Environmental Monitoring Report

Semiannual Report
January-June 2019
11 March 2020

Indonesia: Metropolitan Sanitation Management and Health Project

Prepared by Directorate General of Human Settlements, Ministry Public Works and Housing for the Republic of Indonesia and the Asian Development Bank.

CURRENCY EQUIVALENTS
(as of 11 March 2020)

Currency unit	–	Rupiah (Rupiah)
Rp1.00	=	$0.0000702050
$1.00	=	Rp14,244

NOTE

(i) In this report, "$" refers to United States dollars.

ACRONYMS AND ABBREVIATIONs

ADB	—	Asian Development Bank
AH	—	Affected household
AMDAL	—	*Analisa Mengenai Dampak Lingkungan* (Environmental Impact Assessment Process which includes ANDAL, RKL, and RPL*)*
ANDAL	—	*Analisis Dampak Lingkungan* (Environmental Impact Assessment)
BAPEDALDA	—	*Badan Pengendalian Dampak Lingkungan Daerah* (City / District Environmental Agency)
BLH	—	*Badan Lingkungan Hidup* (Environmental Bureau)
CPMU	—	Central Project Management Unit
DGHS	—	Directorate General of Human Settlements
EA	—	Executing agency
EIA	—	Environmental Impact Assessment
EMP	—	Environmental Management Plan
EMoP	—	Environmental Monitoring Plan
IA	—	Implementing Agency
IEE	—	Initial Environmental Examination
IP	—	Indigenous People
IPDF	—	Indigenous People Development Framework
IPDP	—	Indigenous People Development Plan
O&M	—	Operation and maintenance
PP	—	*Peraturan Pemerintah* (Government Regulation)
RKL	—	*Rencana Pengelolaan Lingkungan* (Environmental Monitoring Program)
RPL	—	*Rencana Pemantauan Lingkungan* (Environmental Monitoring Program)
UKL	—	*Upaya Pengelolaan Lingkungan* (Environmental Management Effort, similar to IEE)
UPL	—	*Upaya Pengelolaan Lingkungan* (Environmental Monitoring Effort, similar to EMP)
WWTP	—	Wastewater Treatment Plant

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I. INTRODUCTION

1. The Metropolitan Sanitation Management and Health Project (MSMHP) is implemented to achieve improved public health and reduced environmental pollution in Yogyakarta and Medan. The project outcome is to have increased access to improved wastewater in both cities which target 2.4% and 7% increase in population in Medan and Jakarta respectively with access to sewer connection. Project component includes the following three outputs: (i) community mobilization for improved health and hygiene including construction of community-based sanitation facilities; (ii) infrastructure development for sewerage including improvement and extension of sewer systems and wastewater treatment plants; and (iii) consultant support for project implementation.

2. The project in Yogyakarta covers administrative areas of Yogyakarta city, Sleman district and Bantul district, an agglomeration known as KARTAMANTUL. Project intervention include sewerage construction which is connected to the existing wastewater treatment plant at Sewon (WWTP Sewon). In Medan, project intervention includes optimization of the existing WWTP Cemara and construction of sewerage networks in zone 9 and zone 10-11. During the reporting period, the works in zone 10-11 is still progressing (the other works has been completed within 2011 – 2015. Under the national budget, EA also facilitate the construction of sewerage network in zone 12. Project maps can be seen in Figure 1 and 2 below.

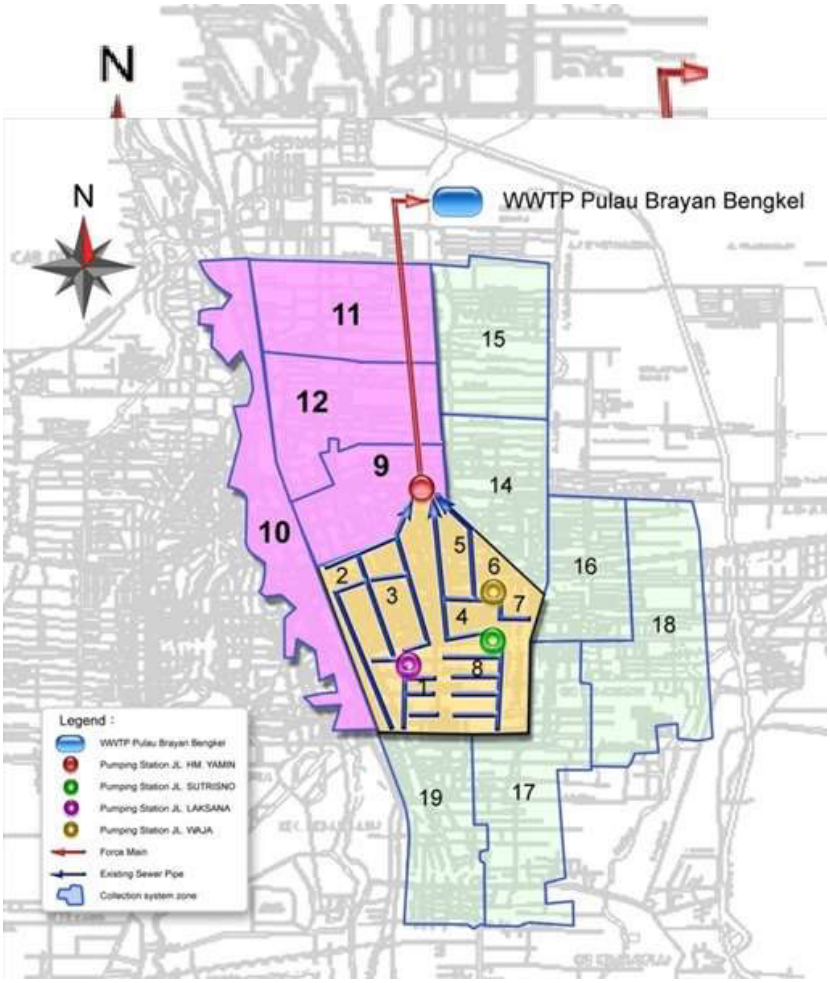

Figure 1. Project Location Map for Medan (Zone 9, 10, 11, and 12)

