the Sub-decree No. 72 ANKR. BK dated 11 August 1999 on the Environmental Impact Assessment Process; and
- Referring to requirement of the Ministry of Environment;

HEREBY DECIDES

Article 1.-

The Prakas is purposely to coordinate and provide the public and private development project proponents the Guidelines on Effective Implementation of Environmental Impact Assessment Procedures for development projects in the Kingdom of Cambodia.

Article 2.-

The aim of the Prakas is to classify the environmental impact assessments for development projects with the requirement of Contracts on Environmental Protection and/or Initial or Full Environmental and Social Impact Assessment (IEIA or EIA) reports.

Article 3.-

The Prakas is effectively applied to any proposed development projects, including existing and being implemented activities conducted by private individuals or companies, joint-venture or public companies or government ministries/agencies as stipulated in the Appendix, except the special and urgent development projects that are required to be decided by the Royal Government of Cambodia.

Article 4.-

The development projects that require the Contract on Environmental Protection are referred to those with minimal negative environmental and social impacts as listed in the Appendix. For the projects with moderate or severe negative impacts on the environment and society, the project proponents are required to submit IEIA or EIA reports to the Ministry of Environment.

In case that the development projects require the Contract on Environmental Protection, the project proponent shall attach the Environmental Management Plans (EMPs).

Article 5.-

The development projects that require initial environmental impact assessment are referred to any projects with moderate negative environmental and social impacts as listed in the Appendix. In case that the projects have severe impacts on the environment and society, the Ministry of Environment shall require the project proponents to prepare full environmental impact assessment reports.

Article 6.-

The development projects that requires full environmental impact assessment are referred to any projects with severe negatives impacts on the environment and society as listed in the Appendix.

Article 7.-

The time frame for the Contract on Environmental Protection to be reviewed and approved is 28 (Twenty-Eight) working days in accordance with the Joint Prakas on Provision of Public Service of the Ministry of Environment between the Ministry of Environment and the Ministry of Economy and Finance.

The time frame for initial or full environmental impact assessment reports to be reviewed and approved shall be conformed with the Sub-decree No. 72 ANKR. BK dated 11 August 1999 on the Environmental Impact Assessment Process and other relevant valid regulations

Article 8.-

The development projects as listed in the Appendix of the Prakas shall be subject to modification in alignment with the Prakas issued by the Minister of Environment.

Article 9.-

Any provisions that are contrary to the Prakas shall be considered abrogated.

Article 10.-

Secretary of State, Under-Secretary of State, Chief of Cabinet, Secretary General of the General Secretariat of the National Council for Sustainable Development, all Director General of the Ministry of Environment, Inspector General, Director of the Department of Environmental Impact Assessment and Directors of all Subordinating Units of the Ministry of Environment shall exercise the Prakas from the signing date onwards.

Phnom Penh, 03 February 2020

MINISTER

(Signed and Stamped)

SAY Sam Al

cc:

- Council of Ministers
- Council for Development of Cambodia
- Cabinet of Samdech, Akka Moha Sena Padei Techo Prime Minister
- Cabinet of Samdech, Excellency, Lok Chumteav Deputy Minister
- Municipal and Provincial Offices
- As stipulated in the Article 10 (for implementation)
- Royal Gazette
- Archive

APPENDIX

Prakas No. 021 PRK.BST dated 03 February 2020
On
Environmental Impact Assessment (EIA) Classification for Development Projects

No.	Types of Projects	Environmental Impact Assessment Classification based on the scales of development projects		
		EIA[1]	IEIA[2]	Contract on Environment Protection
1. Mining, Energy and Industrial Sectors				
1	mining and/or petroleum and/or gas exploration		(All sizes)	
2	Business in mining industries	(All sizes)		
3	Business in petroleum and/or gas mining	(All sizes)		
4	Business in all types of construction mining, including limestone, marble, mudrock, crushed rock, granite, gravel, sand, laterite, soil, clay, phosphorite, kaolin—etc.	(> 40 ha)	(>10-40 ha)	(≤ 10 ha)
5	Business in mining crafts			(≤ 10 ha)
6	precious mining processing plants	(All sizes)		
7	Mining wash stations	(All sizes)		
8	Gas production plants	(All sizes)		
9	Petroleum refinery plants	(All sizes)		
10	Petrochemical plants	(All sizes)		
11	Petroleum and/or gas piping facilities	(≥ 2 km in length)		
12	Petroleum and/or gas reservoir station for distribution	(> 1.000.000 liters)	(≤ 60.000 – 1.000.000 liters)	
13	Gasoline and/or gas stations or gasoline and/or gas reservoir stations	(> 60.000 liters)	(> 40.000 – 60.000 liters)	(≥ 8.000 – 40.000 liters)
14	Cement plants	(All sizes)		
15	Hydropower plants	(> 50 Megawatts)	(≥ 1 – 50 Megawatts)	(< 1 Megawatts)
16	Power plants	(> 50 Megawatts)	(≥ 5 – 50 Megawatts)	(< 5 Megawatts)
17	Power sub-station construction projects		(All sizes)	

[1] Full Environmental Impact Assessment
[2] Initial Environmental Impact Assessment

18	Chemical fertilizer plants	(All sizes)		
19	All types of paint manufacturing plants	all sizes		
20	Chemical plants	(All sizes)		
21	All types of metal processing plants such as nails, barbed wires, nets	(≥ 300 tons/ month)		
22	All types of metal melting plants	(All sizes)		
23	All types of H-metal and other material plants	(All sizes)		
24	Natural diesel plants	(All sizes)		
25	Ethanol/methanol plants	(All sizes)		
26	Fuel refinery plants from used car tires	(All sizes)		
27	Battery manufacturing plants	(All sizes)		
28	Wine, beer and alcohol brewery plants	(All sizes)		
29	Tobacco and cigarette factories	(All sizes)		
30	Calcium Carbide manufacturing factories	(All sizes)		
31	Grease and engine oil manufacturing plants	(All sizes)		
32	Paper factories	(All sizes)		
33	Paper pulp manufacturing and processing factories	(All sizes)		
34	Leather crusting and processing factories	(All sizes)		
35	Organic fertilizer factories		(All sizes)	
36	All kinds of electrical device and electronic equipment manufacturing factories		(All sizes)	
37	Machinery, industrial equipment and accessories manufacturing and assembling plants		(All sizes)	
38	Automotive manufacturing factories		(All sizes)	
39	Plastics manufacturing plants		(All sizes)	
40	Plastics processing plants		(All sizes)	
41	Pesticide factories		(All sizes)	
42	Detergent, soap and washing liquid factories		(All sizes)	
43	Solid waste recycling and incinerating factories		(All sizes)	

44	Dyeing and weaving factories		(All sizes)	
45	Garment, laundry, printing and dyeing factories		(All sizes)	
46	Sponge and mosquito repellent rubber band manufacturing factories		(All sizes)	
47	Firework and ceremonial explosive material manufacturing factories		(All sizes)	
48	Palm oil extraction plants		(All sizes)	
49	Cassava and other product processing plants		(All sizes)	
50	All types of button and zip factories		(All sizes)	
51	Wool and leather processing garment factories		(All sizes)	
52	Aluminum tin factories		(All sizes)	
53	All purposed-flour factories		(All sizes)	
54	Acacia and eucalyptus tree grinding factories		(All sizes)	
55	All types of glass and glass bottle factories		(All sizes)	
56	Flooring and ceramic tile production facilities		(All sizes)	
57	Charcoal factories (from sugarcane waste, coconut shells, rice husks)		(All sizes)	
58	Rubber latex (processing) plants		(≥ 1.000 tons/year)	(< 1.000 tons/year)
59	Salt production and processing factories		(≥ 3.000 tons/year)	(<3.000 tons/year)
60	Concrete mixing stations		(> 30.000 m^3/month)	(≤ 30.000 m^3/month)
61	Concrete drainage pipe and construction material manufacturing facilities		(> 30.000 m^3/month)	(≤ 30.000 m^3/month)
62	Sugar processing plants		(≥ 3.000 tons/year)	(<3.000 tons/year)
63	Plywood factories		(≥ 100.000 $m^3$of timber/month)	(< 100.000 $m^3$of timber/month)
64	Sawmills		(≥ 50.000 $m^3$of timber/month)	(< 50.000 $m^3$of timber/month)
65	All types of wheel tire and tube manufacturing factories		(≥ 500 tons/year)	(<500 tons/year)
66	Animal feed factories		(≥ 10.000 tons/year)	(< 10.000 tons/year)
67	Food and canned-food processing factories		(≥ 500 tons/year)	(<500 tons/year)

68	All types of soft drink and juice factories		(All types)	
69	Fruit jam factories		(≥ 500 tons/year)	(< 500 tons/year)
70	Rice and grain (processing) millers or factories			(≥ 3.000 tons/year)
71	Fish sauce, soy sauce, soy paste, chili sauce, tomato sauce factories			(≥ 500.000 liters/year)
72	Furniture manufacturing facilities			(≥ 1.000 $m^3$of timber/month)
73	Foundation pile and electric pole factories			(All sizes)
74	Automotive assembling plants			(All sizes)
75	Cotton processing factories			All sizes
76	Automotive and ship repairing facilities			(All sizes)
77	Clean water production and distribution stations			(All sizes)
78	Roof tiles production facilities			(All sizes)
79	Rice flour factories			All sizes
80	All types of electrical device and electronic equipment assembling plants			(All sizes)
81	Lifting equipment assembling plants			(All sizes)
82	Umbrella factories			(All sizes)
83	Candy factories			(All sizes)
84	Shoes factories			(All sizes)
85	All types of bag factories			(All sizes)
86	Sport equipment factories			(All sizes)
87	Mattress factories			(All sizes)
88	Bag, towel, mosquito net and doll factories			(All sizes)
89	Exported packaging product manufacturing factories			(All sizes)
90	Glove, shock, towel, hat factories			(All sizes)
91	Elastic waistband manufacturing and supplies factories			(All sizes)

