

Safeguards Due Diligence Report

January 2021

Cambodia: Second Greater Mekong Sub-Region
Corridor Towns Development Project

CW01: Kampot Wastewater Collection and
Treatment, and Drainage and Sewerage

Prepared by the Ministry of Public Works and Transport with the assistance of project implementation management support consultants for the Royal Government of Cambodia and the Asian Development Bank.

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Cambodia: Second Greater Mekong Subregion Corridor Towns Development Project

Draft Involuntary Resettlement Due Diligence Report

Additional Works (Vo1), Proposed Change in Scope,

Acronyms

ADB	Asian Development Bank
AHs	Affected Households
BRP	Basic Resettlement Plan
COI	Corridor of Impact
DED	Detailed Engineering Design
DMS	Detailed Measurement Survey
DRP	Detailed Resettlement Plan
EMP	Environmental Management Plan
GDR	General Department of Resettlement
GMS	Greater Mekong Subregion
GRM	Grievance Redress Mechanism
MPS	Main Pumping Station
MPWT	Ministry of Public Works and Transport
LAR	Land Acquisition and resettlement
PIB	Public Information Brochure
PISCB	Project Implementation Support and Capacity Building
PIU	Project Implementation Unit
PMU	Project Management Unit
ROW	Right of Way
SPS	Safeguard Policy Statement
UD	Urban Drainage
WWTP	Wastewater Treatment Plant

Table of Contents

1.0	Project Background	6
1.1	Original Project Scope	6
1.2	Proposed Revisions to the Project.....	7
2.0	Scope of the Report	8
3.0	Additional Works for CW01 and Change in Project Scope	8
3.1.	Additional Works for CW01.....	9
3.2	Proposed Change in Project Scope	13
4.0	Involuntary Resettlement (IR) Impact Assessment.....	19
4.1	Impact Assessment of the Additional Works under VO1	19
4.2	Impact Assessment of the Proposed Change in Scope	20
4.3	Temporary Impacts.....	24
5.0	Conclusions and Recommendations	25

1.0 Project Background

1.1 Original Project Scope

1. The Royal Government of Cambodia (RGC) has received a loan from the Asian Development Bank (ADB) for the Second Greater Mekong Subregion (GMS2) Corridor Town Development Project (the Project) under Loan No. 3314-CAM. The loan was approved on 13 November 2015 and was declared effective on 29 February 2016. The physical completion date is 31 December 2020 while the loan closing date is 30 June 2021.

2. The Project covers four subprojects comprising: (a) Strategic Local Economic Development Plans implemented; (b) Priority urban infrastructure investments implemented; (c) Institutional capacities for managing public investments strengthened; and (d) Community awareness on project activities and environmental sustainability improved. The Project for Cambodia will improve urban services in the two towns of Kampot and Sihanoukville.

3. The scope of the Project under Urban Infrastructure Investments is broken into four civil works (CW) subprojects which are: (i) CW 01 - Kampot Wastewater Treatment Plant (WWTP) and Urban Drainage Works; (ii) CW 02 - Kampot Solid Waste Management; (iii) CW 03 - Sihanoukville Urban Drainage Works; and (iv) CW 04 - Sihanoukville Solid Waste Management and Project Management Capacity Building Consultancy Services.

4. The Executing Agency of GMS2 is the Ministry of Public Works and Transport (MPWT) through the Project Management unit (PMU) while the project implementing units are Provincial Departments of Public Works and Transport of Kampot and Sihanoukville. The Project Management and Implementation Support and Capacity Building (PISCB) is NJS Consultants Co. Ltd. in joint venture with CEST Incorporated and Key Consultants Cambodia, Ltd.

5. Civil Works 01 (CW01) – Kampot Wastewater Treatment (WWCT) and Urban Drainage Works. CW01 aims to separate the wastewater and stormwater at source, such that the wastewater can be treated at a new wastewater treatment plant (WWTP). The wastewater collection is a separated sewer system and has three catchment areas, covering the main built-up urban area. The wastewater treatment plant is a lagoon type and is located some 5 kms to the south of the built-up urban area.

6. The Urban Drainage (UD) Works will improve the existing drainage which are concentrated on several strategic urban roads in and around the main built-up urban area east of the Kampot River. The total length of the proposed drainage system is 7,390 meters including the drainage lines on both sides of Urban Drainage Lines 2, 3, 4B, 5, 6 and 7a which will all discharge into Kampot River. The summary of the original sub-components under CW 01 are shown in the following **Table 1**.

Table 1: Status of Original Sub-Components under CW 01

No.	Work Item	Remarks
	Sewerage	
1	C1 Pumping Station	C1 Pumping station is located on government land, all construction works are done within the boundaries of the assigned vacant lot.
2	Main Pumping Station (MPS) and Buildings	Structures within the COI have been removed and compensation has been paid. All construction works are being undertaken within the boundaries of the land made available for construction.
3	C1 Area Force Mains and Gravity Sewer to MPS	Force mains will be constructed in vacant lots owned by the government. Gravity sewers will be installed along existing public roads.

No.	Work Item	Remarks
4	Force Main from MPS to WWTP	Pipe line will be installed under the middle of the road to avoid impact on properties along the road. Access to the houses along the road by foot or motorcycle will be assured. Access by car will be temporarily interrupted. Works will be scheduled in such a manner to limit the interrupted access to the minimum.
5	WWTP, Site Development, Anaerobic Pond, Facultative and Maturation Ponds, Sludge Drying Bed and Chambers, Buildings	All work will be done within the boundaries of the land made available for the WWTP construction
6	Collector Sewers and Household Connections	To be deferred to LCIP, instead for sewerage the works will focus on the installation of main sewerage lines in all 3 sectors, temporary arrangements for interception of sewage from the existing drainage system and pumping stations and force mains
7	Main Sewer Lines	Sewer lines will be installed under the main roads. The works in sensitive business areas will be carried out during night time only (8 pm to 4 am) so that there is no business disruption
	Drainage	
8	U-Drain Line 2 (From NR#3 to Prek Kampot)	The works in sensitive business areas will be carried out during night time only (8 pm to 4 am) so that there is no business disruption
9	U-Drain Line 3 (From NR#3 to Prek Kampot)	Mobile vendors and food stalls will be provided nearby optional temporary market locations
10	U-Drain Line 4a 1 (From NR#3 to Prek Kampot)	U-drain will be installed in the road next to the sidewalk
11	U-Drain Line 7a and Line 5 (From Traffic Roundabout D. Education Garden to Prek Kampot)	U-drain will be installed in the road next to the sidewalk
12	U-Drain Line 6 (Connect to Line 2, Line 3, Line 4a1 & Line 5)	U-drain will be installed in the road next to the sidewalk, no business disruption on shops and street vendors
13	Rehabilitation of Existing Open Canal Line 4b (From Boeung Chak to Kampot Rover)	Structures within the COI have been removed and compensation has been paid. All canal rehabilitation works will be done within the boundaries of the land within the established COI

1.2 Proposed Revisions to the Project

7. On 16 October 2019, MPWT requested ADB to cancel six subprojects in Sihanoukville. As a result of this request, two subprojects to be located in Sihanoukville (CW03: Sihanoukville Urban Drainage Works and CW04 and Sihanoukville Solid Waste Management) will be cancelled. Following the government's request to cancel the subprojects in Sihanoukville, all works on CW04 have been suspended. The Client has issued a formal notice cancelling the scope of works for CW04 to the PISCB consultant.