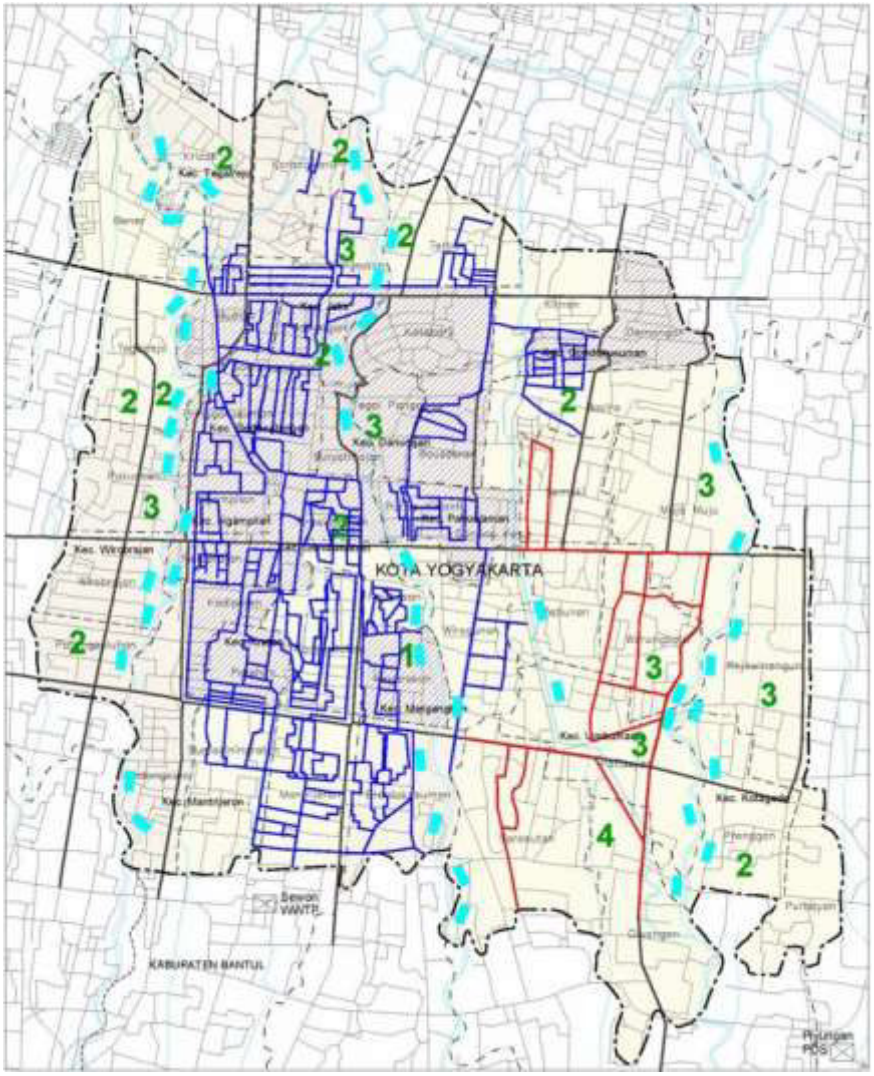

Figure 2. Project Location Map for Yogyakarta

3. The Project has been classified by ADB as environmental category B. An Initial Environmental Examination (IEE) has been prepared in 2009. The project's impacts are site-spesific such as soil erosion caused by excavation activity, dust pollution, construction noise, traffic congestion caused by construction activity, with proven and readily designed mitigation measures. Initial environmental examinations were conducted, and environmental management plans were developed and will be implemented in compliance with ADB's environmental assessment requirements prescribed in its Environment Policy (2002). The executing agency will implement, monitor, and periodically report to ADB on the status of environmental management plan implementation.

4. In compliance with the Government of Indonesia requirements for environmental management, the project has prepared AMDAL (Analisis Mengenai Dampak Lingkungan which consists of Environmental Impact Assessment, Environmental Management Plan, and Environmental Monitoring Plan or ANDAL-RKL-RPL). The AMDAL study entitled: "Environmental Impact Assessment of Installation of Secondary Pipe Network and Household Wastewater Connection to support Metropolitan Sanitation Management and Health Project di Kota Medan dan Kabupaten Deli Serdang, Provinsi

Sumatra Utara".1 The AMDAL reports have been approved by Badan Lingkungan Hidup (BLH) Kota Medan, which was then endorsed by the Mayor of Medan City. Approval of the AMDAL was given in 2014 through Decision of the Governor of North Sumatra (No. 188.44/559/KPTS/2014). The Governor gave the decision because the project area covers more than one administrative unit, i.e. Medan city and Kabupaten Deli Serdang. The Mission has received Andal report, but has not received the RKL and RPL reports, and therefore requested soft copy of the RKL and RPL reports. The Mission also requested copy of Izin Lingkungan issued by concerned agency as required by PP No. 27/2012 related to Izin Lingkungan.

5. The environmental safeguard monitoring report is prepared to report environmental-related activities to meet ADB's Environment Policy (2002). The report reviewed (i) Institutional setup and responsibilities for EMP implementation and supervision (ii) Compliance with environment related project covenants (iii) Compliance with environment related project covenants (iv) Environmental mitigations measures implemented in the reporting period (v) Environmental monitoring (vi) Public consultation including grievance redress mechanism (vii) Health and Safety (viii) Institutional strengthening and training.

II. PROJECT IMPLEMENTATION PROGRESS

6. The Metropolitan Sanitation Management and Health Project consists of two subprojects, which are the subprojects in Yogyakarta and Medan City. Subprojects in Yogyakarta has been completed in 2014 while the subproject in Medan is partially completed, with no activities run in 2018.

Subproject in Yogyakarta City

7. In Yogyakarta subproject, by 2014 three packages with a total value of $6,39 million were completed: (i) sewerage expansion phase 2, (ii) sewerage expansion phase 3 and (iii) CCTV installment. The sewerage covers administrative areas of Yogyakarta city, Sleman district and Bantul district, an agglomeration known as KARTAMANTUL. The sewerage is connected to the existing wastewater treatment plant at Sewon (WWTP Sewon). The works in Yogyakarta have been completed and provisionally handed over in September and March 2014. In addition, there have been 52 community-based sanitation built through financing facility of the Special Allocation Fund (Dana A*nggaran Khusus* / DAK), STBM, and Sanimas Program over the course of 2010-2014. Figure 3 shows WWTP Sewon while figure 4 shows the community-based sanitation facilities.

[1] *Rencana Kegiatan Pemasangan Jaringan Pipa Sekunder dan Sambungan Rumah Air Limbah Rumah Tangga mendukung Kegiatan Metropolitan Sanitation Management and Health Project di Kota Medan dan Kabupaten Deli Serdang, Provinsi Sumatra Utara*.

Figure 3. WWTP Sewon in Bantul Regency

Figure 4. Community-based Sanitation Facilities in Yogyakarta

8. The environmental impact during implementation period in Yogyakarta subproject includes soil erosion from excavation, dust pollution, construction noise, and traffic jam caused by construction activity. To mitigate the impact, the project carried out control measures on environmental impacts such as: build sheet pile to prevent landslide caused by excavation and spraying water on construction sites to reduces air pollution.

Subproject in Medan City

9. There are initially five civil works packages in Medan, of which three of them have been completed by January 2015. The remaining two packages were later terminated and redesigned. However, due to the availability of the remaining loan proceeds, only package for Zone 10 and 11 that is financed by the loan proceeds, while the package for Zone 12 is financed by the APBN.

