Gaza Solid Waste Management Project
GSWMP

Environmental & Social Management Plan
For
Sofa Landfill Access Road

Addendum No. 6 to the GSWMP Environmental & Social Impact Assessment

Prepared by:

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Table of Acronyms

AFD	French Development Agency
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GRM	Grievance Redress Mechanism
GSWMP	Gaza Solid Waste Management Project
JSC- KRM	Joint Service Council for Solid Waste Management in Local Governorate Units of Khan Younis, Rafah and Middle Area
MDLF	Municipal Development and Lending Fund
MoLG	Ministry of Local Government

1. Introduction

The Gaza Solid Waste Management Project (GSWMP) is aiming at improving solid waste management services in the Gaza Strip through the provision of efficient and environmentally/socially-sound waste disposal schemes, as part of measures to improve the overall solid waste management systems. Through the GSWMP, a sanitary landfill (Al Fukhary Landfill) will be constructed and its Access Road will be rehabilitated in the southern region of Gaza Strip with capacity to serve 3 governorates out of Gaza's 5 governorates until year 2027; and to serve the entire Gaza Strip until the year 2040, in addition to the construction of solid waste transfer stations, all within a holistic approach that would strengthen the institution in charge of solid waste management, the Joint Service Council, and enhancing public participation and awareness throughout the implementation of the program.

This document addresses the rehabilitation of Al fukhary (Sofa) Landfill Access Road. Improvements to the main access road would be used by all vehicular traffic to mitigate the impact on the roads users (trucks of landfill and other facilities) and adjacent population including the farmers and landowners. According to MoLG classifications, the project area is classified as a regional street; it is not part of municipal jurisdiction. The proposed width of the access road (street No. 2) is 34.0m, which was endorsed by the Central Committee of planning at the MoLG on July 25th, 2018 – ANNEX I. The existing asphalt road varies from 4m to 6m wide (ESIA, 2012)[1]. The Feasibility study of the Gaza Solid Waste Management Project (conducted in 2012)[2] proposed expanding the pavement width of the access road up to 8m with a total cost estimation (169,375 US$) including 5cm asphalt layer, 8 cm bender layer, 20cm crushed stone base, and 20 cm sub-base layer. During the previous period, the road was used for transferring the solid waste by heavy trucks to Sofa landfill site in the eastern part of (street No. 2), and also used for some farmers and land owners at the region. Currently in 2018, the damage of the access road is bigger, and the prices of materials are changed, thus the cost estimation for rehabilitation of the access road changed. The designer suggested to expand the width of the pavement up to 7.5m (75 cm at each side). The works including removal and replacement of damaged parts of the access road, and finally adding 5cm layer of top asphalt for all the access road.

The rehabilitation design is prepared by the Joint Venture of Global Vision Consultants (GVC) and Sajdi & Partners (CEC). The length of the Sofa landfill access road is about 2.5 km, connecting the Salah Al Dien Main street (Street No. 4) with the entrance of the Sofa landfill. This ESMP addresses the rehabilitation of access road funded by GSWMP: World Bank Group and the French Development Agency (AFD). It is an Addendum to the ESIA completed in September 2012 for the proposed sanitary landfill in Al Fukhary (Sofa).

[1] Environmental and Social Impact Assessment Study:
http://www.mdlf.org.ps/Files/Docs/GSWM%20ESIA_FINAL_19sep2012.pdf
[2] Feasibility Study:
http://www.mdlf.org.ps/Files/solid-waste-gaza/Final_FS_31Jan2012.pdf

1.1 Overview and Sub-Project Description

The project area is located in Al-Fukhary area in Khan younis Governorate. Sofa road is used as access road to Sofa Solid Waste Landfill, it has an access from Salah Al Dein Street and ends at the armistice borderline. Access road status is considered as not good due to the deep damage in large parts of its body. Figure (1) shows the location of the road. The length of the road is approximately 2.5 Km (from Salah Al Dien St. to the access gate of the landfill), knowing that the remaining length (from the access of the landfill to the borderline) will not be taken into account within this project. The width of existing access road varies from 4m to 6m in some parts.

Figure 1. Satellite Photo (Google Earth) of Al Fukhary Landfill Access Road

Improvements of the Sofa landfill access road will be implemented. Such improvements would consist of road widening in some narrow parts without removal of any trees, structures or infrastructures, and paving/rehabilitate of some damaged parts and expanding the pavement width up to 7.5 m, and final pavement cover will be paved for all the road. Moreover, the rehabilitation will include the cleaning of the access road from any dumped waste along the road. Works will not include any water, stormwater or sewerage networks, as well it will not include any electrical works such as lightening of the street.