8. Subsequently, it was agreed to reallocate the funds freed up by the cancellation of the Sihanoukville subproject to the Kampot subproject. For this purpose, ADB needs to process a change in project scope, and ADB has requested confirmation of the works to be included in the project scope change and the estimated cost.

9. The works that are proposed to be included in the proposed change in project scope are based on issues discussed and agreements made in a meeting held on 28 July 2020 with the participation of MEF, PMU, SBPH/JIANGSU NANTONG JV, and PISCB to review the ongoing implementation of the project. In the meeting, two major issues that are complicating the implementation of the ongoing works and/or reducing their effectiveness, which will affect the overall outcome of the project, were identified.

10. The first major issue was the existing drainage system with about 32 km of pipelines and 1,200 junction boxes/manholes/rainwater inlets which covers the complete urban center of the town of the east bank of the river which was not included in the detailed engineering design (DED).

11. The second major issue was the limitations for gravity drainage during high tide water levels. The median high tide water level in the river is 2.33 m and the median low tide water level is 1.20. With the street level in the urban center ranging between 2.60 and 3.50 m with a median level of 2.80, there is little differential hydraulic head available for the new and existing drainage system to function effectively around high tide in the river. If heavy rainfall coincides with high tide, flooding of the town center is unavoidable.

12. To mitigate the effects and constraints of the above design issues and assure that the outcome and outputs for the Kampot subproject can be achieved the following measures were agreed as additional works for the current CW 01 and proposed additional change in the project scope.

2.0 Scope of the Report

13. This draft resettlement impact assessment due diligence report (DDR) is being prepared for the additional scope of works proposed under the variation order 1 (VO1) and the proposed change in project scope.

14. The report is based on the concept design, field visits, and informal undocumented discussions and consultations with the affected communities carried out as part of preparation of additional works and scope. A preliminary impact assessment and due diligence process was conducted to examine any land acquisition and resettlement issues, in line with the ADB's Safeguard Policy Statement (SPS), 2009 and Royal Government of Cambodia's (RGC) laws and regulations.

15. This draft report will be updated following completion of detailed engineering design (DED) for the proposed change in scope. Final DDR will be submitted to ADB, cleared and disclosed on its website before contract award.

3.0 Additional Works for CW01 and Change in Project Scope

16. The project was assigned category B for involuntary resettlement and C for indigenous peoples impacts. The draft resettlement plan for Kampot subproject covering (i) wastewater collection and treatment; (ii) solid waste management; and (iii) urban drainage components was prepared and disclosed in 2015.¹ In Sihanoukville town, the proposed subprojects did not require preparation of a resettlement plan.

17. At the stage of the detailed engineering design in 2018 it was decided to prepare resettlement planning documents for each subproject component to ensure progress in project implementation.² The urban drainage component was screened for resettlement impacts based on the DED and confirmed that drainage lines 2, 3, 4A, SA, 6 and 7 were free from encumbrances. A due diligence report confirming

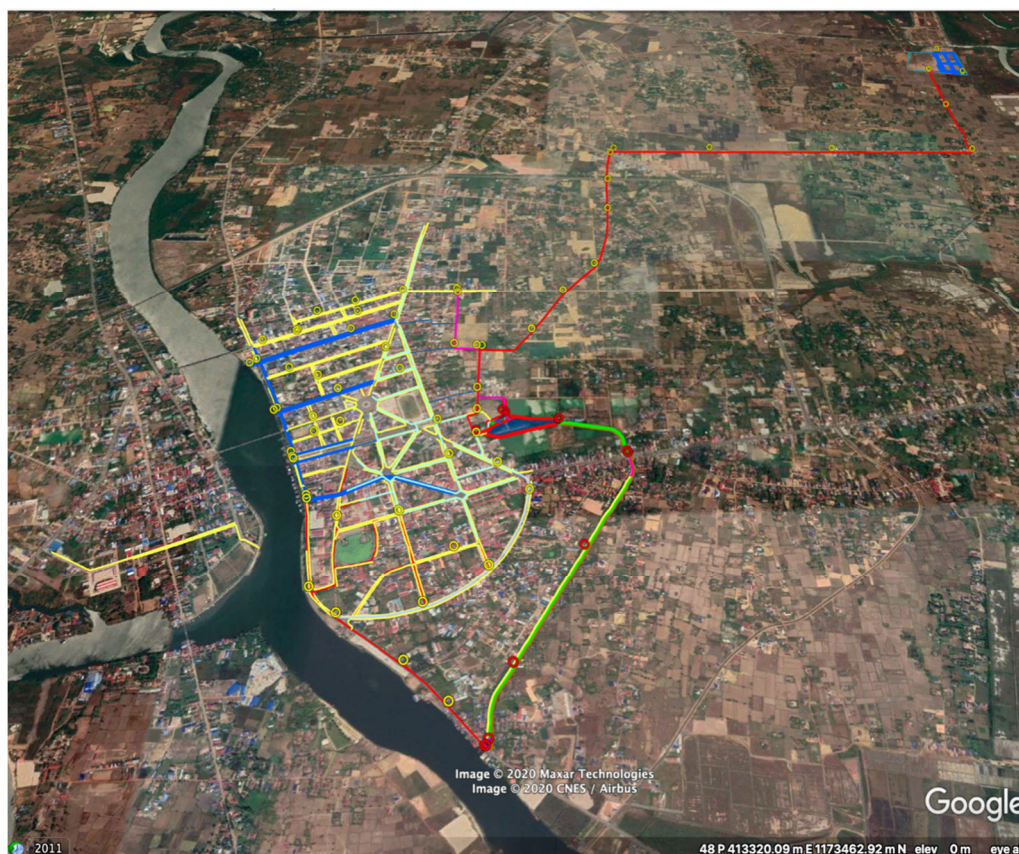
¹ <https://www.adb.org/projects/documents/cam-second-gms-corridor-towns-devt-project-kampot-subproject-aug-2015-rp>