10. The scope of work in zone 10 – 11 can be find in the appendices. The contract profiles are as follows.

Table 1. Contract Data Sheet of The Contractor

No.	Description	Remarks
1	Contract Number	HK.02.03/SUP.MSMHPSSMOZP_MDN/PSPLP-I/721/2018
2	Name of Contractor Firm	PT Nindya Karya (Persero)

No.	Description	Remarks
3	Contract Date	9 November 2018
4	Work Title	*Optimalisasi Jaringan Pipa Air Limbah, MSMHP Kota Medan Zona 10-11* (Optimilization of Sewerage Pipelines, MSMHP Medan City Zone 10-11)
5	Work Location	Medan City, North Sumatera Province
6	Date of SPMK (*Warrant to Start the Work*)	9 November 2018
7	Contract Value	Rp 131,561,421,000 (including 10% tax/PPN)
8	Contract Period	723 Calendar days

Table 2. Contract Data Sheet of The Supervision Consultant

No.	Description	Remarks
1	Contract Number	HK.02.03/SUP.MSMHPSSMOZP_MDN/PSPLP-I/720/2018
2	Name of Consultant Firm	PT Arkonin Engineering Manggala Pratama
3	Contract Date	9 November 2018
4	Work Title	Project Management and Consultant Supervision MSMHP Medan City Zone 10-11)
5	Work Location	Medan City, North Sumatera Province
6	Date of SPMK (*Warrant to Start the Work*)	9 November 2018
7	Contract Value	Rp 9,428,210,000 (including 10% tax/PPN)
8	Contract Period	723 Calendar days

11. As of 30 June 2019, progress of physical work compared to the contract is as follows.
    - Planned : 19.681%
    - Realization : 17.431%
    - Deviation : -2.250%

12. As of 30 June 2019, financial progress compared to the contract is as follows.
    - Planned : 19.681%
    - Realization : 10.000%
    - Deviation : -9.681%

13. The main construction work activities that has been done in January – June 2019 period are pipe installation work, soil excavation in jacking works, and construction work for pump station. The civil works progress in Zone 10 - 11 during reporting period is 17,431% and has minus deviation due to construction work permit that just released on 1st April 2019 by Mayor of Medan City. The work permit from Mayor of Medan City is really important factor to construction due to negative public perception during previous work in 2012 – 2016. During that time, the Contractor was not implemented the "*clean construction"* method properly so there were so many excavation holes from pipe installation .

Figure 5. Project Implementation in Medan (January – June 2019)

III. INSTITUTIONAL SETUP AND RESPONSIBILITIES FOR EMP IMPLEMENTATION AND SUPERVISION

14. The Directorate General of Human Settlements (DGHS) or Cipta Karya of the Ministry of Public Works and Housing (MPWH) is the Executing Agency for MSMHP. The Central Project Management Unit (CPMU) is establish at the Sub-Directorate of Wastewater under the Directorate for Environmental Sanitation Development. At the provincial level, the Provincial Project Management Unit (PPMU) is the implementing agency of the project. The PPMU has been established in North Sumatera and Yogyakarta.

15. Implementing Agencies (IA). The responsibility of the IAs is to carry out the environmental assessment process according to the national environmental legislation and to obtain environmental clearance from the relevant project approving authority (Dinas LH) and ADB for environmental compliance before awarding contracts for the subcomponents. In both cities, the government agency in charge of the on-site sewerage projects related to government housing projects is DGHS. Sludge collection from on-site wastewater treatment (septic tank, communal STP, etc.) is the responsibility of Dinas Kebersihan in both Medan and Yogyakarta.

16. Based on RKL-RPL (EMP-EMoP) that has been made on 2014, the implementing agencies for environmental management and monitoring during construction works on Medan City is department of Spatial Planning, Housing, and Settlements – North Sumatera Province (DINAS TARUKIM). The monitoring agencies and the report

recipient agencies are different based on each environmental impact that must be manage and monitor.

17. The monitoring agencies and report recipient agencies for each impact can be seen in Table below:

Table 3. Environmental Management Institution

Unit	Unit Functions	Responsible for Environmental Aspects/Functions	Consultants / Functions
Construction Phase			
Ministry of Public Works' Directorate General of Human Settlements (DGHS)	Executing Agency for MSMHP; Provides technical supervision and responsibility over the investment		
Central Project Management Unit (CPMU) at Sub-Directorate of Wastewater under the Directorate of Environment Sanitation Development (Dir. PPLP)	Responsible for MSMHP implementation in project cities; Coordinates with ADB and other external agencies	CPMU will responsible for overall supervision in the project including environmental aspect; Coordinates with PPIU and LPMU to ensure environmental aspect are well implemented; responsible for environmental monitoring reports preparation.	Environmental Safeguard in Project Management and Consultant Supervision (PMCS) will: (i) assist CPMU and PPMU in monitoring of EMP implementation; and, (ii) assist CPMU in preparation of semi-annual environmental safeguard monitoring reports.
Provincial Project Management Unit (PPMU) has been established under Satker PPLP North Sumatera and Satker PPLP D.I. Yogyakarta.	Key implementation unit in the field; Provides technical advice to both Contractor and Consultant to lead implementation in the field; Closely monitors construction progress.	PPMU is responsible for overall environmental supervision of construction activities; incorporating the environmental requirements into project contractual agreements; ensure that the Contractor's EMP is properly implemented and monitored.	Assist PPMU in monitoring environmental mitigation activity implementation in the field.
Construction contractor	Implement construction activities.	Contractor's responsible for implementation of the Contractor's Environmental Mitigation Activities; Coordinates with PPMU and PMCS related to environmental mitigation activities.	

18. It is mandatory for the Contractor to carry out environmental mitigation activities to minimize the environmental impacts that resulted from project activities. The activities that can be carried out by the Contractor in minimizing the impact during construction stage are as follows:

Table 4. Environmental Mitigation Activities

No	Environmental Impact	Environmental Management Activity
1	Job Opportunities	1. The Contractor should coordinate with Camat/ Kelurahan/ Head of Lingkungan (Kepling) for construction worker recruitment; 2. Give priority to local construction worker as project construction worker. 3. Conduct job education and training related to project implementation for local workers.
2	Air Quality	1. Using transportation mode to mobilize utility and materials that pass the noise and speculation test by the Transportation Agency; 2. Regularly watering and washing the body of the road, especially in the dry season, which is in morning, afternoon, and evening; 3. The past project vehicle Lalang was given a tarpaulin cover if it was loaded 4. Watering the dump truck wheels since entering and exiting the project; 5. Give masks for construction workers and communities in surrounding location areas. 6. Making a guardrail (zinc fence / multiplex) at the excavation location.
3	Road Damage	1. Soil excavation should be done according to technical methods about excavation work and placement of excavated land so it will not cause road traffic or disturb community activity 2. Soil excavation, installation, and compaction method should be done using “clean construction” (every 100 m of excavation work, pipe installation should be done immediately, excavation must be covered again with soil, the remaining soil should be clean from the project area so the soil taps are minimized as little as possible. 3. For the excavation work, the hole needs to be guard with zinc fence
4	Road Traffic	1. Maintain roads regularly 2. Repair damaged road caused by pipe installation work immediately; 3. Reduce material transportation activity in rush hour; 4. Arranging the mobility of equipment and materials not during rush hour / solid vehicles; 5. For sewer pipe that crossing the road, the installation work will be done at night.
5	Public unrest	1. The excavation of land should be as small as possible and immediately closed again; 2. The method of excavation, installation, and closure is carried out by the method of "clean construction", so that the piles / mounds of land are minimized as little as possible; 3. For the excavation work, the hole needs to be guard with zinc fence 4. Before carrying out activities, Contractor must coordinate with cross-sectoral agencies / agencies.