92	Cartoon factories			(All sizes)
93	Sewing thread, thread rolling and tape factories			(All sizes)
94	Wig factories			(All sizes)
95	Door and decorative glass factories			(All sizes)
96	Floor and wall tiling, fibre cement sheet and tiles factories			(All sizes)
97	All types of office stationery and equipment factories			(All sizes)
98	Zinc sheet, automatic rolling door and construction metal factories			(All sizes)
99	Cloth labelling accessories factories			(All sizes)
100	Cooling tea and yogurt factories			(All sizes)
101	Tissue factories			(All sizes)
102	All types of fishing tool factories			(All sizes)
103	Shoe lining factories			(All sizes)
104	All types of rain coat factories			(All sizes)
105	Grain drying facilities			(All sizes)
106	All types of window blind factories			(All sizes)
107	Garment factories			(All sizes)
108	Vehicle spare part factories			(All sizes)
109	Drinking water purified factories			(All sizes)
110	Glass and bottle cover factories			(All sizes)
111	Cosmetic factories			(All sizes)
112	Cloth hanger and plastic product manufacturing factories			(All sizes)
113	Pipe factories			(All sizes)
114	Kitchen ware and furniture decorative accessory factories (from paper and garment)			(All sizes)
115	Plate, cooking pot, tea pot and other equipment factories			(All sizes)
116	Souvenir and packaging material factories			(All sizes)
117	Khmer noodle and instant noodle factories			(All sizes)
118	All kinds of belt factories			(All sizes)

119	Table cover, mattress sheet and pillow case factories			(All sizes)
120	Shoe accessories factories			(All sizes)
121	Car accessories factories			(All sizes)
122	Cloth accessories factories			(All sizes)
123	Computer and phone charger manufacturing and assembling factories			(All sizes)
124	Altar factories			(All sizes)
125	Candle factories			(All sizes)
126	Sack factories			(All sizes)
127	Ice factories			(All sizes)
128	Workshop tools manufacturing and assembling factories			(All sizes)
129	Construction material and equipment factories			(All sizes)
130	Business in collecting, stocking and processing all types of used car tires			(All sizes)
131	Rubber grinding and manufacturing facilities			(All sizes)
2. Health sector				
132	Hospitals	(All sizes)		
133	Referral hospitals		(All sizes)	
134	Laboratories		(All sizes)	
135	Hemodialysis center		(All sizes)	
136	Medical equipment factories		(All sizes)	
137	Pharmaceutical factories		(All sizes)	
138	Pharmaceutical raw material manufacturing factories		(All sizes)	
139	Polyclinics, clinics and maternity clines			(All sizes)
140	Health care center			(All sizes)
141	Pharmaceutical warehouses			(All sizes)
3. Water resource sector				
142	Irrigation systems		(≥ 5.000 ha)	(1.000 - < 5.000 ha)

143	Waster diversion system		(≥ 5.000 ha)	(1.000 - < 5.000 ha)
4. Agricultural sector				
144	Wetland and coastal areas	(All sizes)		
145	Dense forest business	(≥ 500 ha)		(< 500 ha)
146	Forest land	(≥ 500 ha)		(< 500 ha)
147	Agro-industrial farmland	(≥ 500 ha)		(< 500 ha)
148	Concession forest	(≥ 500 ha)		(< 500 ha)
149	Commercial fishing ports, except community fishing ports		(All sizes)	
150	Poultry farms		(≥ 50.000 heads)	(5.000 - < 50.000 heads)
151	livestock farms		(≥ 500 heads)	(100 - < 500 heads)
152	Crocodile, tortoise and turtle farms		(≥ 500 heads)	(100 - < 500 heads)
153	Aquaculture farms (fish, crabs, shrimps, lobsters---etc.)		(≥ 10 ha)	(5 - < 10 ha)
154	Seaweed aquaculture		(≥ 20 ha)	(5 - < 20 ha)
155	Agro-industrial rehabilitation and development		(≥ 500 ha)	(< 500 ha)
156	Slaughterhouse		(≥ 100 heads/day)	(10 - < 100 heads/day)
157	Agricultural fertilizer and pesticide warehouse			(≥ 10.000 tons/year)
5. Tourism sector				
158	Tourist Attraction sites	(> 50 ha)	(> 10- 50 ha)	(≤ 10 ha)
159	Karaoke, bar, and discotheque businesses	(building area > 45 000 m^2)	(building area > 15 000 – 45.000 m^2)	(building area> 3 000 - 15 000 m^2)
160	Golf Courses		(≥18 holes)	(<18 holes)
161	zoos		(≥ 10 ha)	(<10 ha)
162	Restaurants		(> 500 seats)	(> 100 - 500 seats)
163	Tourist ports		(All sizes)	

164	Floating Restaurants			(≥ 300 seats)
165	Beer Garden			(All Sizes)
166	Tourist cafeteria			(≥ 300 seats)
6. Infrastructure sector				
167	Airport construction	(All sizes)		
168	Urban development	(All sizes)		
169	Stadium construction	(All sizes)		
170	Industrial waste dumping sites	(All sizes)		
171	Industrial /Special Economic Zones	(All sizes)		
172	Automatic sewage water treatment and drainage system facilities	(All sizes)		
173	Railroad Construction	(All sizes)		
174	Commercial port construction, except the community ports	(All sizes)		
175	Construction and operation of undersea cables and infrastructure, including undersea-to-on land cable connections	(All sizes)		
176	Construction of all kinds of buildings (offices, multipurpose buildings, commercial buildings, condominiums, building blocks, flats and villas, supermarkets and other buildings)	(building area > 45 000 m^2)	(building area> 15 000 - 45 000 m^2)	(building area> 3 000 - 15 000 m^2)
177	Hotel constructions near the coastal/ riverfront areas	(> 230 rooms)	(≥ 60 - 230 rooms)	(<60 rooms)
178	Hotel construction far from the coastal and river areas	(> 250 rooms)	(≥ 80 - 250 rooms)	(<80 rooms)
179	Road constructions	(> 100 km)	(≥ 30 - 100 km)	(10 - <30km)
180	Railroad and road expansion	(> 100 km)	(≥ 50 - 100 km)	(10 - <50 km)
181	Road construction in the protected areas	(> 30 km)	(≥ 10 - 30 km)	(<10 km)
182	Renovations to road widen in the nature protected areas	(> 50 km)	(≥ 10 - 50 km)	(<10 km)
183	Power transmission network	(> 230 kV)	(≥ 115 – 230kV)	(<115kV)
184	Mud pumping	(≥ 50 000 m^3)		(<50 000 m^3)
185	Guesthouse construction		(≥80 rooms)	(<80 rooms)
186	Tourist Boats		(≥ 100 tons)	(<100 tons)
187	Natural sewage water treatment and Drainage System facilities		(All size)	

188	Rubbish dumping Sites		(All sizes)	
189	Bridge and Road constructions		(Support weight ≥ 30 tons)	
190	Telecommunications and information technology networks		(All sizes)	
191	On-land Fiber optic cable networks		(All sizes)	
192	Data Centers		(All sizes)	
193	Laboratory centers, including technical quality control and certification		(All sizes)	
194	Local telecommunication (Mobile/Fixed line Phone, Internet and benefit-added services)			(All sizes)
195	Construction projects of stalls and open-space markets			(All sizes)
196	Phone system installation station			(All sizes)
197	Cemeteries			(≥ 5 ha)

Annex 3: Environmental Standards for Cambodia

Table 1: Water Quality Standard in Public Water Areas for Bio-Diversity Conservation

No	Parameter	Unit	Standard Value
A. River			
1	pH	mg/L	6.5 – 8.5
2	BOD_5	mg/L	1 – 10
3	Suspended solid	mg/L	25 – 100
4	Dissolved oxygen	mg/L	2.0 - 7.5
5	Coli-form	MPN/100 mL	< 5000
B. Lakes and Reservoirs			
1	pH	mg/L	6.5 – 8.5
2	COD	mg/L	1 – 8
3	Suspended solid	mg/L	1 – 15
4	Dissolved oxygen	mg/l	2.0 - 7.5
5	Coliform	MPN/100 mL	< 1000
6	Total nitrogen	mg/L	0.1 – 0.6
7	Total phosphorus	mg/L	0.005 – 0.05
C. Coastal water			
1	pH	mg/L	7.0 – 8.3
2	COD	mg/L	2 – 8
3	Dissolved oxygen	mg/L	2 – 7.5
4	Coliform	MPN/100 mL	< 1000
5	Oil content	mg/L	0
6	Total nitrogen	mg/L	0.2 – 1.0
7	Total phosphorus	mg/L	0.02 – 0.09

Note: l = liter; mg = milligram; ml = milliliter

Source: Annex 4 of Sub-decree on Water Pollution Control, 1999

Table 2: Ambient Air Quality Standard[5]

No	Parameters	Period 1 h Average (mg/m^3)	Period 8 h Average (mg/m^3)	Period 24 h Average (mg/m^3)	Period 1-year Average (mg/m^3)
1	Carbon monoxide (CO)	40	20	-	-
2	Nitrogen dioxide (NO_2)	0.3	-	0.1	-
3	Sulfur dioxide (SO_2)	0.5	-	0.3	0.1
4	Ozone (O_3)	0.2	-	-	-
5	Lead (Pb)	-	-	0.005	-
6	Total suspended particulates (TSP)	-	-	0.33	0.1

Source: Sub-decree on air pollution control and noise disturbance, 2000.

Table 3: Maximum permitted noise level in public and residential area (dB)

No	Location	Period		
		06:00 to 18:00	18:00 to 22:00	22:00 to 06:00
Silence Area				
1	- Hospital	45	40	35

[5] Note: This standard applied to evaluation of ambient air quality and to monitoring of air pollution status.

2	- Library			
3	- School			
4	- Nursery			
Resident Area				
1	- Hotel	60	50	45
2	- Administration place			
3	- House			
Commercial, services areas and mixed small industrial factories		70	65	50
Intermingling in residential areas		75	70	50

Table 4: Drinking Water Standards (2004)

No	Parameter	Unit	Standard Value
1	pH	mg/L	6.5 – 8.5
2	Turbidity	NTU	5
3	Arsenic	mg/L	0.05
4	Iron		0.03
5	Total dissolved solid	mg/L	800
6	Chlorine	mg/L	0.2-0.5
7	Copper	mg/L	1
8	Sulfate	mg/L	250
9	Nitrite	mg/L	3
10	Nitrate	mg/L	50
11	Lead	mg/L	0.01
12	Mercury	mg/L	0.001
13	Coliform	CFU/100 mL	0

Table 5: Effluent Standard for Pollution Sources Discharging Wastewater to Public Water Areas or Sewer