² The detailed engineering design (DED) for the Urban Drainage subproject was submitted in January 2018 and the DED for the Wastewater Collection and Treatment (WWCT) was submitted in February 2018. Both subprojects were re-designed to avoid and/or minimize resettlement impacts. The DED for the solid waste landfill was pending confirmation of the site which as pending acquisition through either negotiated settlement or willing buyer-willing seller mode.

the findings was prepared and disclosed in March 2019.³ In September 2019 the updated/detailed resettlement plan (DRP) was prepared for the Urban Drainage Line 4B, which involves the improvement of existing open earth canal to increase the water flow capacity and reduce flooding during heavy rain.⁴

18. The combined drainage/sewerage network map is shown in **Figure 1**

Figure 1: Drainage and Sewerage Network Map



3.1. Additional Works for CW01

19. The principal reasons for the additional work are: (a) the omission of the existing 32 km combined drainage/sewer system from the DED for both the new drainage and sewer lines; (b) poor site conditions at both the WWTP and the MPS sites that require a higher quality and quantity level of soil stabilization and soil filling than foreseen in the DED; and (c) underestimation of the requirements for house connections to the new sewer lines.

20. Based on the agreements reached during the meeting with MEF, PMU, Contractor and PISCB, the variation order 1 (VO1) for the CW01 works contract was prepared. A conditional no objection letter (NOL) from ADB was received for VO1 in November 2020, subject to ensuring that no physical works

³ <https://www.adb.org/sites/default/files/project-documents/46443/46443-002-sddr-en.pdf>

⁴ <https://www.adb.org/sites/default/files/project-documents/46443/46443-002-rp-en.pdf>

commence until the updated Environmental Management Plan and resettlement due diligence report have been cleared by ADB.

21. Additions to the ongoing works under the V01 are summarized in **Table .**

Table 2: Summary of Additional Works for VO1

Work Item	Description
(1) Cleaning and repair of the existing combined drainage/ sewerage system in the in the town center on the east bank of the river	The additional work involves a comprehensive cleaning and maintenance of the system including the cleaning and repair of the existing drainage system (32,123 meters); repair of 500 manhole covers; repair/replacement of 90 manhole covers and pits.
(2) Soil improvement at the WWTP	The additional work will involve the removal and hauling of the very loose soil and will be disposed according to the environmental laws and regulations of RGC. These will be replaced by several layers of denser soil to enable the heavy equipment and other vehicles to have access to the WWTP
(3) Pavement reinstatement and/or placing new laterite pavement after installation of force main line from MPS to WWTP	The additional work of re-surfacing of the laterite road will occur after installation of the forced mail line within the existing dirt road. The road surface will be improved by pavement reinstatement and/or placing new laterite pavement from MPS to WWTP, around 6 km in length
(4) Removal of Garbage from the open canal line 4b and cleaning of box culvert in the canal crossing with NR 33. Demolition of foundations of houses relocated from the canal bank, under the resettlement plan	This additional work will entail the collection and hauling of garbage along UD Line 4B from the canal banks which have been previously cleared according to the approved DRP. and the cleaning of the box culvert in the canal crossing with National Road (NR) 33. The additional work also entails the removal of these remaining concrete posts and remnants of the previous removal of the houses covered by the DRP of UD Line 4B. These were previously located on the canal and along the right of ways of 7 meters each side

22. The collector lines and house connection which was an original component of CW01 was removed from the scope of work for CW01 because the existing drainage system was not considered in the DED. The collector system would have to be completely redesigned based on a detailed inventory of the existing sanitation/sewage disposal facilities in the house/building to be connected to the new sewerage system.

23. **(1) Cleaning and repair of the existing combined drainage/ sewerage system in C1, C2 and C3 sectors.** The existing combined drainage/sewerage system in the urban center of Kampot town consists of 32 km of pipeline located on both sides of all the streets under the side walk with approximately 1,200 manholes cum rain inlets/junction boxes, will remain essential for the drainage of the urban center even after the completion of the 7 km of new drainage lines under the project. From an initial survey of the existing system, it was concluded that the conveyance capacity of the system had been reduced by 60 to 70% because of accumulated debris in the pipelines and that removal of this debris together with necessary repairs of pipelines and manholes was essential to restore the system to full capacity.



Photographs 1: Samples of cleaning and maintenance of combined drainage and sewerage system. Photograph 2: A Jetvac equipment that will clean a 32 km system

24. The additional work involves a comprehensive cleaning and maintenance of the system. The requirements for debris removal from the system and repair of manholes was assessed and after detailed discussion with the Engineer, the Contractor has submitted on 30 August 2020 a proposal for the cleaning of existing drainage pipelines, the repair of 600 manhole covers and the repair/replacement of 90 manhole covers and pits. This includes removal of debris and sediment from 1.400 manholes and 32 km of pipes lines with jetvac equipment and power rodders.

25. **(2) Soil improvement at the Waste Water Treatment Plant (WWTP).** The WWTP will be built in an open area of 10.12 ha located about 6km from Kampot town center to the north-east of the catchment area. The top soil is very loose with a low bulk density which will not permit access of construction equipment and vehicles.

26. The additional works will entail the improvement of soft soil layer of the WWTP site by Soil Filling up to the elevation of 1.75. The site is flooded or waterlogged from July/August to December and is underlain by a 10 to 14 m thick very soft soil layer. Heavy construction equipment cannot enter the site at present. Before construction of the lagoons can start, a subbase has to be installed with sufficient bearing capacity to allow construction equipment to enter the site.



Photographs 3 & 4: The proposed site of the waste water treatment plant. As part of the additional works, the soil in this area will be replaced to enable the construction of the lagoons and heavy equipment and other vehicles to have access.

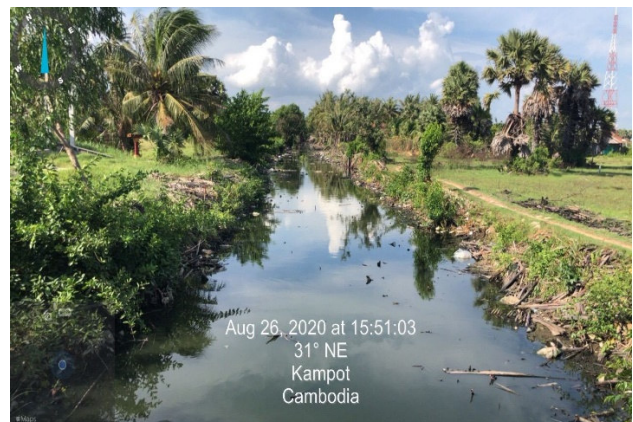
27. **(3) Pavement reinstalment and/or placing new laterite pavement after installation of force main line from MPS to WWTP.** The forced main line from the MPS to the WWTP, approximately 6 km will be installed in the middle of a very narrow (4 m) laterite road with houses on both sides.