No	Environmental Impact	Environmental Management Activity
		5. Make a signpost warning "there is a pipe excavation" at the time of carrying out the work
6	Public Attitudes and Perceptions	1. The excavation of land should be as small as possible and immediately closed again; 2. The method of excavation, installation, and closure is carried out by the method of "clean construction", so that piles / mounds of land are minimized as little as possible; 3. For the manufacture of pipe holes, it is necessary to make a fencing with zinc so that road users are not disturbed; 4. Before carrying out activities, Contractor must coordinate with cross-sectoral agencies / agencies.

IV. COMPLIANCE WITH ENVIRONMENT RELATED PROJECT COVENANTS

19. There should be no overall significant adverse environmental impacts. However, temporary, transient adverse impacts can be expected during the construction phase and can be addressed through proper engineering design and incorporation of the identified mitigation measures. Permanent damage to the environment by the Project depends on the quality of O&M work to be carried out. As such, the operation of sanitary facilities, and not construction mitigation and monitoring efforts, will be of significance to determine positive environmental effects in the long- term. Environmental Management Plans (EMP) detailing the mitigation measures and monitoring plan during pre-construction, construction and operation phases have been prepared. Affected persons will be informed in advance about potential risks during construction (such as traffic accidents, loss of business, flooding etc.) and about the mechanisms that exist to address any grievances.

20. The PPMUs will be responsible for carrying out the environmental assessment process according to the national environmental legislation and to obtain environmental clearance from the relevant project approving authority (Environmental Agency) and ADB for environmental compliance before awarding contracts for the subcomponents. In both cities, the government agency in charge of the on-site sewerage projects related to government housing projects is DGHS. Sludge collection from on-site wastewater treatment (septic tank, communal STP, etc.) is the responsibility of Dinas Kebersihan in both Medan and Yogyakarta.

21. During construction, compliance monitoring will be conducted in accordance with the environmental monitoring plan. The PPMU will include information on environmental monitoring in the quarterly progress reports. In addition, the PPMU will prepare and submit semiannual environmental monitoring report to ADB for review. Should environmental conditions change during the implementation, the PPMU will also need to update EMP and prepare corrective action plan and submit them to ADB. The reports will be publicly disclosed in ADB website once the quality is acceptable to ADB. No later than 1 month before the completion of the construction work, the PPMU will collect material from all contractors and provide a construction completion report to the stakeholders. The environmental section of this report will indicate the timing, extent, and success of mitigation completed and the maintenance and monitoring needs during operations.

22. The project covenants related to environment can be seen in paragraph no 8 (can be seen in Table below) with status/ remarks to project covenants is complied with per December 2018.

Table 5. Loan Covenants regarding Environment

Para. No.	Covenants	Status/Remarks
8.	**Environment.** The Borrower shall ensure that the construction and operation of the Project facilities shall be carried in accordance with (a) the initial environmental examinations prepared for the Project and approved by ADB; (b) the Borrower's environmental laws and regulations; and (c) ADB's Environmental Policy (2002). In the event of discrepancy between the Borrower's laws and regulations, and ADB's Environmental Policy, ADB's policy shall prevail. The Borrower shall also implement the environmental mitigation and monitoring measures, and other recommendations specified in the initial environmental examinations to minimize any adverse environmental impacts arising from the construction and operation of the Project facilities.	**Complied with.**

V. ENVIRONMENTAL MITIGATIONS MEASURES IMPLEMENTED IN THE REPORTING PERIOD

23. The Contractor already implemented environmental mitigation during reporting period (January – June 2019).

24. The mitigation measures for Construction Phase based on EMP Medan City can be seen in the Table below.

Table 6. Environmental Mitigation Measures

Impact Factor/ Stage	Potential Impacts and/or Issues	Mitigation Measures defined in the EMP	Implementation status and compliance with EMP
Construction Phase			
1. Job Opportunities	1. Recruitment of local workers ≤ 60% from project location surrounding area. 2. Worker take homepay ≤ UMR Medan City and Kab. Deli Serdang; 3. Preferred project workers are residents who are close to the project	• The Contractor should coordinate with Camat/ Kelurahan/ Head of Lingkungan (Kepling) for construction worker recruitment; • Give priority to local construction worker as project construction worker. • Conduct job education and training related to project implementation for local workers.	• Contractor already coordinate with camat for construction worker recruitment; • Coordinator already give priority to local construction workers, all field workers are from Medan; • Contractor already conduct job education and training related to project implementation.

Impact Factor/ Stage	Potential Impacts and/or Issues	Mitigation Measures defined in the EMP	Implementation status and compliance with EMP
	site; 4. There is no recruitment to unemployment in the project area.		
2. Air Quality	The air quality is exceeded Government Regulation No. 41/ 1999 for Air Quality Management	• Using transportation mode to mobilize utility and materials that pass the noise and speculation test by the Transportation Agency; • Regularly watering and washing the body of the road, especially in the dry season, which is in morning, afternoon, and evening; • The project vehicle was given a tarpaulin cover if it was loaded; • Watering the dump truck wheels when entering and exiting the project; • Give masks for construction workers and communities in surrounding location areas. • Making a guardrail (zinc fence / multiplex) at the excavation location.	• Currently the mode of transportation used is a dump truck but there has been no inspection from the local Transportation Agency; • The Contractor already implemented mitigation by watering and washing the main road after construction has been done with 1500 L water vehicle; • The Contractor already give tarpaulin cover in the project vehicle; • Contractor watering dump truck wheels only if the wheels are dirty when entering and exiting the project area; • Contractor has not give masks for communities in surrounding location areas; • Contractor already making a guardrail for every excavation location.
3. Road Damage	Damage road because excavation and pipe installation work caused road traffic	• Soil excavation should be done according to technical methods about excavation work and placement of excavated land so it will not cause road traffic or disturb community activity; • Soil excavation, installation, and compaction method should be done using “clean construction” (every 100 m of excavation work, pipe installation should be done	• Every soil excavation activity should be approved by Consultant according the excavation work. The placement of excavated land should not disturb community activity. • The clean construction is implemented. The pipe is immediately install after the soil excavated per 50