No.	Parameters	Unit	Allowable Limits for Pollutant Substance Discharging to	
			Protected Public Water Area	Public Water Area and Sewer
1	Temperature	˚C	<45	<45
2	pH	mg/L	6-9	5-9
3	BOD_5 (5 days at 20 °C)	mg/L	<30	<80
4	COD	mg/L	<50	<100
5	Total suspended solids	mg/L	<50	<80
6	Total dissolved solids	mg/L	<1000	<2000
7	Grease and oil	mg/L	<5.0	<15.0
8	Detergents	mg/L	<5.0	<15.0
9	Phenols	mg/L	<0.1	<1.2
10	Nitrate (NO_3)	mg/L	<10	<20
11	Chlorine (free)	mg/L	<0.1	<2.0
12	Chloride (iron)	mg/L	<500	<700
13	Sulfate (as SO_4)	mg/L	<300	<500
14	Sulfide (as Sulphur)	mg/L	<0.2	<1.0
15	Phosphate (PO_4)	mg/L	<3.0	<6.0
16	Cyanide (CN)	mg/L	<0.2	<1.5
17	Barium (Ba)	mg/L	<4.0	<7.0
18	Arsenic (As)	mg/L	<0.1	<1.0
19	Tin (Sn)	mg/L	<2.0	<8.0
20	Iron (Fe)	mg/L	<1.0	<2.0

No.	Parameters	Unit	Allowable Limits for Pollutant Substance Discharging to	
			Protected Public Water Area	Public Water Area and Sewer
21	Boron (B)	mg/L	<1.0	<5.0
22	Manganese (Mn)	mg/L	<1.0	<5.0
23	Cadmium (Cd)	mg/L	<0.1	<0.5
24	Chromium $(Cr)^{+3}$	mg/L	<0.05	<1.0
25	Chromium $(Cr)^{+6}$	mg/L	<0.05	<0.5
26	Copper (Cu)	mg/L	<0.20	<1.0
27	Lead (Pb)	mg/L	<0.10	<1.5
28	Mercury (Hg)	mg/L	<0.002	<0.05
29	Nickel (Ni)	mg/L	<0.20	<1.0
30	Selenium (Se)	mg/L	<0.05	<0.5
35	DO	mg/L	>2.0	>1.0
36	Polychlorinated byphenyl	mg/L	<0.003	<0.003
37	Calcium	mg/L	<150	<200
38	Magnesium	mg/L	<150	<200
39	Carbon tetrachloride	mg/L	<3	<3
40	Hexachloro benzene	mg/L	<2	<2
41	DTT	mg/L	<1.3	<1.3
42	Endrin	mg/L	<0.01	<0.01
43	Dieldrin	mg/L	<0.01	<0.01
44	Aldrin	mg/L	<0.01	<0.01
45	Isodrin	mg/L	<0.01	<0.01
46	Perchloro ethylene	mg/L	<2.5	<2.5
47	Hexachloro butadiene	mg/L	<3.0	<3.0
48	Chloroform	mg/L	<1.0	<1.0
49	1,2 Dichloro ethylene	mg/L	<2.5	<2.5
50	Trichloro ethylene	mg/L	<1.0	<1.0
51	Trichloro benzene	mg/L	<2.0	<2.0
52	Hexaxhloro cyclohexene	mg/L	<2.0	<2.0

Remarks: The Ministry of Environment and the Ministry of Agriculture, Forestry and Fishery shall collaborate to set up the standard of pesticides which discharge from pollution sources.

Annex 4: Consultation Meetings

Minutes of meetings

Consultation with Siem Reap City Hall		
Date of Meeting Thursday, 10th June 2021	**Venue** **Siem Reap City Hall**	**Prepared by;** Chan Narith National Social Safeguards and Resettlement Specialist

Participants:

All the participants as be the local authority and also key person in project

- Director of Administration of City Hall
- Commune/Sangkat Chief (Svay Dangkum)
- PMC (National Social Safeguards and Resettlement Specialist)

Total participants = 3 Female = 0

Background and Objective of the Meeting

Discussion about road rehabilitation and footpath

Minute of meeting (MoM)

Road Rehabilitation

- Rehabilitation of the existing road, maintaining the existing width and shoulder
- Rehabilitation will include the Sivutha Boulevard and the BBU / Wat Chork road
- There will be no expansion of width and thus no impact on private properties or assets

Footpath Section

- Located along the Sivutha Boulevard for a length of 1.3 km (corner of the NR6 to the Dragon roundabout)
- The footpath will have a width of 4.5 meters following the drawing/letter from the provincial authority
- Construction of footpath on both sides of the road
- Avoid all impact on permanent buildings and structures
- Avoid all impact on public and private trees
- Avoid all impact on public asset along the street

Consultation with Local Authority of Sangkat Svay Dangkum		
Date of Meeting Thursday, 10th June 2021	**Venue** **Svay Dangkum Sangkat Office** (Meeting Room)	**Prepared by;** Chan Narith National Social Safeguards and Resettlement Specialist

Participants:

- Chief of the Sangkat Svay Dangkum
- PMC (National Social Safeguards and Resettlement Specialist)

Total participants = 2 Female = 0

Background and Objective of the Meeting

- Discussion of the road rehabilitation and footpath
- Share ideas and perspectives relative to project

Minute of Meeting (MoM)

- Has been informed through joint meetings at the provincial hall and city hall since 2020 and also shared information with the villages in the subproject area
- Inform and involve the city hall to provide facilitation and support the subproject when required e.g. for coordination, document provision, site review and consultation etc.
- Agree with and suggests to follow the provincial instruction for road rehabilitation and footpath width especially to avoid impacts to private and public assets
- Good, if the construction can avoid impacts to structure, tree, public assets etc.
- Inform the people in the villages about ROW and footpath space for future construction requirement
- Has been informed by the CADASTRAL officer in 2014 and 2016 about ROW and agreed with households for future road in the ROW.
- Has provided information about ROW and footpath to the households in the village although not during the meeting about the development project and construction
- Project is perceived as positive and a priority especially if it happens soon, during this year or early next year. Currently is a good period for construction during COVID-19

One-to-One Consultation (OOC)		
Date of Meeting 8th – 13 June 2021 During Site Mission	**Venue** **Along the subproject alignment and footpath section**	**Prepared by;** **Chan Narith** National Social Safeguards and Resettlement Specialist

Participants:

The people/household living along the subproject alignment under the additional works

Total 125 person met Female = 70

Background and Objective of the Meeting

- Discussion about road rehabilitation and footpath
- Share ideas and perspective relative to the subproject
- Obtain suggestions, comments, and respond to questions

Social Safeguard and Resettlement Specialist

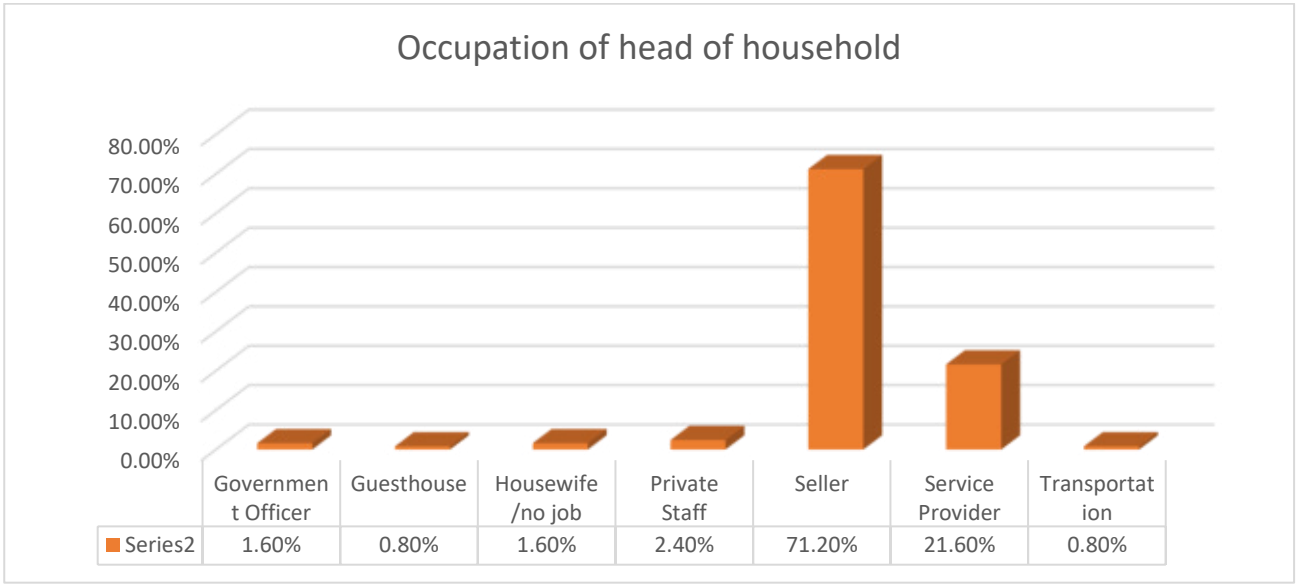
- Detail about RCG and ADB's SPSS 2009

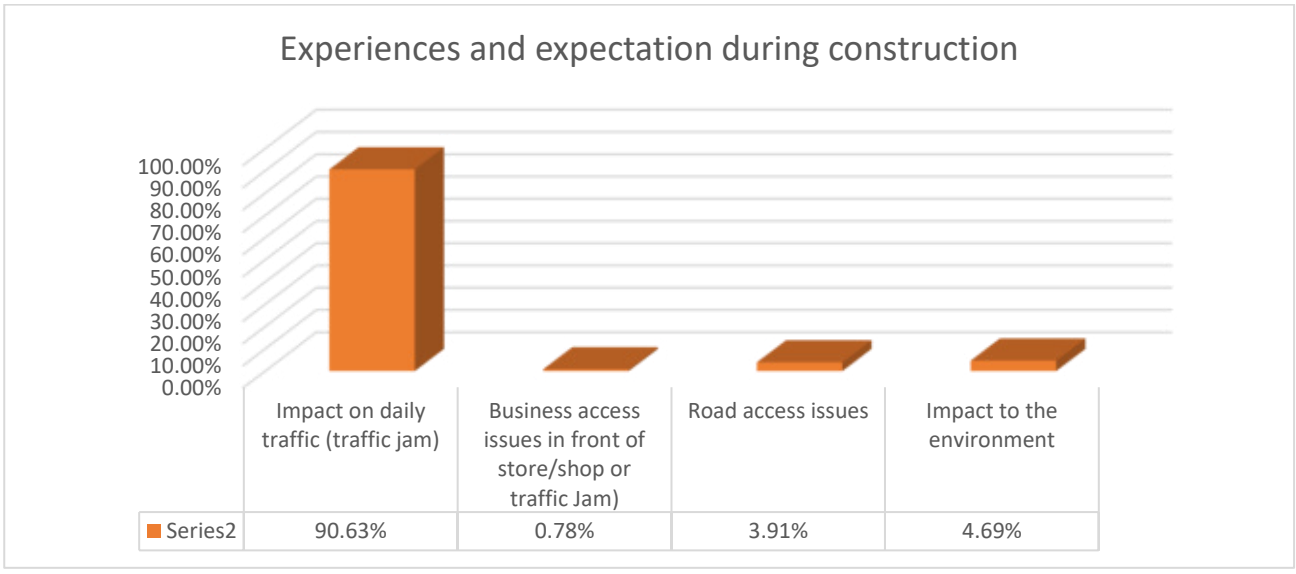
Following the RCG instructions and measures to prevent the spread of COVID-19, the public consultation was changed from group discussion to house to house or one-to-one consultation directly with the owner of houses or business building along the subproject alignment.