Photographs 5 & 6: The laterite road where the proposed forced main pipeline will pass. After the installation, the propose additional work will re-surface the road with laterite pavement to facilitate access

28. To avoid further inconvenience and guaranty unimpeded access for all households along the road after the installation of the pipeline, the additional works involve reinstating and/or improving the road pavement by providing a 25 cm thick compacted laterite pavement layer with of width between 4 to 5 m depending on the existing road width. This re-surfacing will occur within the existing laterite road, from station 0+250 to station 5+950. Pavement reinstatement will be limited to the present carriage way.

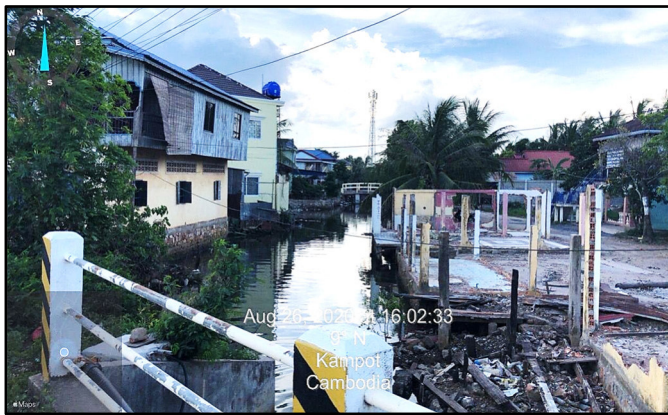
29. **(4) Garbage removal from Line 4B and cleaning of box culvert in the canal crossing with NR 33** and demolition of foundations of houses previously relocated. The open canal is used as a local dumpsite and around 10,000m² of the canal is already filled with garbage. This accumulated garbage is washed out periodically to the river during the heavy rains and inevitably goes to the sea, contributing pollution in the river and sea. After the open earth canal was cleared of structures, it became evident that large volume of garbage has to be removed and the culvert be cleaned as preliminary activity before renovation of the open drainage canal can be implemented.



Photographs 7: Floating garbage along Urban Drainage Earth Canal Line 4B which is proposed to be collected to improve conveyance capacity, as part of the additional works. Photograph 8: Picture of canal after garbage removal.

30. This garbage removal was not included in the original scope of the works but because of the urgency of this activity on other construction activities and to prevent garbage being washed out of the river, the removal of garbage has already been completed. The garbage was removed using locally hired manual labor and no equipment were used except for the hauling of garbage to the municipal disposal site. Garbage removal occurred within the corridor of impact (COI) of the open earth canal and its banks which were previously been cleared. There are no houses or other structures along the canal that were affected by this garbage removal.

31. Based on the approved DRP for line 4B which was fully implemented, a total of 23 AHs have illegally constructed their houses and extended kitchens on the ROW above the water inside the canal. Out of these total, 14 AHs shifted back to their private land adjacent to the canal while 9 AHs were identified landless and relocated to a new site. Based on the results of DMS, there were 124 affected structures of various types in the subproject area, including main or residential structures, residential cum shop and secondary structures. Out of the 124 affected structures of various types, there were structures whose posts and other parts of the structures remained standing along the canal or along the canal banks.



Photograph 9 & 10: Examples of remaining structure foundations which were previously paid and relocated but remained within the corridor of impact of canal Line 4B.

32. The additional work entailed the removal of these remaining posts and other parts of the structures which remained standing along the canal or its banks, remnants of the previous removal of the houses covered by the DRP of UD Line 4B. These construction remnants were already included in the valuation of affected structures and have been completely compensated. In addition, the Chak trees have been cut during the clearing of the canal but this had limited effect on the smooth flow in the canal since roots have not been removed permitting the trees to grow back. The roots have to be removed facilitate the water flow in the canal. The removal of the foundations is already completed and this is being included as part of VO 1 to secure balance of payment to the contractor. There were no resettlement impacts caused by the removal of these protruding concrete posts located within the canal itself.

3.2 Proposed Change in Project Scope

33. The basic goal of the proposed change in project scope is to provide a more comprehensive solution for the drainage of the Kampot town area to further strengthen the existing works under CW01. The main constraint for the drainage of the Kampot town area is that gravity drainage is only fully effective at low tide. Both the outfalls of the existing and new drainage lines are partially or fully submerged during high tide. Therefore, pumping support is required to ensure effective drainage of the town area if heavy

rainfall coincides with a high tide. For an integrated improvement of the town drainage the following interventions as shown in **Table** are proposed.

Table 3: Summary of Works under the Proposed Change in Project Scope

Work Item	Description
(5) Modification of the new drainage line parallel to the river to intercept the flows from both the new and existing drainage lines that drain towards the river and extend the line with 1.4 km to connect with the outfall of the open drainage canal 4b	To assess the functionality of the existing drainage system in combination with the new drainage lines to allow the identification of bottlenecks and the dimensioning of the proposed improvements, a hydraulic model of system.
(6) New 1.3 km main drainage collector line in C3 and 780 m of secondary collector lines	Installation of drainage collection line in C3 under public roads. The exact alignment of the sewer lines and the hydraulic design under public roads will have to be determined during DED
(7) Construction of C3 pumping station	Construction of a lift pumping station in the available public pump the sewerage through the forced main going to the MPS.
(8) Open canal bank stabilization and vegetation control	Renovation of the drainage canal 4B and will involve the stabilization of canal banks at the outfall of the canal over a length of approximately 250 m with sheet piling and selective renovation of the canal section over the remaining canal length of 1.6 m using bio-engineering solutions
(9) Pump gate structure construction at the outfall of the open drainage canal	A pump gate structure will be constructed to will reduce the flooding risk of the areas adjacent to the canal without the need to raise the canal banks up to high flood level (3m).
(10) Connection of new and existing drainage system to the pumping station at the outfall of the open canal	The interconnected new and existing drainage system will be connected to the pumping station at the outfall of the open canal through the construction of pipe interconnectors.
(11) Soil filling at MPS and access road	The additional work will involve the removal and hauling of the very loose soil from the 2.9 ha MPS area and will be replaced by several layers of denser soil to enable the heavy equipment and other vehicles to have access to the MPS
(12) Sedimentation and pre-treatment facility construction at the MPS	Construction of a sedimentation and pre-treatment facility inside the 2.9 ha MPS area prior to pumping to prolong the effective life time of the pipe line.
(13) Balancing reservoir construction at MPS	Construction of a balancing reservoir inside the 2.9 ha MPS area to store peak drainage run off during rain storms and prevent flooding of the surrounding areas and areas.
(14) Installation of main sewer lines in sectors C2 and C3 in addition to the installation of main sewer lines in the sector C1 under the original project scope	Installation of additional main sewer lines in sectors C2 and C3.