Impact Factor/ Stage	Potential Impacts and/or Issues	Mitigation Measures defined in the EMP	Implementation status and compliance with EMP
		immediately, excavation must be covered again with soil, the remaining soil should be clean from the project area so the soil taps are minimized as little as possible. • For the excavation work, the hole needs to be guard with zinc fence	meter so the project area is clean from excavated soil as soon as possible; • Contractor already making a guardrail for every excavation location.
4. Road Traffic	Average traffic delay caused by project activity in intersection arms is >40 seconds / vehicle for intersection arms with APIL and >30 seconds / vehicle for intersection arms without APIL.	• Maintain roads regularly • Repair damaged road caused by pipe installation work immediately; • Reduce material transportation activity in rush hour; • Arranging the mobility of equipment and materials not during rush hour / solid vehicles; • For sewer pipe that crossing the road, the installation work will be done at night.	• The Contractor already maintain roads regularly; • The contractor has been repairing the damaged road after the construction has been done in every road sector as soon as possible; • The Contractor already reduce material transportation activity in rush hour; • The equipment and material mobilization is during night for heavy traffic road and in the daylight for non-heavy road; • The installation work for pipe installation that crossing road is done in the daylight;
5. Public unrest	1. There is public unrest due to project activities; 2. Public perception of activities is negative	• The excavation of land should be as small as possible and immediately closed again; • The method of excavation, installation, and closure is carried out by the method of "clean construction", so that the piles / mounds of land are minimized as little as possible; • For the excavation work, the hole needs to be guard with zinc fence • Before carrying out activities, Contractor must coordinate with cross-sectoral agencies.	• The excavation already done to be as small as possible to make it efficient and immediately closed again after • The method of excavation, installation, and closure is carried out by the method of “clean construction”; • For the excavation work, the hole already guard with zinc fence; • The Contractor already coordinate with cross-sectoral agencies before

Impact Factor/ Stage	Potential Impacts and/or Issues	Mitigation Measures defined in the EMP	Implementation status and compliance with EMP
		• Make a signpost warning "there is a pipe excavation" at the time of carrying out the work	carrying out activities; • There is signpost warning in every zinc fence.
6. Public Attitudes and Perceptions	Society perception for project is negative	• The excavation of land should be as small as possible and immediately closed again; • The method of excavation, installation, and closure is carried out by the method of "clean construction", so that piles / mounds of land are minimized as little as possible; • For the manufacture of pipe holes, it is necessary to make a fencing with zinc so that road users are not disturbed; • Before carrying out activities, Contractor must coordinate with cross-sectoral agencies / agencies.	• The excavation already done to be as small as possible to make it efficient and immediately closed again after • The method of excavation, installation, and closure is carried out by the method of “clean construction”; • For the excavation work, the hole already guard with zinc fence; • The Contractor already coordinate with cross-sectoral agencies before carrying out activities;

Figures 6. Implementation of the Environmental Mitigation Measures in Medan

VI. ENVIRONMENTAL MONITORING

25. Environmental Monitoring Plan (EMoP) has been made in 2014 and authorized by Environmental Bureau / *Badan Lingkungan Hidup* (BLH) North Sumatera Province since the initial project location is under 2 regencies/cities (Medan City and Kab. Deli Serdang).

26. Based on EMoP document that has been released on 2014, the environmental monitoring plan (environmental impact source, indicator/parameter, monitoring method, monitoring frequency, and analytical methods) for environmental impact on MSMHP in Medan City can be seen in the Table below:

Table 7. Environmental Monitoring Report

Environmental Impact	Environmental Impact Source	Indicator/ parameter	Monitoring Method and Analytical Method	Monitoring Frequency	Monitoring Results
1. Air Quality	1. Mobilization of construction utilities and materials; 2. Soil excavation and pipe installation work; 3. Cleaning the remaining material; 4. Provision of electrical energy from the generator engine	Government Regulation No. 41/1999 for Air Quality Management	Data collection method: 1. Take air quality samples in the field; 2. In-field observation; 3. Interview with the community in the surrounding location area; 4. Questionnaire with community in the surrounding location area; Analytical method: The results of air quality measurements are then compared with quality standards and baseline data.	Every 6 months during construction phase, and extra sampling/monitoring in dry season beside the routine monitoring schedule	Not yet conducted
2. Road Damage	1. Mobilization of construction utilities and materials; 2. Soil excavation and pipe installation work.	Length and width of damaged road caused by soil excavation and pipe installation	1. Length and width measurement of damaged road; 2. Direct observation in the field 3. Interview with the community in the surrounding project area;	• The measurement of damaged road should be done every month during construction phase. • The observation in the field should be done daily; • The interview and	Not yet conducted

Environmental Impact	Environmental Impact Source	Indicator/ parameter	Monitoring Method and Analytical Method	Monitoring Frequency	Monitoring Results
			4. Questionnaire for the community in the surrounding project area. Analytical Method: Based on damaged road percentage to all road excavation volume.	questionnaire is in the end of the project.	
3. Road Traffic	1. Soil excavation and pipe installation work; 2. Utility and material mobilization ; 3. Material debris cleaning up activity	Average traffic delay caused by project activity in intersection arms is <40 seconds / vehicle for intersection arms with APIL and <,30 seconds / vehicle for intersection arms without APIL.	1. In-depth interviews with 2 residents who were at the intersection of the source of traffic jam as much as 2 informants per intersection. 2. Direct observation on the field to observe traffic in the location of the intersection of the traffic jam; 3. Questionnaire is conducted together with proportional questionnaire attitude and perception of 100 respondents in location Analytical method: Calculating delay traffic duration during construction work.	• The direct observation is everyday during construction phase; • The interview and questionnaire is conducted in the end of the project.	Not yet conducted
4. Public unrest	1. Soil excavation and pipe installation work; 2. Utility and material mobilization ;	1. There is no public unrest due to project activities; 2. Public perception of activities	1. In-depth interviews with local residents who are around the location of secondary piping and house	Once during construction phase	Not yet conducted

Environmental Impact	Environmental Impact Source	Indicator/ parameter	Monitoring Method and Analytical Method	Monitoring Frequency	Monitoring Results
	3. Material debris cleaning up activity	is positive.	connections; 2. Direct observation on the field to observe the behavior of the community to workers or to the assets of the initiator during the construction phase 3. Questionnaire is carried out in conjunction with the attitude and perception questionnaire of 100 respondents in location proportionally to identify community unrest during construction. Analytical method: Tabulation to find out the percentage of people who are restless due to activities		
5. Public Attitudes and Perceptions	1. Soil excavation and pipe installation work; 2. Utility and material mobilization ; 3. Material debris cleaning up activity	Society perception for project is positive.	1. In-depth interviews with 4 residents around the secondary pipeline excavation site and house connections of 4 people in each area of the excavation zone; 2. Direct observation on the field to observe what the community is doing or community actions	Once during construction phases	Not yet conducted

Environmental Impact	Environmental Impact Source	Indicator/ parameter	Monitoring Method and Analytical Method	Monitoring Frequency	Monitoring Results
			towards activities during the construction phase 3. Questionnaire is carried out in conjunction with the attitude and perception questionnaire of 100 respondents in location. Analytical method: Done by qualitative and quantitative analysis.		

27. Installation using Jacking Method. For installation using jacking methods, construction using these is carried out in various stages of work as follows: (1) Making shaft jacking, where there are jacking equipment settings, set up entrance rings, set up jacking machines, insert jacking machines; (2) Implementation of jacking pipes, operating conditions; (3) Monitoring the straightness and slope of the jacking pipe. During the reporting period, the Contractor is carrying out the first stage of making shaft jacking. Photos from making shaft jacking seen as follow.