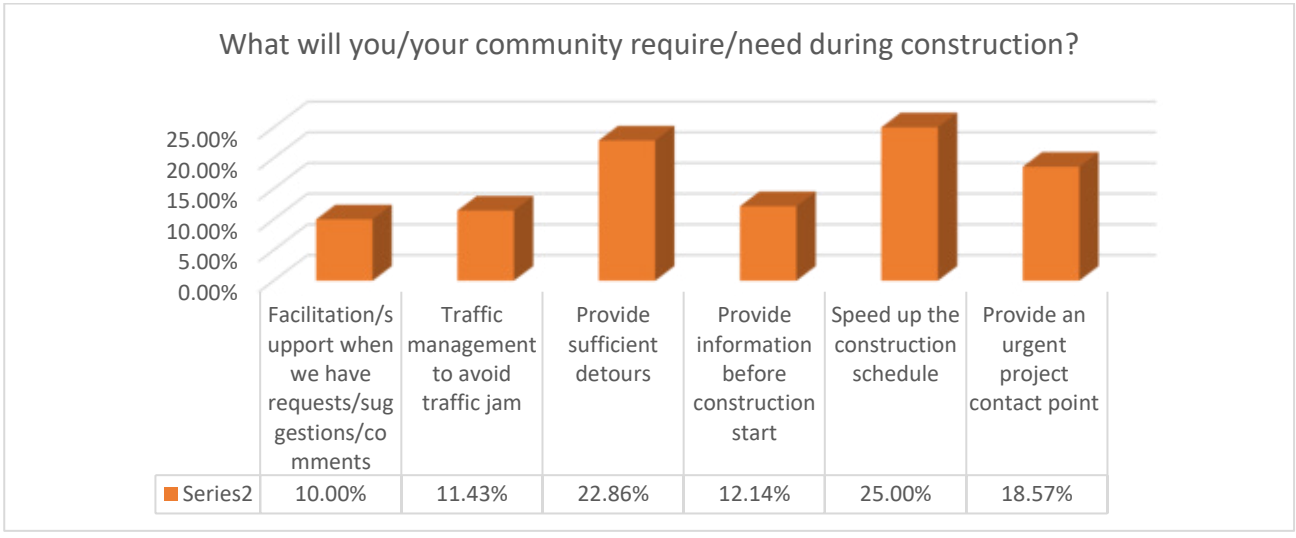
The house-to-house consultation was conducted by the National Social Safeguards and Resettlement Specialist to explain and clarify the following topics:

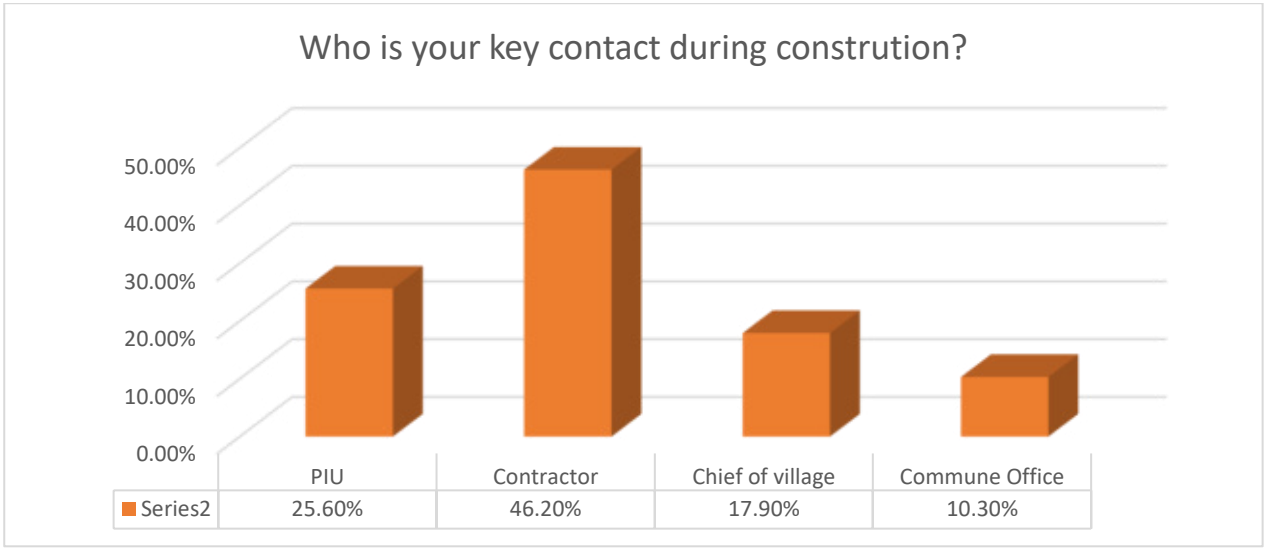
a. The subproject additional works and details of location
b. Key business hours – high/low season to inform the planning of works
c. Access requirements during construction
d. Recommendations/requirements during construction
e. Building access from the footpath to the property – options as step, ramp, or concrete
f. Willingness to pay for the building access when quality work is provided by the contractor as one of the three options and in the range of USD 60-80 per sqm depending on type.