34. ***(5) Modification of the new drainage line parallel to the river to intercept the flows from both the new and existing drainage lines that drain towards the river and extend the line with 1.4 km to connect with the outfall of the open drainage canal 4b.***

35. The existing town drainage system drains to the river. The additional works involve the interception of town drainage system at the last road before water drains to the river by connecting it through the existing drain pipe (1200 mm diameter) and extend this pipe line to about 1.4 km until this extended drainage pipe connects to the pump station at the outfall of canal 4B.



Photograph 11: The drainage line will be constructed under public roads.
The drainage line to the line 4b outfall will be installed under the road at the side of the river

36. **(6) New 1.3 km main drainage collector line in C3 and 780 m of secondary collector lines.** Secondary collector lines will be installed in secondary streets of sector C3 and will then connect with the proposed main drainage collector line which is also part of the additional works.

37. The proposed main drainage line will then connect at the last road before water drains to the river by connecting it through the existing drain pipe (1200 mm diameter) and extend this pipe line to about 1.4 km until this extended drainage pipe connects to the pump station at the outfall of canal 4B.

38. **(7) Construction of C3 pumping station.** Construction of a lift pumping station for C3 sector with a 1.2 km long 200 mm diameter force main and a 450 m long 600 mm gravity sewer line to the MPS. Public land is available for construction of the pumping station. The force main will be installed in the road shoulder (sufficient space) and the gravity sewer line to the MPS will be installed under the road pavement, on the right-hand side.



Photograph 12: The forced main will be installed in the road shoulder (sufficient space) and the gravity sewer line to the MPS will be installed, on the right side.

39. **(8) Open canal bank stabilization and vegetation control.** The renovation of the drainage canal will involve (i) the stabilization of canal banks at the outfall of the canal over a length of approximately 250 m with sheet piling, and; (ii) selective renovation of the canal section over the remaining canal length of 1.6 m using bioengineering solutions. The aim of the bio-engineering measures will be to stabilize the canal banks ensuring a relatively uniform canal section and providing for a more controlled vegetation establishment.

40. **(9) Pump gate structure construction at the outfall of the open drainage canal.** To control the inflow of water from the river during high tide and thus reducing the risk of flooding of areas adjacent to the open drainage canal and to improve the discharge of drainage water during high tide, the open road culvert at the outfall of the open drainage canal will be changed to a gated culvert with pump gates. A pump gate structure is preferred to a conventional gated structure with a separate pumping station as the footprint is much smaller and the construction cost about 30% lower.



Photograph 13: The proposed location for the gated outlet structure after the culvert. Photograph 14: A floating temporary coffee shop moored near the proposed location, and now permanently affixed to the ground.

41. **(10) Connection of new and existing drainage system to the pumping station at the outfall of the open canal.** The interconnected new and existing drainage system will be connected to the pumping station at the outfall of the open canal through the construction of pipe interconnectors.

42. **(11) Soil filling at MPS and access road.** Some areas of the proposed site are submerged under water. Based on the results of a geotechnical investigation carried out in the 2.9 ha area for the main pumping station, the upper 2 m soil layer indicated the presence of very loose soil with a bulk density of less than 1,600 kg/m³. The low bulk density in the MPS area will not permit access of construction equipment without increasing the soil density of the upper layer. Access to the site for heavy equipment is required for the construction of the treatment lagoons. It is proposed to increase the relative density of the top soil layer by soil filling and compaction.

43. The additional work will involve the removal and hauling of the very loose soil from the 2.9 ha MPS area and will be replaced by several layers of denser soil to enable the heavy equipment and other vehicles to have access to the MPS.



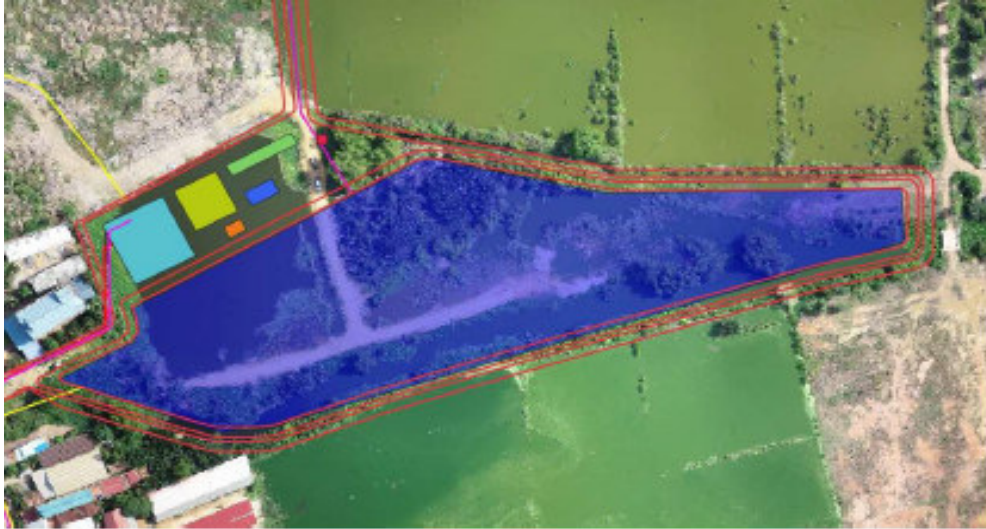
Photograph 15: The location of the proposed 2.9 ha main pumping station where the proposed additional works are proposed.

44. **(12) Sedimentation and pre-treatment facility construction at the MPS.** Construction of a sedimentation to remove primary sedimentation and pre-treatment facility for grease removal inside the 2.9 ha MPS area prior to pumping to prolong the effective life time of the pipe line. Primary treatment will also prevent the discharge of raw sewage within the urban area in case of pump or pipeline failure.

Figure 2: An Example of a Pre-Treatment and Preliminary Sedimentation Facility



45. **(13) Balancing reservoir construction at the MPS.** Construction of a balancing reservoir inside the 2.9 ha MPS area to store peak drainage run off during rainstorms and prevent flooding of the surrounding areas and areas. This is a sort of impounding area where surface run-off water is temporarily stored to minimize flooding and gradually released into the receiving body of water when the threat of flooding subsides.