1.2 Project Description

The total right-of-way for Road No.2 in Al Fukhary Area is set at 34 m according to the Central Committee of Buildings and Cities Organization in Gaza Governorates. However, it is not envisaged that the entire right-of-way will be developed in the short-term period. The length of the road is approximately 2.5 Km (from Salah Al Dien St. to the access gate of the landfill) and the width of existing access road varies from 4m to 6m in some parts. the consultant introduced alternatives for the width of the right-of-way to be used in this project and the geometry of the cross section for each alternative.

1.2.1 Project Alternatives

Two alternatives were considered among other alternatives and proposed by the consultant as follows:

First Scenario - Short-term intervention: Rehabilitation of the existing road a current roadway width of 6 m and increasing the width of road to be 7.5m (this scenario will not remove any trees, structures, or fences).

First Scenario - Long-term intervention: Construction of Road No 2 at 24.4 m roadway width (this scenario will remove some trees, and fences/walls).

Although, the site investigation report revealed that the existing pavement (width 6m) is highly deteriorated with lots of cracks (longitudinal, cross, crocodile, …etc) and the existing access road may not withstand the forecasted traffic loads for the coming years, but the second alternative was excluded due to the shortage of the project budget.

The first scenario will be implemented under Gaza Solid Waste Management Project which will include road widening in some narrow parts without removal of any trees or structures/infrastructures, and paving/rehabilitate of some damaged parts and expanding the pavement width up to 7.5 m, and Final layer will be paved for all the road (2.5 km). Moreover, the rehabilitation will include the cleaning of the access road from any dumped waste along the road. Works will also include road opening on Salah Al Dien Street in front of Sofa Landfill Access Road for easing the flow of incoming and outgoing solid waste trucks. All the previous works were coordinated with the governmental authorities; a governmental committee were formed to follow up the design of sofa landfill access road, the committee included JSC-KRM and related governmental ministries. Meetings were carried out weekly for discussing the design progress. The committee will also be activated during the implementation of the project.

Rehabilitation of the access road is expected to facilitate the movement of waste trucks, as well farmers cars; it will also enhance the environmental conditions in terms of cleanness of the road and decreasing the dust emissions along the access road. The rehabilitation of the access road is expected also to decrease the damages of the SW trucks, and thus decreasing the maintenance costs.

1.2.2 Access Road Design

The design process of the first scenario (Rehabilitation of Access Road) passed through several stages starting by conducting the site investigation (Topographical Survey, Hydrologic Study, Soil Investigation and Traffic Study of Road No.2), then a preliminary design of Road No.2 was made based on the following items:

- Traffic movements;
- Safety and security of all users of road;
- International practice of geometric design by using the parameters of AASHTO for carrying out the preliminary design of each of the alternatives;
- Crossing solution of the new road with Salah Al Dein road;
- Influence on environment and community of the adjacent area;
- Ease of maintenance of the road;
- Construction cost and duration of construction.

In later stages, a detailed design of Road No.2 including detail drawings were submitted to MDLF for review. The consultant in the rehabilitation process has adopted three basic steps:

a. Asphalt Removal & Replacement in the damaged and deteriorated areas

Replacing the pavement is a standard procedure when repairing roads. The challenge is to ensure that only the damaged layers of the road structure are removed.

b. New paving area to Increase the width of the road

The existing road is paved 6 m wide, but the width of road is often less than 6m due to deterioration of asphalt layers at the roadsides as a result of traffic loads and irrigation activities in the road area.

The damaged and deteriorated areas of road include the missing area of the road width (6.0 m), so that the missing area will be paved to get 6.0 m width of road as shown in figure (2).

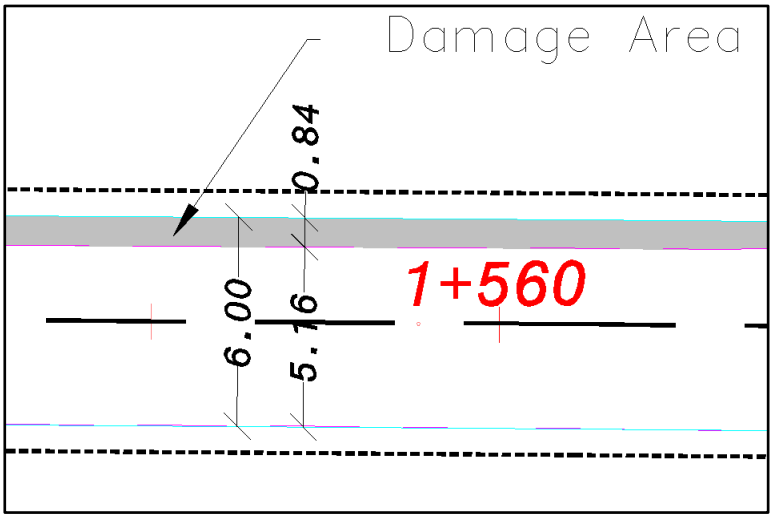

Figure 2. Plan of Road No 2 (current width and missing width)

New paving area has to be added along the both sides of the road, which trench with 75 cm width will be paved to increase the width of the road that will be 7.5m width as shown in the figure (3) & figure (4) respectively.