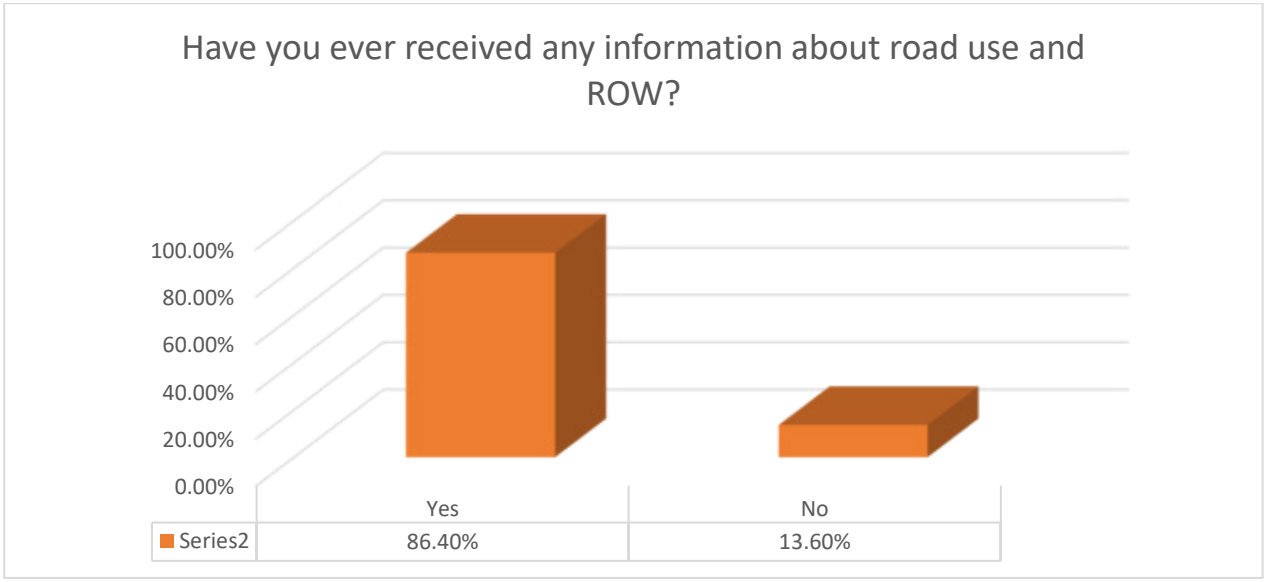
Results of the one-to-one consultation

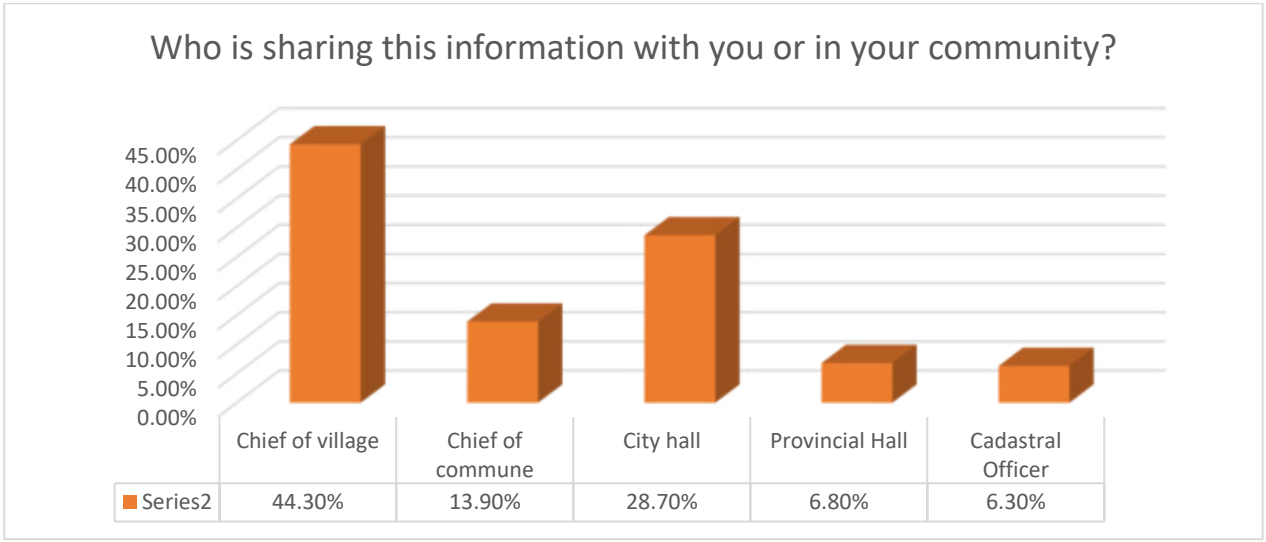


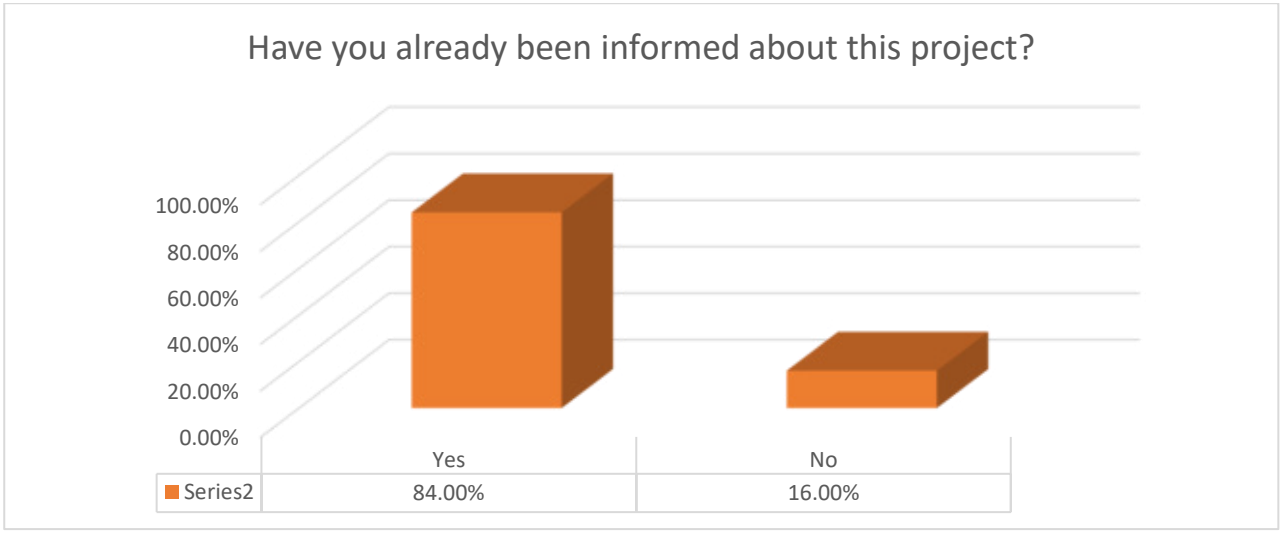


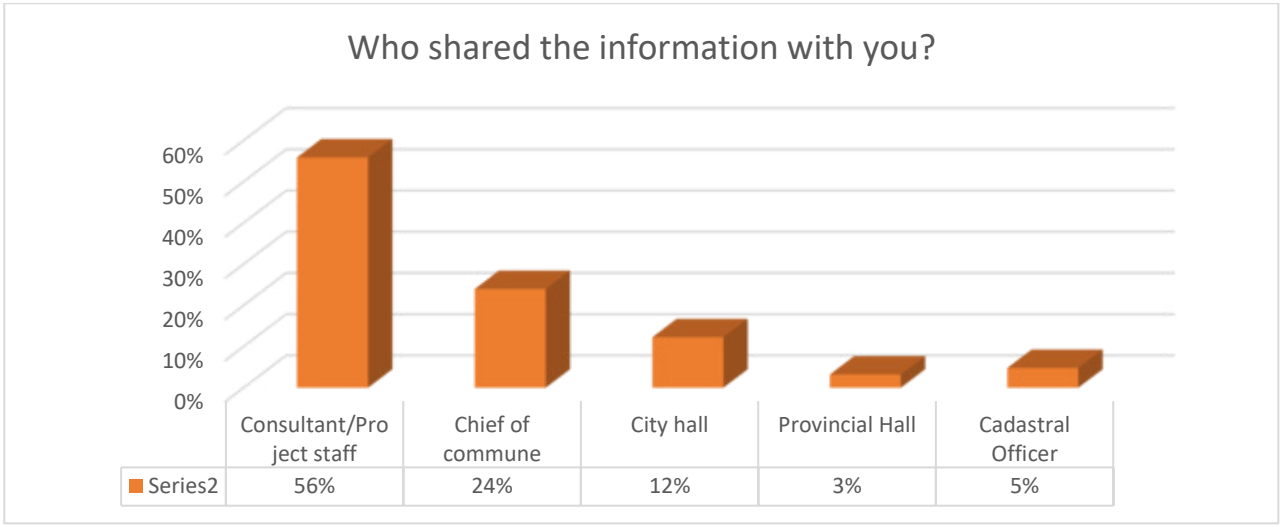


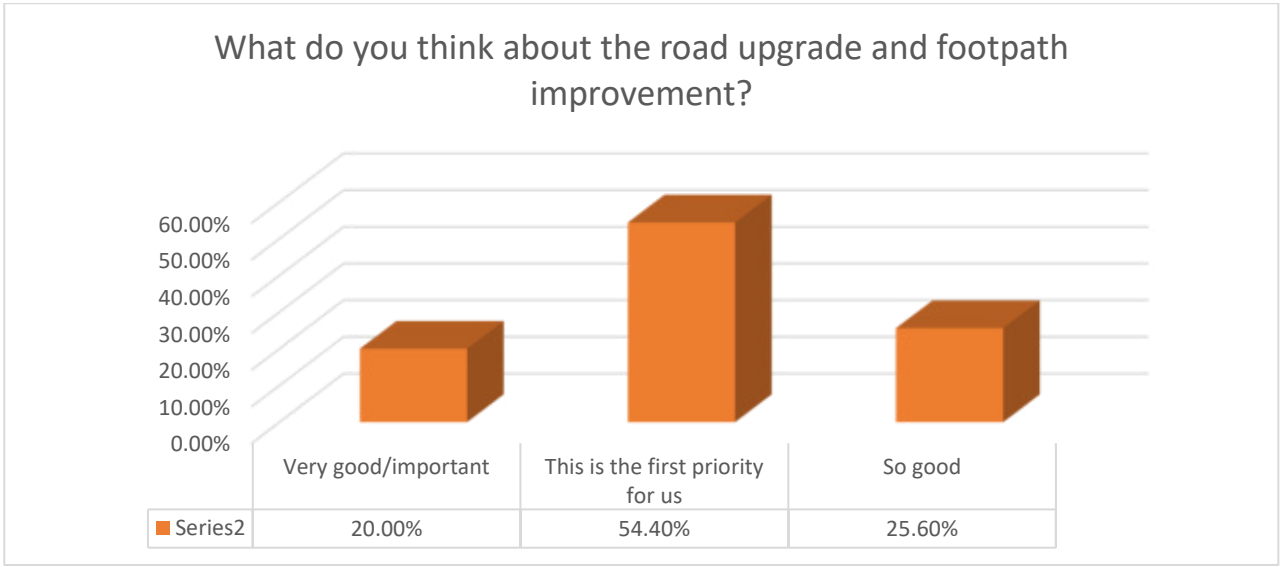

Who is your key contact during constrution?
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
PIU
Contractor
Chief of village
Commune Office
Series2
25.60%
46.20%
17.90%
10.30%

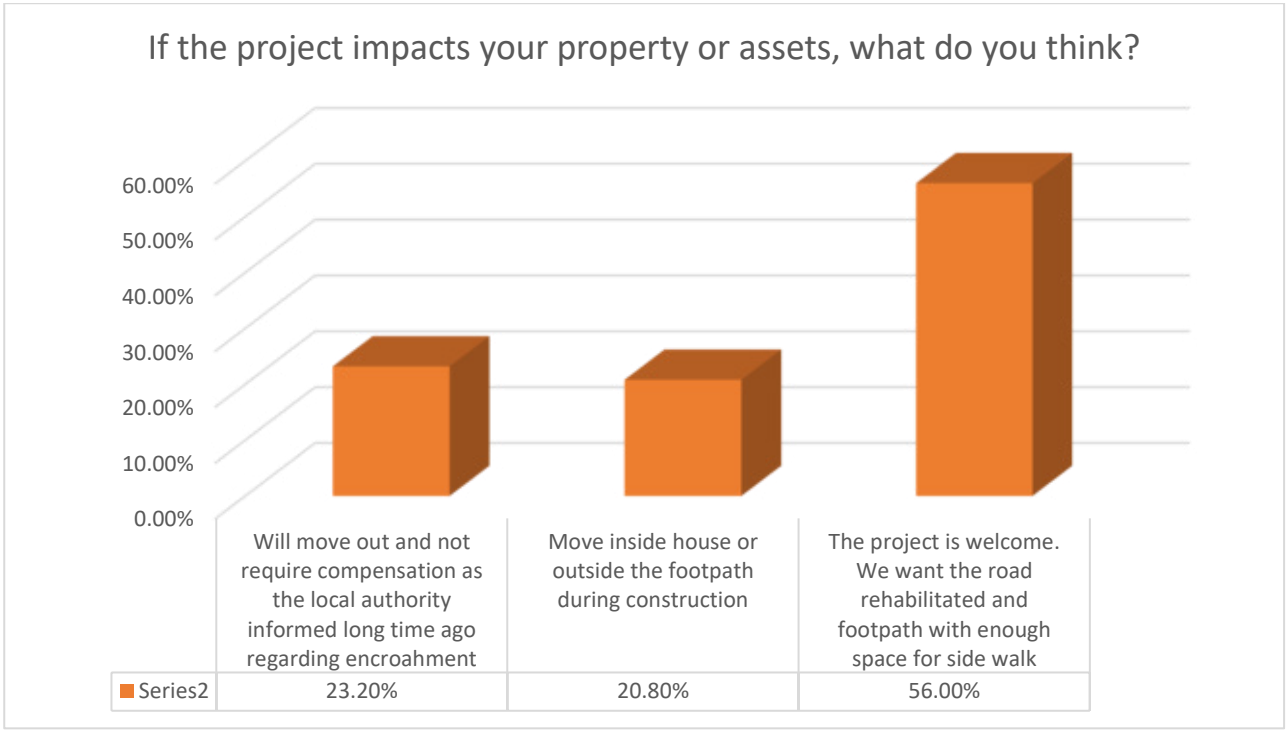

Have you ever received any information about road use and ROW?
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Yes
No
Series2
86.40%
13.60%