Photograph 16: Balancing reservoir will be constructed within the 2.9 ha previously acquired by MEF for the construction of the MPS

46. ***(14) Installation of the main sewer lines in the sectors C2 and C3 in addition to the installation of main sewer lines in the sector C1 under the original project scope.*** The project work change will involve the installation of 4.1 km of main sewer lines along existing public roads in C2 and C3 catchments, under the road pavement in addition to the installation of main sewer lines in the sector C1 under the original project scope.



Photograph 17: The main sewer for C3 will be installed within the existing public roads, under the road pavement.

4.0 Involuntary Resettlement (IR) Impact Assessment

47. A preliminary IR impact assessment was undertaken to initially determine the IR impacts and minimize and/or avoid these resettlement impacts in the DED stage. The IR screening will be finalized after the detailed engineering design (DED) is completed to measure, assess and confirm the preliminary resettlement impact assessment, and a final due diligence report prepared and disclosed on ADB website upon clearance before civil works commence.

48. There are 14 proposed additional work items for the Waste Water Treatment Plant (WWTP) and Urban Drainage (UD) sub-components, including 4 subcomponents pertinent to additional works under VO 01 and 10 sub-components for the proposed change in project scope which were assessed for IR impacts.

49. The preliminary IR impact assessment concluded that the proposed additional works under VO1 and the proposed change in scope will not require land acquisition, neither they entail involuntary resettlement impact. While the proposed additional works are category C for IR impacts, the original project IR category remains B. The findings of the impact assessment are described below.

4.1 Impact Assessment of the Additional Works under VO1

50. IR impact assessment of the additional works proposed under the VO1 confirmed that the proposed works will not entail any land acquisition or involuntary resettlement. The following table presents findings of the field visits and assessment.

Table 4: Resettlement Impact Assessment for the Additional Works under VO1

Work Component	Resettlement Assessment
(1) Cleaning and repair of the existing combined drainage/ sewage system in C1, C2 and C3 sectors.	<p>The cleaning and repair of the existing combined drainage/ sewerage system in C1, C2, and C3 (a) will use Jetvac equipment and power rodders and will occur in the existing combined drainage/sewerage system in catchment basins C1, C2 and C3, all located within existing public roads. The manholes to be repaired or replaced are also all located in the existing roads or sidewalks. There is no anticipated land acquisition, and any resettlement impact is highly unlikely on this additional work.</p> <p>The corridor of impact (COI) for the drainage and sewerage system includes the road carriageway, curbs, gutters and sidewalks owned by the government and free from encumbrances.</p> <p>Temporary environmental impacts such as traffic congestion, generation of noise will be addressed by the EMP.</p>
(2) Soil improvement at the WWTP site	<p>The WWTP will be built in an open area of 10.12 ha land owned by RGC (land has been acquired by MEF). There are no affected households or any economic activity at the WWTP site (former salt making area). The soil improvement at the wastewater treatment plant will be limited to the 10.12 ha area previously</p>

Work Component	Resettlement Assessment
	acquired by MEF and is devoid of any resettlement impact.
(3) Pavement reinstatement and/or placing new laterite pavement after installation of force main line from MPS to WWTP, 6 km	The installation of the forced main pipe alignment has been covered by the 2019 DDR for Kampot WWTP and Urban Drainage. The re-pavement of the laterite road will happen within the existing road alignment. The re-pavement will have no anticipated land acquisition or most unlikely to have any resettlement impacts.
(4) Garbage removal from Line 4B and cleaning of box culvert in the canal crossing with NR 33. Demolition of foundations of houses relocated from the canal bank, under the resettlement plan.	Urban Drainage (UD) Line 4B underwent IR screening and a detailed resettlement plan (DRP) was submitted to ADB, cleared, and disclosed on its website. Subsequently, the DRP was fully implemented including the affected structures and trees within the corridor of impact (COI) of Line 4B defined as the actual alignment of the open canal and its easement with a width of 7 meters each side. There's no further encroachment to the COI neither squatters identified following the DRP implementation.

51. Because of the urgency of the removal of garbage (4) in the canal on other construction activities and to prevent garbage being washed out of the river, the removal of garbage has already been completed. The garbage was removed using locally hired manual labor and no equipment were used except for the hauling of garbage to the disposal site. Garbage removal occurred within the corridor of impact (COI) of the open earth canal and its easement of 7 meters, both sides which were previously been cleared. There are no houses or other structures along the canal that were affected by this garbage removal.

52. The demolition of foundations of houses previously relocated from the canal was part of the original plan for open canal 4B. It has been completed and there was no land acquisition, or any additional involuntary resettlement impacts aside from the structures previously identified and compensated.

4.2 Impact Assessment of the Proposed Change in Scope

53. Preliminary impact assessment was carried out on the proposed scope to confirm safeguards categories. It concludes that the proposed additional scope will not entail land acquisition, neither will it result in involuntary resettlement impact. The table below summarizes findings of the preliminary impact assessment and some points are elaborated in the subsequent paragraphs for clarity.

Table 5: Preliminary Resettlement Impact Assessment of the Proposed Scope

Category	Works Component	Summary Impact Assessment
Wastewater system and network improvements to	(7) Construction of C3 pumping station.	The construction of the lift pump station will occur along the publicly owned road shoulder adjacent to