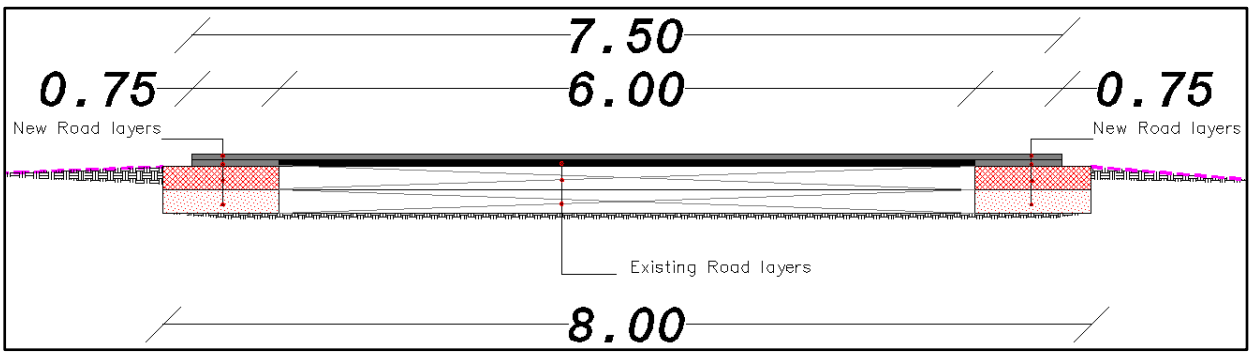

Figure 3. Section of Road No 2 (current width and new paving areas)

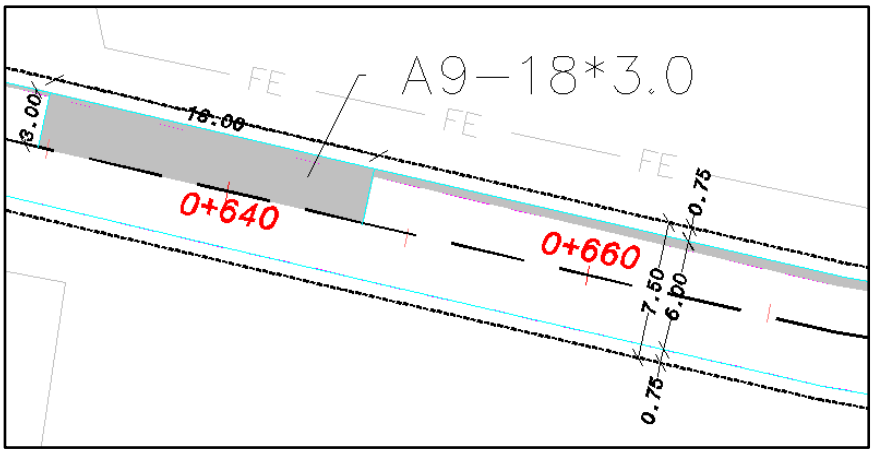

Figure 4. Plan of Road No 2 (current width and new paving areas)

c. Add a new top asphalt layer Along the road

Construction of new asphalt surfaces carrying heavy vehicle traffic or continuous heavy loads offers a balance between pleasing aesthetics, durability, and wear/skid resistance.

The small layer thickness of the new surface course helps to keep the costs of this method of rehabilitation fairly low. Paving thin layers in hot application uses 30 kg to 50 kg of asphalt mix per m² of the new surface course, which is up to 50% less when compared to conventional "mill and fill" measures. Because it helps to save natural resources, paving thin layers in hot application is also beneficial to the environment.

New asphalt layer has to be added at the top of the old and new layer of the road, which the new layer will be along 2.5 km of the road and with 7.5 m wide as shown in figure (5).
The New asphalt layer will be with thickness 50 mm wearing course asphalt layer (1/2 inch mix design).

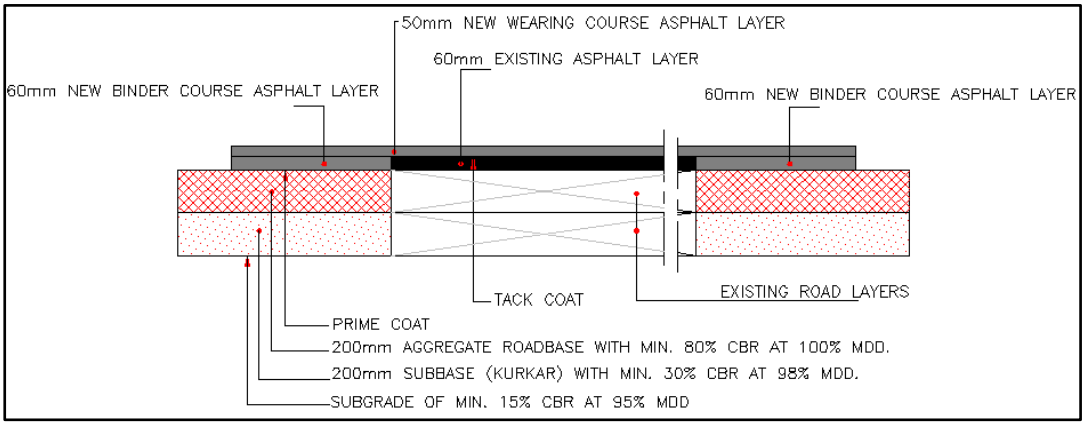

Figure 5. Section of Road No 2 (current width and new paving areas)