Figure 7. Starting pit shaft construction on Jl. Sidorukun.

28. For road traffic control, Contractor already discuss with Satlantas Medan and put traffic sign in surrounding project area. Traffic control for jacking pipe activities on Sidorukun can be seen in Figure below.

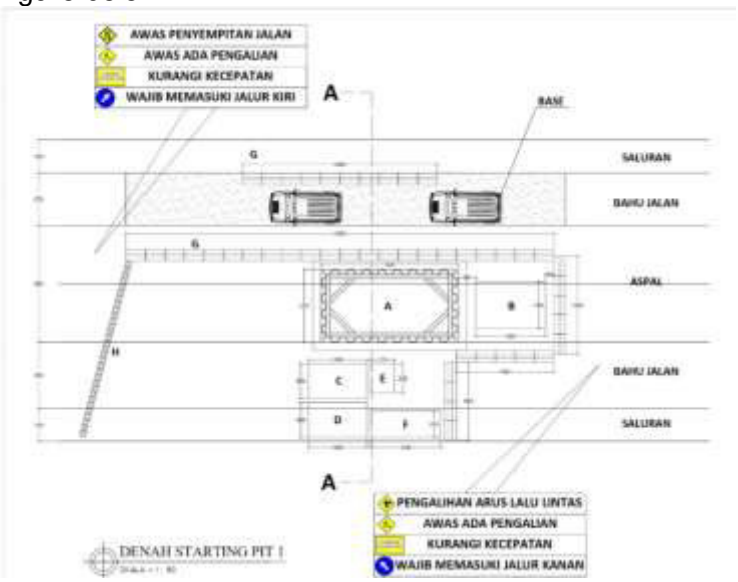

Figure 8. Traffic Control in Starting Pit in Jl. Sidorukun

VII. PUBLIC CONSULTATION, GRIEVANCE REDRESS MECHANISM

29. There are 2 (two) grievance redress mechanisms (GRMs) on MSMHP in Medan. The first GRM is presented in AMDAL report and the second one is that implemented in the field. Because there is no activity project in Medan during 2016-2018, the first GRM (that presented in AMDAL report) could not be implemented properly since there isn't consultation during 2016 – 2018 about GRM.
30. Grievance redress mechanism (GRM) regarding this project was attached to the GRM during AMDAL study (EIA/SIA), is attached to the GRM applicable in Medan City Government and available in the GRM designed specifically for this project. The GRM during AMDAL Study can be seen in the following figure.

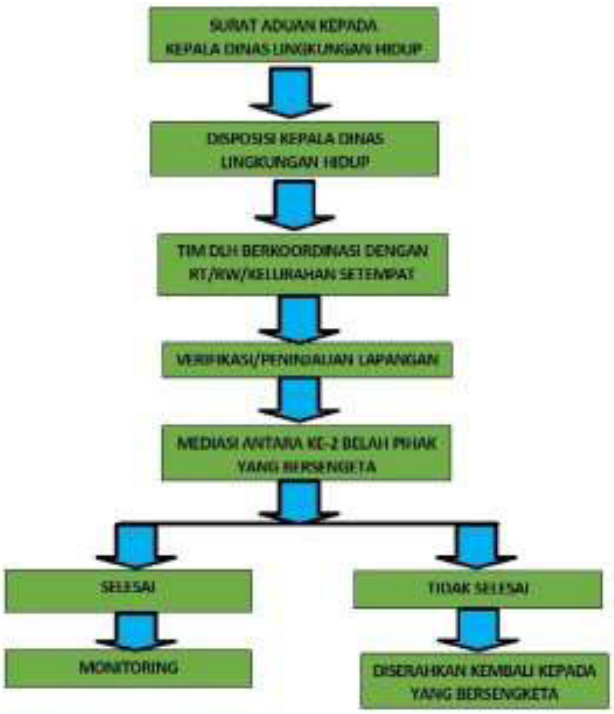

Figure 9. Grievance Redress Mechanism during AMDAL Study (EIA/SIA)

31. GRM applicable in Medan City Government does not have a specific flowchart, but the City Government always displays channels available for public complaint and they also provide complaint form in their website (https://pemkomedan.go.id/hubungi-kami.html), as seen in the following figure.

Figure 10. Form for Complaint Available in The Official Website of Medan City Government

32. On February 2019, it has been agreed between project owner (Satker PSPLP of North Sumatera Province) and the contractor (PT Nindya Karya) that should any community member have complaints related to this project, the complaint could be addressed to representatives of PT Nindya Karya through certain phone numbers as shown on the billboard below.

Figure 11. Billboard on construction sites.

Figure 12. Billboard on construction sites and contains basic information about the project.

33. The grievance redress mechanism agreed in this project can be seen in the following figure. Despite that, the grievance redress mechanism doesn't include the stage for lawsuit.

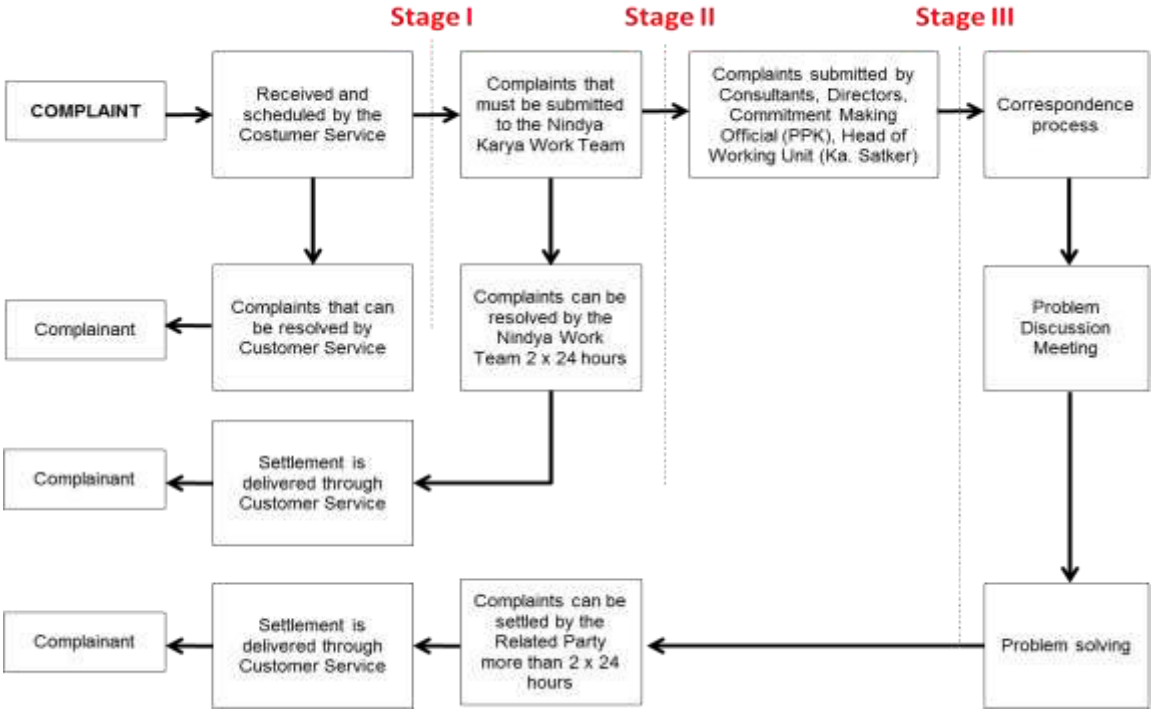

Figure 13. Grievance redress mechanism in MSMHP Medan

VIII. HEALTH AND SAFETY

34. Health and safety expert are mobilized in Consultant team for the project. Health and safety expert job description in Consultant, among other is to make sure construction work is done properly according health and safety guideline.