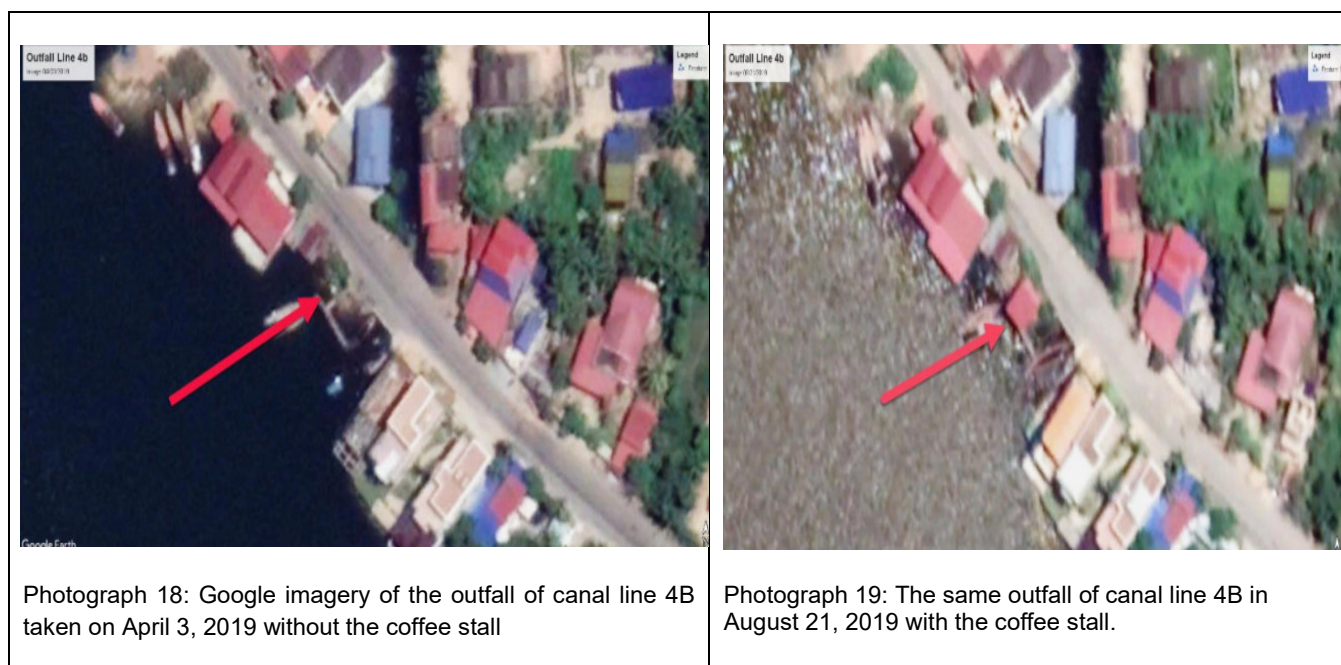
Category	Works Component	Summary Impact Assessment
enhance the operation and long-term sustainability of the infrastructure, and include the expansion of the sewerage network to adjacent catchments	(14) Installation of the main sewer lines in the sectors C2 and C3.	the Kampot River and will not require acquisition of privately owned land or assets.
	(11) Soil filling at the MPS and access road.	<p>The installation of the forced main has been covered by the DDR for Kampot WWTP and urban drainage back in 2019. The latest impact assessment confirmed that the forced main will be laid in the middle of the laterite road. The re-pavement of the laterite road after installation of the force main will be limited to the road carriageway, and no road widening will be permitted. It is highly unlikely that the re-pavement of the laterite road will require any land acquisition or cause any involuntary resettlement impacts.</p> <p>Temporary disturbances because of the limited impairment to access will be addressed through construction method.⁵ Contractor shall provide temporary access for residents living along this laterite road as needed.</p> <p>The works will occur within the 2.9 ha MPS site, which is a state-owned land and was screened and included in the approved and disclosed DDR for the WWTP and urban drainage in 2019. The 2.9 ha is devoid of any habitation or crops and trees from the time the DDR was undertaken up to the present. Thus, there will be no land acquisition or involuntary resettlement impacts resulting from the proposed works.</p> <p>Other temporary environmental impacts such as traffic congestion, noise and dust will be addressed by the EMP.</p>
	(12) Sedimentation and pre-treatment facility construction at the MPS.	
Drainage network improvements to manage inflow of water from the river during periods of high tide and reduce	(5) Modification of the new drainage lines to intercept flows from new and existing drainage lines	There will be no land acquisition or resettlement impacts resulting from the proposed works for the drainage/sewerage systems as the corridor of impact will be limited to the road carriageway,

⁵ Construction will be in phases or sections using backhoes to shorten the disruption in front of structures and lay the pipes faster.

Category	Works Component	Summary Impact Assessment
the risk of flooding in the city center	(6) Extension of drainage collector lines	<p>curbs, gutters and sidewalks owned by the government and free from obstructions.</p>
	(10) Connection of new and existing drainage system to the pumping station at the outfall of the open canal	<p>There are temporary environmental impacts such as traffic congestion, dust and noise generation, as well as potential restriction of access to properties, which will be addressed by the EMP.</p>
	(10) Repair of existing combined drainage/sewer lines	<p>Potential temporary business disruption of mobile vendors around the 3 Kampot markets is avoided as works will be conducted at night time and the government ambient noise standards sub-decree No. 422 ANRK.BK on Air Pollution Control and Noise Disturbance (MoE, 2000 and WHO) will apply</p>
	(9) Construction of a pump gate structure at the outfall of the open drainage canal	<p>The proposed location of the pump gate structure is at the outfall of canal 4B after the small bridge spanning the canal. Structures that could obstruct the construction of a pump gate structure at the outfall of line 4B have been removed and the AH have been compensated under the DRP for urban drainage Line 4B.</p>
	(13) Construction of a balancing reservoir at the MPS	<p>The site visits to the proposed location of the pump gate structure revealed a floating coffee stall in the proposed location. Based on time series Google Earth imagery analysis, it was estimated that the coffee stall was moved into place around August 2019, long after the DMS (November 2018 to January 2019) and the cut-off date (January 2015), and before the compensation payment. The latest visit (November 2020) found that the coffee stall is no longer floating but is firmly fixed to the ground. During the meeting with the owner, the concept of the cut-off date for eligibility was explained to the owner of the coffee stall, and it was clarified that he will not be entitled to compensation in the event if his coffee stall will be relocated elsewhere to give way to the construction of the structure. The owner understood and agreed, and he informed the team that he plans to relocate and moor the floating coffee stall several meters away from the planned pump gate structure during construction.</p> <p>The balancing reservoir will be built inside the main pumping station (MPS) which was previously</p>

Category	Works Component	Summary Impact Assessment
		acquired by government. A due diligence report was prepared for the MPS, WWTP and urban drainage in Kampot back in 2019, and the latest IR screening reconfirmed that there was no habitation or encroachment or privately owned/used assets inside the site.
Rehabilitation of the open drainage canal	(8) Open canal bank stabilization and vegetation control	Renovation of the drainage canal will involve (a) the stabilization of canal banks over a length of approximately 250 m with sheet piling, and; (b) selective renovation of the canal section using bioengineering solutions. These two activities will happen within the canal and its 7-meter easement on both sides previously cleared under the DRP of open canal line 4B and free from encumbrances at the time of the impact assessment.

54. The comparison of 2 Google imageries is in the following photographs to support the preliminary findings on the eligibility of the coffee shop owner for compensation or other assistance.



55. In summary, the proposed works in open canal Line 4B will take place and be limited within the corridor of impact (COI) of the canal, identified as the canal plus 7 meters easement on both sides of the canal. All affected assets within this COI were previously identified, measured and valued as well as compensated under the DRP of Canal 4B. Hence, there is no anticipated land acquisition or involuntary resettlement impacts for these additional works.