1.3 ESMP Objectives

This report is prepared for carrying out an Environmental and Social Management Plan (ESMP) for rehabilitation of Al Fukhary (Sofa) Landfill Access Road. This will include the proposed mitigation and monitoring measures based on the existing baseline information, and the

expected potential impacts significant on the physical environment, biological environment, socioeconomic, cultural and heritage and human health. This report aims to be in conformity of the World Bank safeguard policies, taking into consideration the environmental and social regulations of the Palestinian Environment Quality Authority (EQA). Final draft of the ESMP will be disclosed in electronic format on MDLF website; JSC Facebook page; and the World Bank InfoShop. The ESMP document in hard copy format will be available in MDLF office; and JSC-KRM main office.

2. Baseline Conditions

Most of the environmental and social baseline data were available in the ESIA of the GSWMP[3]. The data were updated in the recent ESMP for Construction of Interim Short-Term Cell – Al-Fukhary Landfill. The environmental baseline data that were studied include: meteo-climatologically conditions; ambient air quality; soil characteristics; geological survey; water resources; geophysical survey and fauna and flora. The social baseline data include also the neighboring communities at Al-fukhary region.

Nine not official irrigation pipes with 6'' diameter (installed by farmers without a license) in addition, two domestic municipal water pipes are existing on both sides of the access road, but out of the proposed parts to be rehabilitated as shown in Figure (6). These service utilities were not implemented in proper way. As a result, many leaks / sever damages could be noticed along the road and caused damage to the existing road in many places as shown in Images (1,2).

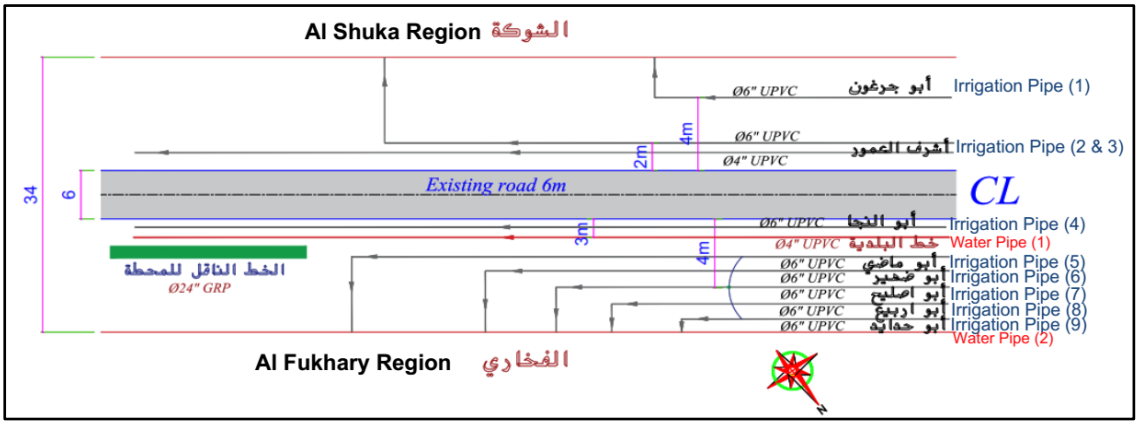

Figure 6. Domestic water and irrigation pipes along with Sofa Landfill Access Road

[3] Environmental and Social impact assessment (ESIA) for Gaza Solid Waste Management Project: http://www.mdlf.org.ps/Files/Docs/GSWM%20ESIA_FINAL_19sep2012.pdf


Images 1,2. Parts of Road No.2 in Al Fukhary Area (January, 2018)

The condition survey for each section of the road is presented in table (1), the survey was made in January, 2018. The sofa landfill access road is got worst during the last 7 months.

Table 1. the condition survey for each section of the road (starting from Salah Al Dien St.)