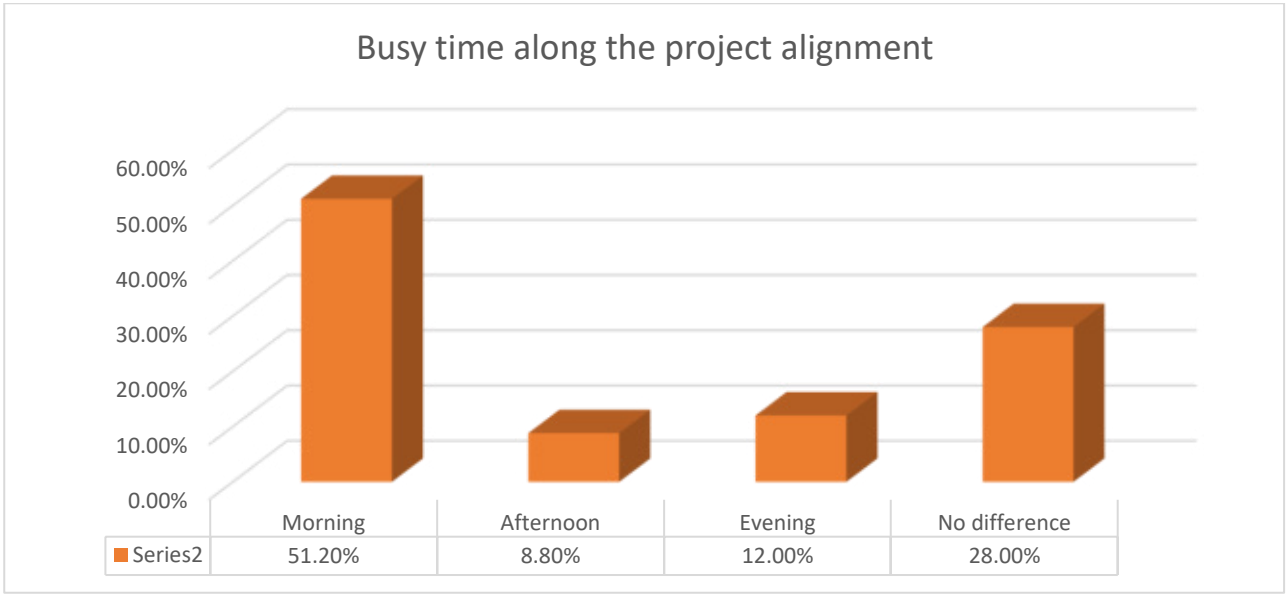

Who is sharing this information with you or in your community?
45.00%
40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
Chief of village
Chief of commune
City hall
Provincial Hall
Cadastral Officer
Series2
44.30%
13.90%
28.70%
6.80%
6.30%

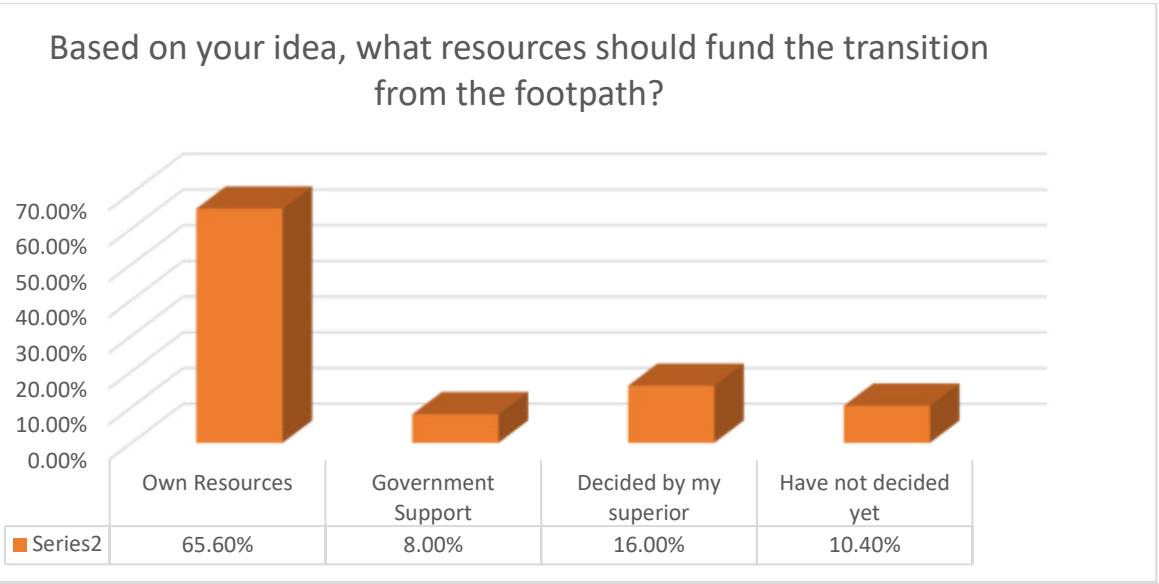

Have you already been informed about this project?
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Yes
No
Series2
84.00%
16.00%

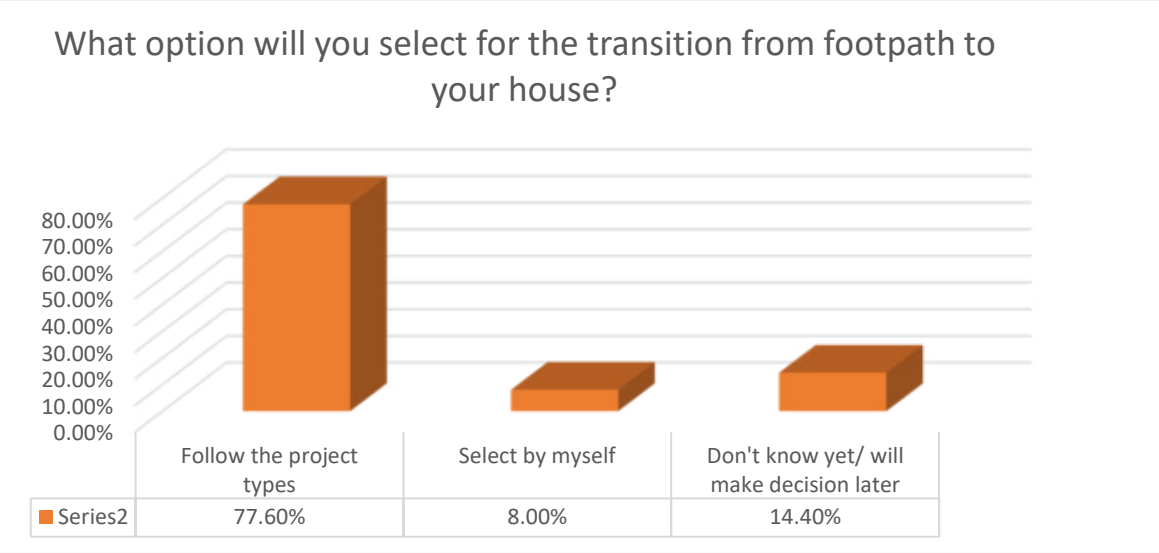

Who shared the information with you?
60%
50%
40%
30%
20%
10%
0%
Consultant/Project staff
Chief of commune
City hall
Provincial Hall
Cadastral Officer
Series2
56%
24%
12%
3%
5%

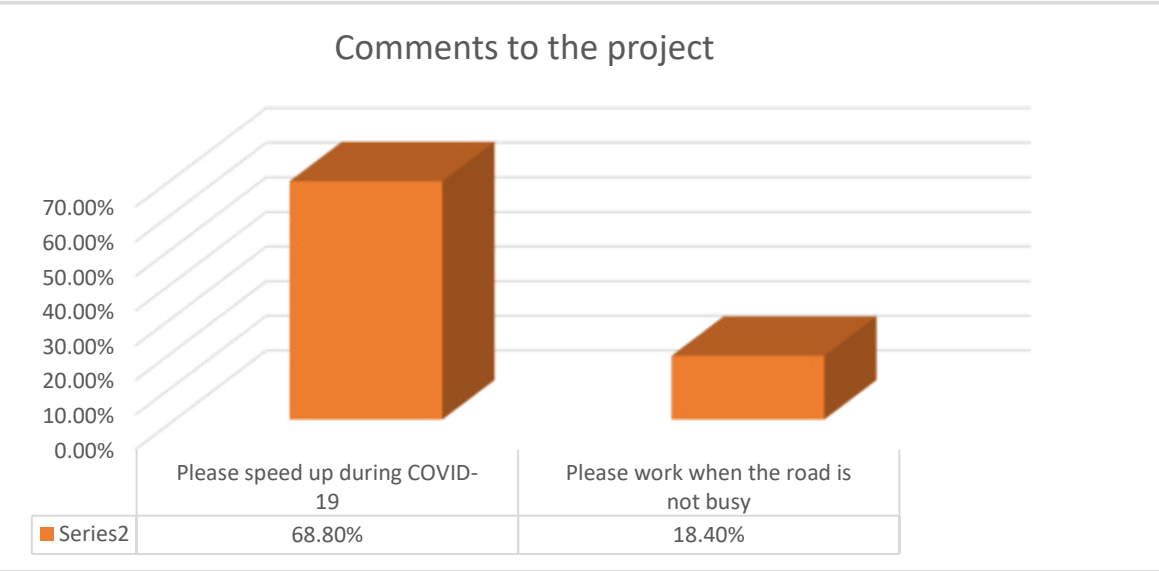

What do you think about the road upgrade and footpath improvement?
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Very good/important
This is the first priority for us
So good
Series2
20.00%
54.40%
25.60%


If the project impacts your property or assets, what do you think?
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Will move out and not require compensation as the local authority informed long time ago regarding encroahment
Move inside house or outside the footpath during construction
The project is welcome. We want the road rehabilitated and footpath with enough space for side walk
Series2
23.20%
20.80%
56.00%


Busy time along the project alignment
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Morning
Afternoon
Evening
No difference
Series2
51.20%
8.80%
12.00%
28.00%


Based on your idea, what resources should fund the transition from the footpath?
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Own Resources
Government Support
Decided by my superior
Have not decided yet
Series2
65.60%
8.00%
16.00%
10.40%


What option will you select for the transition from footpath to your house?
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Follow the project types
Select by myself
Don't know yet/ will make decision later
Series2
77.60%
8.00%
14.40%


Comments to the project
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Please speed up during COVID-19
Please work when the road is not busy
Series2
68.80%
18.40%