35. To minimize risk caused by work activities (can be seen in table below), the Contractor do mitigation actions such as daily HSE induction for worker, HSE induction to guest that will enter project site, inspection of licenses for operation of heavy vehicles, and another daily inspection such as PPE, heavy equipment, excavation hole, etc. The risk mitigation plan, because there is no actual implementation during January – March 2019 period, can be seen in table 8 while the risk mitigation actual implementation can be seen in table 9.

Table 8. Risk Mitigation Plan during January – March 2019

No	Activities*	Issue	Risk	Mitigation
January 2019				
1	Bore Pile		Workers get hit by heavy equipment	Employ experienced workers and provide safety talk
2	Asphalt Cutting		Workers can be injured by tool blades	Employ experienced workers and provide safety talk
February 2019				
1	Bore Pile	This work can change the shape of the environment around the local residents	1. Workers get hit by heavy equipment; 2. Workers get hurt	1. Employ experienced workers; 2. Provide safety talk.
2	Asphalt Cutting	1. This work can cause air pollution; 2. This work can damage the vision and hearing of the user of the device.	1. Workers can be injured by tool blades. 2. Workers get respiratory problems due to air pollution 3. Workers suffer from hearing loss because of the sound generated by the device	1. Employ experienced workers; 2. Provide safety talk before construction; 3. Provide complete PPE to construction workers.
3	Secondary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents;	1. Workers can get hit by heavy equipment; 2. Workers get respiratory problems due to air pollution; 3. Workers are	1. Use experienced workers 2. Provide safety talk before starting work 3. Complete the PPE of the workers 4. Using Shoring /

No	Activities*	Issue	Risk	Mitigation
		3. This work can cause landslides during excavation.	buried by landslides while in excavation; 4. Residents around can fall into excavation; 5. Residents around can fall when passing through a pile of excavated results that are not dense.	anchoring to ensure that excavated soil walls do not collapse 5. Installing Zinc Barrier to avoid the approaching residents so as to minimize the presence of residents who fall; 6. The landfill must be ensured to be fully compact and controlled by the Quality Control Contractor.
March 2019				
1.	Asphalt Cutting	1. This work can cause air pollution; 2. This work can damage the vision and hearing of the user of the device.	1. Workers can be injured by tool blades. 2. Workers get respiratory problems due to air pollution 3. Workers suffer from hearing loss because of the sound generated by the device	1. Employ experienced workers; 2. Provide safety talk before construction; 3. Provide complete PPE to construction workers.
2.	Secondary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents; 3. This work can cause landslides during excavation.	1. Workers can get hit by heavy equipment; 2. Workers get respiratory problems due to air pollution; 3. Workers are buried by landslides while in excavation; 4. Residents around can fall into excavation; 5. Residents around can fall when passing through a pile of excavated results that are not	1. Use experienced workers 2. Provide safety talk before starting work 3. Complete the PPE of the workers 4. Using Shoring / anchoring to ensure that excavated soil walls do not collapse 5. Installing Zinc Barrier to avoid the approaching residents so as to minimize the presence of

No	Activities*	Issue	Risk	Mitigation
			dense.	residents who fall; 6. The landfill must be ensured to be fully compact and controlled by the Quality Control Contractor.
3.	Primary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents; 3. This work can cause landslides during excavation.	1. Workers can get hit by heavy equipment 2. Workers get respiratory problems due to air pollution 3. Workers are buried by landslides while in excavation 4. Residents around can fall into excavation.	1. Use experienced workers 2. Provide safety talk before starting work 3. Complete the PPE of the workers 4. Use Sheet Pile to ensure that excavated soil walls do not collapse 5. Installing Concrete Barriers and Zinc Panels to avoid the approaching residents to minimize the presence of residents who fell.

Table 9. Risk Mitigation Actual Implementation during April – June 2019

No	Activities*	Issue	Risk	Mitigation
April 2019				
1.	Asphalt Cutting	1. This work can cause air pollution; 2. This work can damage the vision and hearing of the user of the device.	1. Workers can be injured by tool blades. 2. Workers get respiratory problems due to air pollution 3. Workers suffer from hearing loss because of the sound generated by the device	1. Employ experienced workers; 2. Provide safety talk before construction; 3. Provide complete PPE to construction workers.
2.	Secondary Pipe Excavation	1. This work can cause air pollution; 2. This job can	1. Workers can get hit by heavy equipment; 2. Workers get	1. Use experienced workers 2. Provide safety talk before starting

No	Activities*	Issue	Risk	Mitigation
		change the shape of the road environment around residents; 3. This work can cause landslides during excavation.	respiratory problems due to air pollution; 3. Workers are buried by landslides while in excavation; 4. Residents around can fall into excavation; 5. Residents around can fall when passing through a pile of excavated results that are not dense.	work 3. Complete the PPE of the workers 4. Using Shoring / anchoring to ensure that excavated soil walls do not collapse 5. Installing Zinc Barrier to avoid the approaching residents so as to minimize the presence of residents who fall; 6. The landfill must be ensured to be fully compact and controlled by the Quality Control Contractor.
3.	Primary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents; 3. This work can cause landslides during excavation.	1. Workers can get hit by heavy equipment 2. Workers get respiratory problems due to air pollution 3. Workers are buried by landslides while in excavation 4. Residents around can fall into excavation.	1. Use experienced workers 2. Provide safety talk before starting work 3. Complete the PPE of the workers 4. Use Sheet Pile to ensure that excavated soil walls do not collapse 5. Installing Concrete Barriers and Zinc Panels to avoid the approaching residents to minimize the presence of residents who fell.
May 2019				
1.	Asphalt Cutting	1. This work can cause air pollution; 2. This work can damage the vision and hearing of the	1. Workers can be injured by tool blades. 2. Workers get respiratory problems due to air pollution	1. Employ experienced workers; 2. Provide safety talk before construction; 3. Provide complete