Section		Length (m)	Type of Distress	Description
From Station (M)	To Station (M)			
0+000	0+050	50	No Major Distresses	Minor Distresses
0+050	0+300	250	Raveling	Erosion the asphalt surface due to Loss of bond between aggregate particles and the asphalt binder
0+300	0+450	150	Cracks, potholes and Settlement	Deterioration of asphalt due to longitudinal and block cracks turn to dangerous potholes and Settlement
0+450	0+750	300	Cracks, potholes.	Longitudinal and transverse cracks
0+750	1+250	500	Deep potholes and settlement	dangerous potholes and Destroyed asphalt
1+250	1+350	100	Cracks, potholes.	Longitudinal and transverse cracks
1+350	1+700	350	Deep potholes and settlement	dangerous potholes
1+700	2+300	600	Settlement and Depression	Deterioration of asphalt due to lack of drainage
2+300	3+100	800	Edge Cracks	The Narrow pavement led to Different Edge cracks. This problem resulting from the Lack of drainage and edge protection

Geotechnical investigation for the existing road profile was carried out in order to evaluate the subsurface conditions at the road site. Twelve (12) test pits were drilled at the site up to a depth of (2-6) meters using a rotary air drilling machine provided with bucket auger of 0.4 m diameter. The test pits locations along the Road No.2 have been identified for geotechnical investigation purpose as presented in the geotechnical report and as shown in Figure (7).

Figure 7. Test pit locations for geotechnical investigation

The drilling has been conducted under the supervision of the geotechnical engineers of the MSL laboratory. Samples of representing different soil layers (At depths of 0.5, 1.0, 2.0, 3.0m) were collected, examined, labeled and sealed at the site then sent to the Material & Soil laboratory. The soil logs of each Test Pits were recorded - the geotechnical report[4].

Traffic analysis for the year 2020 and year 2040 has been made by the designer based on some assumptions (solid waste quantities/solid waste trucks, number of private cars, vehicles for the cement factories, tractors for farmers, and WWTP vehicles) – Traffic Analysis Report[5].

An alternative access road can be used during the construction phase. The alternative access road is narrow (width is 4 – 5m in some parts), moreover its pavement contains some of damaged parts, and the last part of it is not paved (about 1,800m). The municipality of Al-Fukhary is ready to contribute in control the use of this access road during short time once no more accesses are available in the main access road during final pavement works, and this can be limited to few days. Figure (8) shows the alternative accesses map.

Figure 8. Test pit locations for geotechnical investigation

[4] Site Investigation Report: https://1drv.ms/b/s!At-LiLjpWC2vhwZHcp00WNk8-Z_S
[5] Traffic Analysis Report: https://1drv.ms/b/s!At-LiLjpWC2vhwfo95AncrjOLZiM

The average annual precipitation in the area was about 236 mm in 2016. Most of the precipitation falls between December and March. Storms can occur in winter when maximum wind speeds reach about 18 m/s. In winter, the prevailing wind direction is SW with an average speed of 4.2 m/s and during summer the prevailing winds are from the NW sector.

Few residential houses, three cement factories, and mosque are located at both sides of the access road, in addition to agricultural lands which most of them are cultivated by olive trees, and few lands are cultivated by potato plants. Most of the side agriculture lands are fenced, knowing that the rehabilitation of the Sofa landfill access road will not reach to any fence along the road, and thus it will not remove any of fences or trees.

Regarding to construction of WWTP in the region, UNDP is expected to install a wastewater pressure line along the Sofa landfill access road (from Salah Al Dien St. to WWTP adjacent to Sofa Landfill), but the wastewater pressure line will be out of the pavement of the access road; no direct or indirect implications are expected.

3. Expected Impacts of rehabilitation of Sofa Landfill Access Road

The rehabilitation of Sofa landfill access road is expected to reduce or prevent dust, minimize disturbances and obstacles and ensure road safety. Pavement add positively to the people's attitude towards preserving these assets and therefore keeping their localities clean and safe. In addition, the rehabilitation of the access road will reduce the breakdown of solid waste trucks, thus the maintenance costs are expected to be reduced. Furthermore, the paved access road will have a better atheistic condition.

In another hand, some adverse impacts are expected especially during the construction period such as traffic congestion at the access road, dust emissions due to construction works, and break of some water connections.

The traffic is expected due to the closure of access road during the removal of damaged parts and pavement of the road. The closure of the road will disturb the movement of the daily solid waste trucks and farmers private cars.

Dust emissions are also expected due to the construction of the access road, knowing that there are some near residential houses and agriculture lands at both sides of the road. Dust emissions contain fine particulate matters that inhibit the normal respiration and photosynthesis mechanisms within the plants leaves[6]. The fine dust particulates are easily inhaled, even short-term exposure can cause respiratory problems and allergic reactions to humans. The workers/drivers are also expected to be exposed to dust emissions.

Furthermore, agricultural water pipes at both sides of the road are expected to be damaged due to construction works, and thus could interrupt the water on agricultural lands in the region.

Socially, the project is expected to result in number of negative social impacts during the construction phase, most importantly, temporary inconvenience to the neighboring

[6] Shivakumar MVK (2005) Impact of sand storms/ dust storms on agriculture. Natural Disasters and Extreme Events in Agriculture. Publisher – Springer eBook, page 159-177.

communities is expected due to construction works in term of noise, dust and traffic matters. On the other hand, the project will create number of temporary jobs.