Attendance list, one-to-one consultations

HH-ID	Commune	English-Name	Gender	Age	Occupation
1	Svay Dangkum	Chheang Kong	Male	57	Service Provider
2	Svay Dangkum	Chai Vanthorn	Male	27	Seller
3	Svay Dangkum	Heng Sombath	Male	38	Seller
4	Svay Dangkum	Prum Sok Norng	Female	49	Seller
5	Svay Dangkum	Em Chansophy	Male	49	Service Provider
6	Svay Dangkum	Neang Savy	Female	28	Service Provider
7	Svay Dangkum	Yeth Srey Cheat	Female	29	Seller
8	Svay Dangkum	Lor Mung Seng	Male	41	Seller
9	Svay Dangkum	Chhet Makara	Male	26	Private Staff
10	Svay Dangkum	Thorn Voleak	Female	24	Government Officer
11	Svay Dangkum	Chum Sreylin	Female	32	Seller
12	Svay Dangkum	Lem Bun Thern	Male	41	Seller
13	Svay Dangkum	Horn Sinuon	Female	45	Seller
14	Svay Dangkum	Mean Beang Huot	Male	45	Seller
15	Svay Dangkum	Vul Virak	Male	24	Service Provider
16	Svay Dangkum	Thin Savern	Male	52	Service Provider
17	Svay Dangkum	Thy Phanith	Male	37	Transportation
18	Svay Dangkum	Sun Heng	Male	40	Seller
19	Svay Dangkum	Mern Sameath	Female	57	Housewife
20	Svay Dangkum	Sean Chanthy	Female	40	Seller
21	Svay Dangkum	Sean Khunthea	Female	45	Seller
22	Svay Dangkum	Chheam Verng	Male	59	Seller
23	Svay Dangkum	Sros Nimol	Male	42	Seller
24	Svay Dangkum	Eak Rina	Female	26	Seller
25	Svay Dangkum	Sou Chamnan	Male	26	Service Provider
26	Svay Dangkum	Sok Chan Thy	Female	27	Service Provider
27	Svay Dangkum	Thach Lydasothavy	Female	27	Seller
28	Svay Dangkum	Meng Keangly	Female	27	Seller
29	Svay Dangkum	Chheang Huot	Male	47	Seller
30	Svay Dangkum	Sok Tola	Male	35	Seller
31	Svay Dangkum	Uk Savy	Male	35	Seller
32	Svay Dangkum	Prerng Sokha	Female	34	Seller
33	Svay Dangkum	Yuon Seung	Female	52	Seller
34	Svay Dangkum	Chai Sayuth	Male	31	Seller
35	Svay Dangkum	Ti Keang	Male	47	Seller
36	Svay Dangkum	Phy	Female	29	Seller
37	Svay Dangkum	Mey Kem Huoy	Female	46	Seller
38	Svay Dangkum	Mao Chetra	Male	50	Seller
39	Svay Dangkum	Ly Theang Seng	Male	36	Seller
40	Svay Dangkum	Meng Bunleap	Male	54	Seller
41	Svay Dangkum	Tha Chantho	Female	31	Seller
42	Svay Dangkum	Menng Sunnthorng	Male	32	Seller
43	Svay Dangkum	Chheang Ang	Male	41	Service Provider
44	Svay Dangkum	Hun Chheanng	Male	30	Seller
45	Svay Dangkum	Hary Out Vea	Female	45	Household/Guesthouse
46	Svay Dangkum	Huot Channa	Male	29	Seller

HH-ID	Commune	English-Name	Gender	Age	Occupation
47	Svay Dangkum	Mak Ly	Male	55	Service Provider
48	Svay Dangkum	Chan Ten	Male	23	Seller
49	Svay Dangkum	Da Chan	Female	28	Seller
50	Svay Dangkum	Ya Vicheathy	Male	31	Seller
51	Svay Dangkum	Som Chantha	Male	32	Private Staff
52	Svay Dangkum	Hun Huon	Male	39	Seller
53	Svay Dangkum	Rum Poulek	Male	32	Seller
54	Svay Dangkum	Nuth Sovannara	Male	40	Seller
55	Svay Dangkum	Eang Ho	Female	34	Seller
56	Svay Dangkum	Bun Daya	Female	24	Seller
57	Svay Dangkum	Sok Tum Rath	Female	38	Seller
58	Svay Dangkum	Heng Lyda	Female	34	Service Provider
59	Svay Dangkum	Che Deth	Female	26	Seller
60	Svay Dangkum	Nov Sreyleak	Female	36	Seller
61	Svay Dangkum	Sean Thida	Female	34	Seller
62	Svay Dangkum	Huy Morng	Male	40	Seller
63	Svay Dangkum	Mean Sokne	Female	61	Seller
64	Svay Dangkum	Thuok Meng Hak	Male	44	Seller
65	Svay Dangkum	Chean Da	Female	28	Seller
66	Svay Dangkum	Thy Chheum Lay	Male	42	Seller
67	Svay Dangkum	Svan Tha	Female	42	Seller
68	Svay Dangkum	Leang Hong	Male	48	Seller
69	Svay Dangkum	Menng Leang	Male	34	Seller
70	Svay Dangkum	Lao Horng	Male	40	Seller
71	Svay Dangkum	Un Phatim	Female	28	Private Staff
72	Svay Dangkum	Por Hav	Male	36	Seller
73	Svay Dangkum	Vang Kusal	Male	33	Seller
74	Svay Dangkum	Heng Dara	Male	35	Seller
75	Svay Dangkum	Nuch Nan	Male	38	Service Provider
76	Svay Dangkum	Dul Virak	Male	34	Seller
77	Svay Dangkum	Seng Syra	Female	35	Service Provider
78	Svay Dangkum	Sok Keumnang	Male	43	Service Provider
79	Svay Dangkum	Hev Huoy	Male	53	Seller
80	Svay Dangkum	Hea Sa	Male	35	Seller
81	Svay Dangkum	Bun Savy	Male	31	Service Provider
82	Svay Dangkum	Khern Srey Rath	Male	30	Seller
83	Svay Dangkum	Leum Bunna	Male	51	Service Provider
84	Svay Dangkum	Hun Tuoch	Male	57	Seller
85	Svay Dangkum	Chea Sreytouch	Female	36	Seller
86	Svay Dangkum	Huot Ratha	Female	34	Seller
87	Svay Dangkum	Born Sithul	Male	45	Service Provider
88	Svay Dangkum	Oun Eang	Male	58	Seller
89	Svay Dangkum	Kong Samban	Male	32	Seller
90	Svay Dangkum	Sok Sinin	Female	19	Service Provider
91	Svay Dangkum	Sin Nary	Female	28	Seller
92	Svay Dangkum	Vith Nita	Female	28	Seller
93	Svay Dangkum	Heng Peakdey	Male	37	Service Provider
94	Svay Dangkum	Sam Vitha	Male	42	Seller

HH-ID	Commune	English-Name	Gender	Age	Occupation
95	Svay Dangkum	Thornn Narun	Male	32	Seller
96	Svay Dangkum	Nguon Sreynich	Female	47	Seller
97	Svay Dangkum	Ma La	Female	47	Service Provider
98	Svay Dangkum	Leum Tung	Male	51	Seller
99	Svay Dangkum	San Na	Female	31	Seller
100	Svay Dangkum	Lenng Pannha	Male	44	Seller
101	Svay Dangkum	Heum Theavy	Female	33	Seller
102	Svay Dangkum	Sath Visuth	Male	55	Service Provider
103	Svay Dangkum	Nory Café	Male	36	Seller
104	Svay Dangkum	Leum Pel	Female	33	Government Officer
105	Svay Dangkum	Srun Srors	Female	32	Seller
106	Svay Dangkum	Thorn Boreach	Male	22	Seller
107	Svay Dangkum	Ly Cheav Her	Female	26	Seller
108	Svay Dangkum	Ken Sreynak	Female	34	Service Provider
109	Svay Dangkum	Chea Sreyny	Female	28	Seller
110	Svay Dangkum	Neang Sokheng	Male	29	Service Provider
111	Svay Dangkum	Cheav Pisey	Female	35	Seller
112	Svay Dangkum	Bin Ny	Female	40	Service Provider
113	Svay Dangkum	Heng Sonita	Female	35	Seller
114	Svay Dangkum	Touch Vannary	Female	35	Seller
115	Svay Dangkum	Vun Vicheka	Male	25	Service Provider
116	Svay Dangkum	Eang Sovann	Male	40	Seller
117	Svay Dangkum	Heum Sarom	Female	65	Housewife
118	Svay Dangkum	Pak Phally	Female	40	Service Provider
119	Svay Dangkum	Leum Lim	Male	26	Seller
120	Svay Dangkum	Yem Neth Natith	Male	42	Seller
121	Svay Dangkum	Thai Teath	Male	25	Seller
122	Svay Dangkum	Sok Thern	Male	35	Service Provider
123	Svay Dangkum	Ngeath Sros	Female	34	Seller
124	Svay Dangkum	Makara	Female	35	Service Provider
125	Svay Dangkum	So Samnang	Female	62	Seller

Original Attendance Lists

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងសាធារណការ និងដឹកជញ្ជូន
Ministry of Public Work and Transport (MPWT)

គម្រោង : ផ្គត់ផ្គង់ទឹកស្អាត និង អនាម័យសម្រាប់ខេត្ត
Provincial Water Supply and Sanitation Project (PWSSP)
ADB Loan 3630-CAM / AFD Loan 8335 / Grant 05610-CAM

ADB

បញ្ជីវត្តមាន (Attendant List)

ស្តីអំពី : [illegible]

ថ្ងៃទី 10 ខែ [illegible] ឆ្នាំ ២០២១

ម៉ោងចាប់ផ្តើម (Start time) _____ ម៉ោងបញ្ចប់ (End time) _____

ទីតាំង (Location) [illegible]

ល.រ. No	ឈ្មោះ Name	ភេទ Sex	តួនាទី Position	អង្គភាព Organiztion	លេខទូរស័ព្ទ Tel Number	ហត្ថលេខា Signature
១	[illegible]	ប	[illegible]	[illegible]		
២	[illegible]	—ក—	[illegible]	—ក—		
៣	[illegible]	—ក—	—ក—	—ក—		
៤	[illegible]	ស	—ក—	—ក—		
៥	[illegible]	ប	[illegible]	—ក—		
៦	[illegible]	ស	—ក—	—ក—		
៧	[illegible]	ស	[illegible]	—ក—		
៨	[illegible]	ប	—ក—	—ក—		
៩	[illegible]	—ក—	[illegible]	—ក—		
១០	[illegible]	ស	[illegible]	—ក—		
១១	[illegible]	—ក—	[illegible]	—ក—		
១២	[illegible]	ប	—ក—	—ក—		
១៣	[illegible]	ស	—ក—	—ក—		
១៤	[illegible]	ប	—ក—	—ក—		
១៥	[illegible]	—ក—	[illegible]	—ក—		
១៦	[illegible]	—ក—	—ក—	—ក—		
១៧	[illegible]	—ក—	[illegible]	—ក—		
១៨	[illegible]	—ក—	[illegible]	—ក—		

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ក្រសួងសាធារណការ និងដឹកជញ្ជូន
Ministry of Public Work and Transport (MPWT)

គម្រោង : ផ្គត់ផ្គង់ទឹកស្អាត និង អនាម័យសម្រាប់ខេត្ត
Provincial Water Supply and Sanitation Project (PWSSP)
ADB Loan 3630-CAM / AFD Loan 8335 / Grant 05610-CAM

បញ្ជីវត្តមាន (Attendant List)

ស្តីអំពី : [illegible]

ថ្ងៃទី 10 ខែ [illegible] ឆ្នាំ ២០២១

ម៉ោងចាប់ផ្តើម (Start time) _____ ម៉ោងបញ្ចប់ (End time) _____

ទីតាំង (Location) [illegible]