No	Activities*	Issue	Risk	Mitigation
		user of the device.	3. Workers suffer from hearing loss because of the sound generated by the device	PPE to construction workers.
2.	Secondary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents; 3. This work can cause landslides during excavation.	1. Workers can get hit by heavy equipment; 2. Workers get respiratory problems due to air pollution; 3. Workers are buried by landslides while in excavation; 4. Residents around can fall into excavation; 5. Residents around can fall when passing through a pile of excavated results that are not dense.	1. Use experienced workers 2. Provide safety talk before starting work 3. Complete the PPE of the workers 4. Using Shoring / anchoring to ensure that excavated soil walls do not collapse 5. Installing Zinc Barrier to avoid the approaching residents so as to minimize the presence of residents who fall; 6. The landfill must be ensured to be fully compact and controlled by the Quality Control Contractor.
3.	Primary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents; 3. This work can cause landslides during excavation.	1. Workers can get hit by heavy equipment 2. Workers get respiratory problems due to air pollution 3. Workers are buried by landslides while in excavation 4. Residents around can fall into excavation.	1. Use experienced workers 2. Provide safety talk before starting work 3. Complete the PPE of the workers 4. Use Sheet Pile to ensure that excavated soil walls do not collapse 5. Installing Concrete Barriers and Zinc Panels to avoid the approaching residents to minimize the presence of

No	Activities*	Issue	Risk	Mitigation
				residents who fell.
June 2019				
1.	Asphalt Cutting	1. This work can cause air pollution; 2. This work can damage the vision and hearing of the user of the device.	1. Workers can be injured by tool blades. 2. Workers get respiratory problems due to air pollution 3. Workers suffer from hearing loss because of the sound generated by the device	1. Employ experienced workers; 2. Provide safety talk before construction; 3. Provide complete PPE to construction workers.
2.	Secondary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents; 3. This work can cause landslides during excavation.	1. Workers can get hit by heavy equipment; 2. Workers get respiratory problems due to air pollution; 3. Workers are buried by landslides while in excavation; 4. Residents around can fall into excavation; 5. Residents around can fall when passing through a pile of excavated results that are not dense.	1. Use experienced workers; 2. Provide safety talk before starting work; 3. Complete the PPE of the workers; 4. Using Shoring / anchoring to ensure that excavated soil walls do not collapse; 5. Installing Zinc Barrier to avoid the approaching residents to minimize the presence of residents who fall; 6. The landfill must be ensured to be fully compact and controlled by the Quality Control Contractor.
3.	Primary Pipe Excavation	1. This work can cause air pollution; 2. This job can change the shape of the road environment around residents; 3. This work can	1. Workers can get hit by heavy equipment 2. Workers get respiratory problems due to air pollution 3. Workers are buried by	1. Use experienced workers 2. Provide safety talk before starting work 3. Complete the PPE of the workers 4. Use Sheet Pile to ensure that

No	Activities*	Issue	Risk	Mitigation
		cause landslides during excavation.	landslides while in excavation 4. Residents around can fall into excavation.	excavated soil walls do not collapse 5. Installing Concrete Barriers and Zinc Panels to avoid the approaching residents to minimize the presence of residents who fell.
4.	Road repairment	1. This work can cause injury due to hot asphalt spills 2. This work can result in workers shortness of breath due to inhalation of chemicals from asphalt; 3. This work can result in workers being injured because of heavy equipment or traffic accidents.	1. Workers are injured by asphalt 2. Workers are short of breath due to inhalation of asphalt chemicals 3. Workers are squeezed in a heavy equipment compactor (*baby roller)* 4. Workers were hit by a passing vehicle	1. Wearing PPE that is suitable for work (Safety Helmet, Vest, Rubber Boots, Respiratory Mask) 2. Safetyman placement in the work area 3. Flagman placement in the work area

Note: * = activities that done in the reporting period

36. The HSE induction during reporting period can be seen in the table below.

Table 10. HSE Induction Participants during January – June 2019

No	Worker Group	Induction participants number					
		Jan*	Feb*	Mar	Apr	May	June
1	Project Staff				4		
2	Foreman						
3	Sub-Contractor			27		21	1
4	Operator			1			
5	Daily worker			8	5		
6	Guest				7		6
TOTAL				36	16	21	7

Note: * = the construction activity has not start yet during this month period.

37. The HSE information board can be seen in site office. The information board is regularly up-date every week. The HSE information board contain information such as Project Location, HSE statistic, Personal Protective Equipment (PPE) illustration that must be obey by workers, and safety risk of work activities that carried out during the week. HSE information board for Sewerage Project Medan Zone 10-11 can be seen in figure below.

Figure 14. HSE Information Board

38. During reporting period in January – June 2019, there is no fatal and serious accidents since civil works has not yet begun in this period. Up until June 2019, there is no casualty caused by project activity.

Table 11. HSE Statistic

No	Item	Amount	FR* (Frequency Rate)	SR* (Severity Rate)
1	Total of Working Hours **	**121419**	0	0
2	Number of Accidents**	0		
3	Total Loss of Working Hours**	0		

*) **FR** = (Number of Work Accident x 1.000.000) / Total of Working Hours
SR = (Jumlah Kehilangan Hari Kerja x 1.000.000) / Total Number of Working Hours
**) Total Work Hours from the beginning of the year to this month

IX. INSTITUTIONAL STRENGTHENING AND TRAINING

39. There is no institutional strengthening and training activity during reporting period. The implementation of training activities is planned to be carried out on second semester of 2020 with potential participants from LPMU. The institutional strengthening and training implementation will be carried out with Gender specialist to accommodate the gender aspect.

X. KEY ENVIRONMENTAL ISSUES

40. Up until June 2019, there is no key environmental issue that needs to be address during reporting period. Although there is no key issue, Contractor can improve the mitigation activities based on minor issues that found in the field and public grievances.

Table 11. Minor Issues

No	Non-compliances with EMP	Corrective actions taken	Implementation responsibility	Timeframe	Issues and Suggested Action
1.	Workers often not using respiratory mask	Every worker that exposed to dust must using mask	Contractor	During excavation and clearing during construction	Workers have respiratory problem. Action: HSE Officer should remind the worker that not using mask.
2.	Some heavy equipment certification is already expired	Heavy equipment in the field comes with an updated certificate	Contractor	During construction	Expired certification. Action: Contractor should extend heavy equipment certification in the field (No. SILO).
3.	There is complain regarding noise due to pump station construction work in night	Give proper explanation regarding construction hour for nearby resident	Contractor	During construction that cause extensive noise	The public perception will be negative. Action: Contractor socialize regarding construction hour for nearby resident.

XI. CONCLUSION

41. Based on the monitoring of environmental safeguard on project implementation from 1 January 2019 to 30 June 2019, it can be concluded that:
    (i) Overall there is no major environmental issues / impact caused by MSMHP activity during January – June 2019.
    (ii) The HSE aspect already implemented but should be monitored daily. But the Contractor should give masker to the workers and resident around the excavation location site.
    (iii) Contractor should maintain the implementation of mitigation measures that listed in the EMP document of Medan City activity. The recommendation that Contractor should do in the next semi-annual are socialize construction hour, to utilize heavy equipment with update certification, and to do daily HSE induction to worker with high risk activity.