During the construction phase, Significant Environmental and Social elements are expected to be influenced due to construction works such as dust which is emitted due to removal of damaged parts of the street, operation of heavy construction machines, and construction of new infrastructure. Socioeconomic issues will be affected due to construction works such as the accessibility to agriculture lands, or cement factories will be affected, but mitigation measures sit to have alternative access for people to their proprieties. Table (3) summaries the expected impacts on some environmental and social elements during construction phase.

During the operational phase, the access road will serve the local farmers as well land owners at the region, but incontinence of the people is expected due to the expected increase of traffic accidents due to the increase of speed of heavy vehicles.

Table 2. Overall Main Environmental and Social Impacts due to the rehabilitation of the access road

No.	Environmental and Social Component	Impact		
		Positive	No Impact	Negative
1.	Air Quality – Construction phase			X
2.	Air Quality – Operation phase	X		
3.	Groundwater Quality		X	
4.	Community Water Supply		X	
5.	Public Health and Services	X		
6.	Workers Health and Safety			X
7.	Noise Reduction	X		
8.	Socio-economic (Employment and Poverty Alleviation)	X		
9.	Accidental risks			X
10.	Water network (During construction)			X
11.	Forests and Biodiversity Areas		X	
12.	Aesthetic	X		
13.	Waste Reduction	X		
14.	Land Use	X		
15.	Traffic – During Construction			X
16.	Traffic – During Operation	X		

Table 3. Construction Activities and Potential Impacts

Project Construction Activities	Significant Environmental and Social Issues				
	Agricultural Resources	Water Resources	Air Quality	Cultural and Historical Resources	Socio-economic Conditions
Demolition			√		√
Removal of Existing Infrastructure					√
Heavy Machinery Operation			√		√
Construction of Infrastructure		√	√		√
Excavations and Earthwork	√	√	√		√
Waste Disposal (solid, liquid, hazardous, etc.)	√	√	√		√

Project Construction Activities	Significant Environmental and Social Issues				
	Agricultural Resources	**Water Resources**	**Air Quality**	**Cultural and Historical Resources**	**Socio-economic Conditions**
Transportation			√		√
Accidents and Unplanned Events	√	√			√

Table 4. Operational Activities and Potential Impacts

Project Construction Activities	Significant Environmental and Social Issues				
	Agricultural Resources	**Water Resources**	**Air Quality**	**Cultural and Historical Resources**	**Socio-economic Conditions**
Transportation			√		√
Accident and Unplanned Events	√	√	√		√

4. Mitigation Measures

Mitigation measure should be followed during the construction and operation phases to decrease any of adverse impacts. The measures will address the traffic, dust emissions, noise, and community inconvenience issues. It also will address the safety and health concerns.

To mitigate traffic conjunction, a traffic plan should be submitted by the contractor and it should include the methodology of work which guarantees the safe access of solid waste trucks and farmers, and the tools to be used to control the traffic such as hiring flagmen, installation of traffic berries and traffic signs, and coordination with JSC-KRM and Rafah Municipality. An access should be available all the time during the construction period.

Regarding to dust emissions, the project will have a positive impact on the region as it will decrease the dust emissions after rehabilitation the access road. During construction phase, some dust emissions are expected due to the construction works, removal of some parts of the damaged road, and movement of heavy machinery. The contractor should mitigate/prevent the dust emissions by spraying water.

Sharing information is an important tool to mitigate the local community inconvenience, sharing information could be made through updating the information of the committee in Al-Fukhary Municipality, carrying out consultation meetings with the community, posting the progress of work on JSC-KRM Facebook page, and by using other tools such as distribution of fact sheets, and installation of a banner at the project site. Information to be shared should include the project details, contact numbers, time of daily works, the end of the project, and any other issues based on the farmers/resident's questions.

Moreover, clear channels will be designed for the local community to submit the inquiries about the project, and if they have any complaints. MDLF and JSC-KRM will sort and follow up all the received inquiries/complaints.

The work will be limited to the day time to decrease noise pollution. Workers and drivers will follow the safety measures indicated in the approved Safety Plan of the aforementioned works contract including wearing the required PPE.

5. Grievance Redress Mechanism (GRM)

The local community and the workers in the project are open to submit their grievances to JSC-KRM, and as soon as any new project/activity started the social specialist in JSC-KRM re-arrange the priorities of the grievances in order as a procedure to reduce the negative effects of the project.

Al Fukhary is a small municipal area with low population, it enabled close and personal relationship between municipal employees and the population which is reflected clearly in the duties of the Mayor himself who is in personal and daily contact with his farmer community. Therefore, a main channel of complains is the Municipality of Al-Fukhari, and the mayors' office himself, in addition there are different venues and channels to submit the grievances, which are accessible and available all the time.