56. The renovation of canal Line 4B may cause some temporary restrictions on access to houses along the canal during actual construction. Construction work will be carried out in such a manner that at all times, pedestrian access and access by bicycle or motorcycle will be assured. Motor vehicles will be temporarily denied access during the laying and re-paving of the laterite road.

57. During the installation of sheet piles, temporary noise and vibration are expected to be generated in this activity. The contractor based on the contract, is mandated to keep disruption to the general public to an absolute minimum. If possible, the contractor may introduce devices and equipment to control the level of noise and vibration. In this connection, the contractor shall work strictly from 8AM to 5 PM in the sheet piling activity when many of house members are away from their homes, at work or at school. Sheet piling works after 5PM will be strictly prohibited.

58. Public consultations have been conducted during the preparation of the DRP for Kampot canal line 4B and the DDR for the WWTP and UD of Kampot and informal conversation (undocumented) carried out with some of the residents during the site visits for the preliminary assessment of the additional works. MPWT decided to conduct public consultations after the DED of the additional works particularly on the drainage and sewerage systems, re-pavement of the laterite road, lift pumping station for C3 and the pump gate structure as part of the update of the IR screening and finalization of the due diligence report, because it will be in a better position to answer specific inquiries on the extent of the possible impacts on nearby structures. Presently, the MPWT and PISCB lack the details to answer completely the queries from residents.

4.3 Temporary Impacts

59. Temporary disturbances or impacts will occur in different degrees in some of the subcomponents of the additional works. These temporary impacts are more appropriately addressed in the environmental safeguards rather than under social safeguards. An initial environmental examination (IEE) was conducted to assess the potential environmental impacts of the proposed works and an environmental management plan (EMP) was provided to mitigate these impacts.

60. There are some temporary impacts which may be considered resettlement related such as impacts on mobile food sellers and vendors while construction activities are being implemented. These will be addressed in the particular specifications for the winning contractor in the tender documents. The contractor shall assist vendors to shift back or move aside their stalls during construction.

61. Furthermore, the contractor will undertake construction works during nighttime to avoid the mobile food sellers and vendors who usually sell during daytime, provided the details of the planned works and duration are explained fully to the residents or occupants of the immediate neighborhood and the residents raise no objection to night shift works. The mitigation measures to address potential temporary impacts during construction and addressed in the tender documents are summarized in the following **Table**.

Table 6: Particular Specifications in the Tender Documents

Item	Mitigation Measure
Notification to Stakeholders	The Contractor shall hand deliver to each residence and business close to the site, a written notice which shall state when operations will start and approximately when they will end. The notices shall be printed on A4 paper with wording similar to that shown as follows in Khmer and English.
Contractor's use of the Site.	Contractor is responsible for obtaining the site for his compound and storage area including obtaining all necessary permissions including the supply of water and electricity and provisions for the disposal of all human waste and sewage.
Location of Drainage system	All construction operations and facilities over the entire length of sewer and drain construction shall be confined to within road and other rights-of-way and drainage reserve boundaries and the boundaries of designated working areas.
Underground obstructions/ foundations	Unless identified in the Contract as to be demolished, the Contractor shall be responsible for safeguarding all utilities and structures) and the like in the vicinity of the Site and shall ascertain from the private and public utility authorities' positions of all existing underground services and shall maintain and protect or divert them as required
Construction Areas	Concrete culverts will be precast, either whole or in part, to reduce the width of excavation and also help ensure the works are installed in a quick and efficient manner
	In developed urban areas, the sides of trench excavations in road and other rights of way and designated working areas shall be vertical and shall be supported by a system of sheeting bracing, shoring and other supporting installations necessary to safeguard the work and the workmen.
	No additional payment will be made to the Contractor for working in a confined space or if the position of the Works precludes the use of mechanical excavators or the storage of excavated materials next to the excavations
Access	Where directed by the Engineer, the Contractor shall provide access, vehicular or pedestrian, across sewer or drain trench excavations.
Excavated Unsuitable Materials	Unless approved by the Engineer in each and all instances, excavated material unsuitable for use in the Works shall not be stockpiled on the Site. These shall be hauled off within 2 days. Excavated material shall not be stockpiled on road or other rights of way or designated site working areas.

63. The contractor will repair any damage caused such as damage from heavy vehicles to local roads, or any private assets on completion of construction. The repairs will be to pre-project condition or better at the cost of the contractor. Pavement reinstatement will take place as specified in the Construction Contract. The contractor will also provide a plan of how camp/staging areas will be restored to original condition after construction completed.

5.0 Conclusions and Recommendations

64. No involuntary resettlement impacts are identified resulting from any of the proposed works subcomponents as works will be restricted to the right-of-way (roads) or government-owned land.

65. Temporary resettlement impacts are covered by the provisions of the Tender Documents which form part of the works contract. Any temporary impacts caused during construction beyond COI and within the construction area will be responsibility of the construction contractor, as detailed in the bidding documents and updated EMP. The contractor is to conduct recording of the status of the temporary impacts prior to start of construction, report to PMU/PIU, and restore and rebuild the temporary impacts to their pre-project condition. The mitigating measures for temporary disturbances that may require

funding will be financed through general provisional sum or contingency sums which are allocated in the Bill of Quantities.

66. If any unforeseen resettlement impacts are found during construction, potential AHs/APs may file their complaints and grievances to the grievance redress mechanism specifically established for the project. If the impacts arose from the implementation of construction activities, the contractor will be liable for payment. If the impacts are due to the design or omission during their resettlement impact assessment, General Department for Resettlement (GDR) will be responsible for conducting social impact assessment, formulating a resettlement plan and implementing the RP before works can progress further.

67. Two Grievance Redress Mechanisms (GRM), namely project-specific (environmental) GRM managed by PMU, and resettlement GRM managed by GDR are established and functional for the project.⁶ These venues will enable affected communities and persons (if any) to raise their complaints and grievances.

68. Any temporary impacts, including resettlement related impact caused during construction will be reported monthly by the contractor in their monthly reports with full documentation of details such as agreements, and payments, and grievances and their resolution status, as applicable. PISCB will closely monitor the compliance of the contractor with the environmental and social safeguards provisions stipulated in the contract and will assist PMU to compile the semi-annual social safeguards monitoring reports.

69. The initial resettlement impact assessment/draft DDR will be updated after the completion of the detailed engineering designs for the additional works in around six months following the approval of the proposed change in scope. A resettlement impact assessment will be undertaken to reconfirm the initial findings, and the due diligence reports will be prepared and submitted to ADB for clearance and disclosure before any civil works contract signed.

⁶ Details provided in the approved and disclosed IEE and DRP