ល.រ. No	ឈ្មោះ Name	ភេទ Sex	តួនាទី Position	អង្គភាព Organiztion	លេខទូរស័ព្ទ Tel Number	ហត្ថលេខា Signature
១	[illegible]	ស	[illegible]	[illegible]		
២	[illegible]	ប	—ក—			
៣	[illegible]	—ក—	—ក—			
៤	[illegible]	—ក—	—ក—			
៥	[illegible]	ស	[illegible]			
៦	[illegible]	ប	—ក—			
៧	[illegible]	—ក—	[illegible]			
៨	[illegible]	—ក—	[illegible]			
៩	[illegible]	ស	[illegible]			
១០	[illegible]	ប	[illegible]			
១១	[illegible]	—ក—	[illegible]			
១២	[illegible]	—ក—	[illegible]			
១៣	[illegible]	ស	—ក—			
១៤	[illegible]	ប	—ក—			
១៥	[illegible]	—ក—	[illegible]	[illegible]		
១៦	[illegible]	—ក—	[illegible]			
១៧	[illegible]	—ក—	—ក—			
១៨	[illegible]	—ក—	—ក—	—ក—		

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ក្រសួងសាធារណការ និងដឹកជញ្ជូន
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គម្រោង : ផ្គត់ផ្គង់ទឹកស្អាត និង អនាម័យសម្រាប់ខេត្ត
Provincial Water Supply and Sanitation Project (PWSSP)
ADB Loan 3630-CAM / AFD Loan 8335 / Grant 05610-CAM

ADB

បញ្ជីវត្តមាន (Attendant List)

ស្តីអំពី : [illegible]

ថ្ងៃទី 10 ខែ [illegible] ឆ្នាំ ២០២១

ម៉ោងចាប់ផ្តើម (Start time) _____ ម៉ោងបញ្ចប់ (End time) _____

ទីតាំង (Location) [illegible]

ល.រ. No	ឈ្មោះ Name	ភេទ Sex	តួនាទី Position	អង្គភាព Organiztion	លេខទូរស័ព្ទ Tel Number	ហត្ថលេខា Signature
១	[illegible]	ស	[illegible]	[illegible]		
២	[illegible]	ប	[illegible]			
៣	[illegible]	ប	ប			
៤	[illegible]	ស	ប			
៥	[illegible]	ប	ប			
៦	[illegible]	ស	ប			
៧	[illegible]	ស	[illegible]			
៨	[illegible]	ស	ប			
៩	[illegible]	ប	[illegible]			
១០	[illegible]	ប	ប			
១១	[illegible]	ស	ប			
១២	[illegible]	ស	ប			
១៣	[illegible]	ប	ប			
១៤	[illegible]	ស	ប			
១៥	[illegible]	ប	ប			
១៦	[illegible]	ស	ប			
១៧	[illegible]	ប	ប			
១៨	[illegible]	ស	ប	ប		

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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

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Ministry of Public Work and Transport (MPWT)

គម្រោង : ផ្គត់ផ្គង់ទឹកស្អាត និង អនាម័យសម្រាប់ខេត្ត

Provincial Water Supply and Sanitation Project (PWSSP)

ADB Loan 3630-CAM / AFD Loan 8335 / Grant 05610-CAM

បញ្ជីវត្តមាន (Attendant List)

ប្រធានបទ៖ [illegible]

ថ្ងៃទី 10 ខែ [illegible] ឆ្នាំ ២០២១

ម៉ោងចាប់ផ្តើម (Start time) ______ ម៉ោងបញ្ចប់ (End time) ______

ទីតាំង (Location) [illegible]

ល.រ. No	ឈ្មោះ Name	ភេទ Sex	តួនាទី Position	អង្គភាព Organiztion	លេខទូរស័ព្ទ Tel Number	ហត្ថលេខា Signature
១	[illegible]	ស	សមាជិក	[illegible]		
២	[illegible]	-"-	-"-			[signature]
៣	[illegible]	-"-	-"-			
៤	[illegible]	-"-	[illegible]			[signature]
៥	[illegible]	-"-	សមាជិក			
៦	[illegible]	-"-	-"-			
៧	[illegible]	ស	-"-			[signature]
៨	[illegible]	ប	-"-			
៩	[illegible]	ស	-"-			
១០	[illegible]	ប	-"-			[signature]
១១	[illegible]	ស	-"-			
១២	[illegible]	ប	-"-			
១៣	[illegible]	ស	-"-			
១៤	[illegible]	ប	-"-			
១៥	[illegible]	-"-	-"-			
១៦	[illegible]	-"-	-"-			
១៧	[illegible]	ស	[illegible]			[signature]
១៨	[illegible]	ប	[illegible]	-"-		

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងសាធារណការ និងដឹកជញ្ជូន
Ministry of Public Work and Transport (MPWT)
គម្រោង : ផ្គត់ផ្គង់ទឹកស្អាត និង អនាម័យសម្រាប់ខេត្ត
Provincial Water Supply and Sanitation Project (PWSSP)
ADB Loan 3630-CAM / AFD Loan 8335 / Grant 05610-CAM

បញ្ជីវត្តមាន (Attendant List)

ស្តីអំពី : [illegible]

ថ្ងៃទី ១០ ខែ [illegible] ឆ្នាំ ២០២១

ម៉ោងចាប់ផ្តើម (Start time) _____ ម៉ោងបញ្ចប់ (End time) _____

ទីកាំង (Location) [illegible]

ល.រ. No	ឈ្មោះ Name	ភេទ Sex	តួនាទី Position	អង្គភាព Organiztion	លេខទូរស័ព្ទ Tel Number	ហត្ថលេខា Signature
១	[illegible]	ប	[illegible]	[illegible]		
២	[illegible]	ប	—ıı—			
៣	[illegible]	—ıı—	[illegible]			
៤	[illegible]	ប	[illegible]			
៥	[illegible]	ស	[illegible]			
៦	[illegible]	ប	—ıı—			
៧	[illegible]	—ıı—	[illegible]			
៨	[illegible]	—ıı—	—ıı—			
៩	[illegible]	—ıı—	[illegible]			
១០	[illegible]	—ıı—	[illegible]			
១១	[illegible]	ប	[illegible]			
១២	[illegible]	—ıı—	[illegible]			
១៣	[illegible]	ស	—ıı—			
១៤	[illegible]	—ıı—	—ıı—			
១៥	[illegible]	ប	[illegible]			
១៦	[illegible]	—ıı—	[illegible]			
១៧	[illegible]	—ıı—	—ıı—			
១៨	[illegible]	ស	[illegible]	—ıı—		

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងសាធារណការ និងដឹកជញ្ជូន
Ministry of Public Work and Transport (MPWT)
គម្រោង : ផ្គត់ផ្គង់ទឹកស្អាត និង អនាម័យសម្រាប់ខេត្ត
Provincial Water Supply and Sanitation Project (PWSSP)
ADB Loan 3630-CAM / AFD Loan 8335 / Grant 05610-CAM

ADB

បញ្ជីវត្តមាន (Attendant List)

ស្តីអំពី៖ [illegible]

ថ្ងៃទី 10 ខែ មីនា ឆ្នាំ ២០២១

ម៉ោងចាប់ផ្តើម (Start time) _____ ម៉ោងបញ្ចប់ (End time) _____

ទីកាំង (Location) [illegible]

ល.រ. No	ឈ្មោះ Name	ភេទ Sex	តួនាទី Position	អង្គភាព Organization	លេខទូរស័ព្ទ Tel Number	ហត្ថលេខា Signature
១	[illegible]	ស	[illegible]	[illegible]		
២	[illegible]	—ក—	—ក—			
៣	[illegible]	ប	[illegible]			
៤	[illegible]	—ក—	[illegible]			
៥	[illegible]	—ក—	—ក—			
៦	[illegible]	ស	—ក—			
៧	[illegible]	—ក—	[illegible]			
៨	[illegible]	ប	[illegible]			
៩	[illegible]	ស	—ក—			
១០	[illegible]	ប	—ក—			
១១	[illegible]	ស	—ក—			
១២	[illegible]	ប	[illegible]			
១៣	[illegible]	—ក—	[illegible]			
១៤	[illegible]	ស	[illegible]			
១៥	[illegible]	—ក—	[illegible]			
១៦	[illegible]	ប	—ក—			
១៧	[illegible]	ស	[illegible]			
១៨	[illegible]	—ក—	[illegible]	—ក—		

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងសាធារណការ និងដឹកជញ្ជូន
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Provincial Water Supply and Sanitation Project (PWSSP)
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បញ្ជីវត្តមាន (Attendant List)

ស្តីអំពី : [illegible]

ថ្ងៃទី 10 ខែ [illegible] ឆ្នាំ ២០២១

ម៉ោងចាប់ផ្តើម (Start time) _____ ម៉ោងបញ្ចប់ (End time) _____

ទីតាំង (Location) [illegible]

ល.រ. No	ឈ្មោះ Name	ភេទ Sex	តួនាទី Position	អង្គភាព Organiztion	លេខទូរស័ព្ទ Tel Number	ហត្ថលេខា Signature
១	[illegible]	ប្រុស	[illegible]	[illegible]		
២	[illegible]	ប្រុស	[illegible]	—ក—		
៣	[illegible]	ប្រុស	—ក—	—ក—		
៤	[illegible]	ស	[illegible]			
៥	[illegible]	—ក—	[illegible]			
៦	[illegible]	—ក—	—ក—			
៧	[illegible]	ប	[illegible]			
៨	[illegible]	—ក—	[illegible]	=ll—		
៩	[illegible]	ស	~~[illegible]~~	[illegible]		
១០	[illegible]	—ក—	[illegible]	—ll—		
១១	[illegible]	ប	[illegible]	—a—		
១២	[illegible]	—ក—	—ក—	—4—		
១៣	[illegible]	—ក—	~~[illegible]~~	[illegible]		
១៤	[illegible]	—ក—	[illegible]	[illegible]		
១៥	[illegible]	ស	[illegible]	—ក—		
១៦	[illegible]			—ក—		
១៧	[illegible]	ស		—ll—		
១៨				—ក—		

RAMBOLL TANCONS (Cambodia) Co., Ltd.

Annex 5: Photos from Site Visit and Consultations, June 2021

	
Site visit with Contractor, ongoing works under the under the "38 roads infrastructure development and rehabilitation"	Ongoing works under the "38 roads infrastructure development and rehabilitation"
	
Consultation with local businesses	Consultation with local businesses
	
Hotel on project road under demolition to convert to supermarket	COVID-19 has reduced number of visitors and tourists significantly to the project road