5.1 Venues and channels:

Al Fukhary site office has a ***complaint box*** that can be always used to receive written complaints. Supervision Engineer at Al Fukhary site has always showed willingness to receive and communicate public inquiries, the same applies to the administrative staff of the contractor on the site. Overall the landfill construction site offices are well known to the surrounding community and can always be accessed for inquiries and complaints.

The contractor camp office: the supervisor engineer will be available in the camp office all the time and the road residents would contact with him directly to report about their inconveniences and suggestions to mitigate the negative effects of the project during project construction phase.

Municipality of Al-Shuka will receive any complaints from the local community, and communicate them with the project management staff.

The contact information and the ***phone numbers*** of the safeguards team in the GSWMP project will be published for the population during community meetings.

Other channels can be reach online by JSC-KRM ***Facebook page***, where it checked daily. ***Telephone and Email channels*** will also be available for any potential complaints. The communication details of JSC-KRM is clearly announced on the Facebook page as shown in Figure (9).

Figure 9. Communication details of JSC-KRM

5.2 Complaints Handling and Follow-Up:

After receiving the any complaint from the above channels, an acknowledgment for receiving the complaint will be offered to complainant in 2 business days from receiving and then 4 business days will be taken to resolve and close the complaints under the direct control of the projects and the contractors. Longer period might be needed to address complaints that are not under the direct autonomy of the project and in such cases, the complaint will be diverted to the concerned parties and feedback will be offered to the complainant accordingly.

As soon as the grievance received the following steps will be followed to apply the process:

1- *Sort and process:* the grievance will take a serial number, and register in the complaints database as a first priority complaint.
2- *Acknowledge and follow up:* the safeguards team will call the complainant to have more information about the problem, and inform him/her about the GRM procedures.
3- *Verify, investigate and act*: the PDSU-MDLF, and TOU-JSC teams will verify and investigate about the complaint in the field, and follow up the solution with the contractor or the related party.
4- *Monitor and evaluate:* the JSC-KRM social specialist will check the satisfaction of the complainant through monitoring plan and then record all the process in the monthly report.
5- In case, the complainant can declare about his/her dis-satisfaction with the response of the tier one channels mentioned above, and submit another complaint for a higher level in the JSC-KRM. The social specialist will report about the problem, its solution, the person who contributed in solving the problem and then the comments of the complainant on the provided solution. The executive manager of the JSC-KRM will receive the report and investigate it, then take an action, and report it to r the chairman of JSC-KRM, to be involved in the action.
   ***Note**: the chairman of the JSC-KRM is a Mayor who had authorization to take any action in the southern and middle governorates with cooperation with any other entity (municipality, governmental associations, NGOs,..), so involving the chairman will ensure the fairness of the solution.*

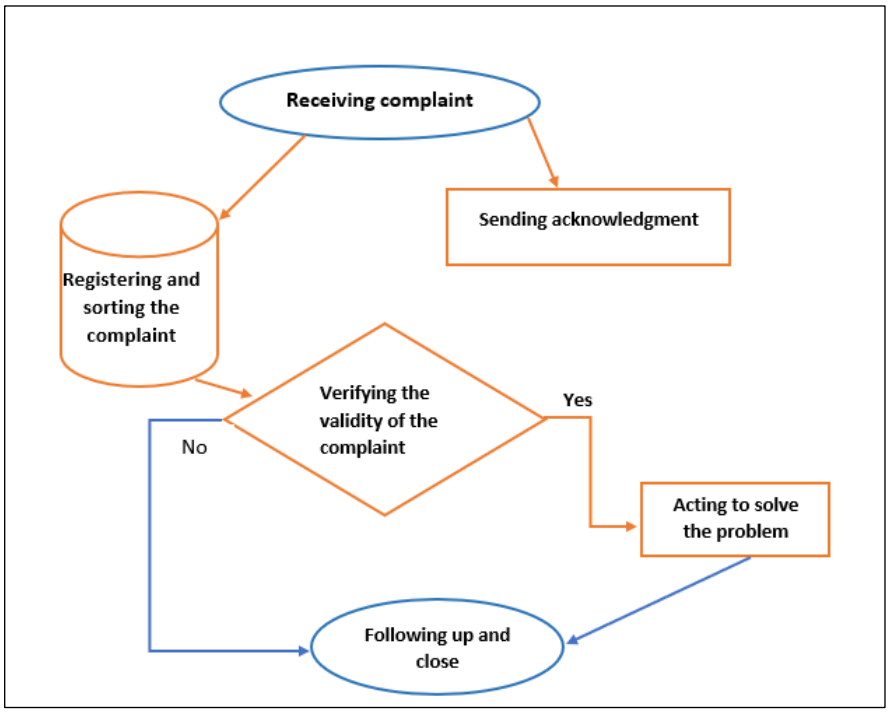

Figure 10. Schematic GRM Relationship Chart for the Material Stockpiling Activities

6. Public Consultations

6.1 Social screening

During design stage, the social specialist from the consulting company conducted interviews with the population along the road to identify the existing situation and the proposed project activities. Suggestions and mitigation measures were discussed with people to ensure the continuous access of population to their economic resources, such as, lands, posters, water, public services or other resources that they depend on.

Images 3,4 Interviews with the community in road No. 2 (November 2017)

6.2 Social survey

In order to identify the suggested mitigation measures of the expected affected people of the project in order to prepare the ESMP, a questionnaire was prepared to collect the views of the population surrounding of the project site. Eighteen questionnaires were distributed to the respondents around the road Figure (11), knowing that questionnaires were hardly filled because the farmers are not found in their lands all the time and there are few numbers of houses along the road itself. The questionnaire targeted different beneficiaries such as land owners, farmers, owner of a cement factory, and residents who live in the region. The questionnaire contains major questions about the Air Quality, Transportation, Public Health and GRM as shown in Annex II, respondents were also asked to suggest effective mitigation measures to mitigate the possible impacts. The results of the questionnaire are as follows:

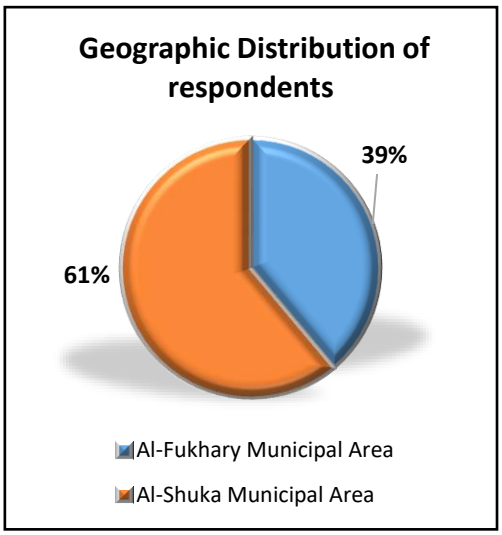

Figure 11. Geographic distribution of respondents

Responders

Figure (12) shows the type of the responders and population that found along the access road. The percentage of the residents 17% of the total responders, those people live with their

families along the road, 39% are land owners and they have lands cultivated by olive or potatoes, 33% are farmers and 11% are concrete factory managers.

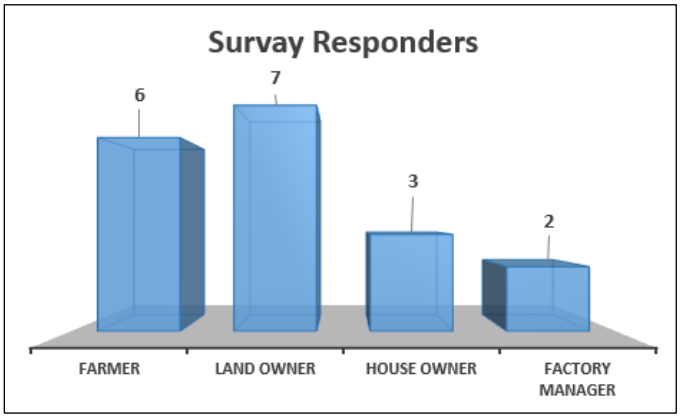

Figure 12. Types of Respondents

Employment rates of the sample

Figure (13) shows that around 22% of the respondents revealed that they were not employed in any sectors while around 56 % of them were working in agriculture and 11% are working in the concrete factories along the road.

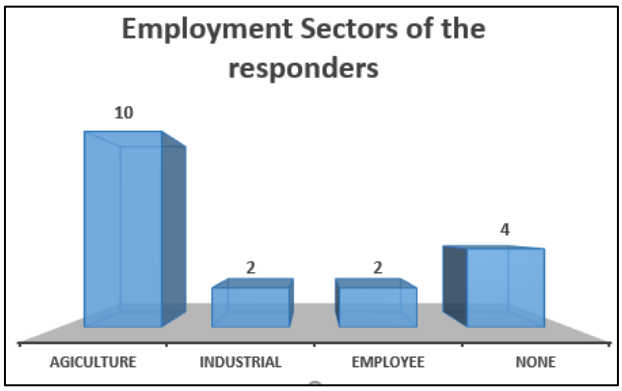

Figure 13. Employment sectors of the local communities participated in the questionnaire

Communities views about the impacts of air quality

Respondents were asked about the anticipated impacts of rehabilitation works on the air quality and if they suggest any mitigation measure to decrease the adverse impacts. Majority of the respondents said they will be affected by dust emissions and they suggest to spraying enough quantities of water in the working areas all the time. All the respondents knew that there is no escape from the dust emission for a certain period (during working phase), in such projects and they agreed that will obviously reduce the dust emission of the passing vehicles after finishing the project and they considered that as an advantage of the project. Only 23% of the responders (who use the public transportation) will face a problem in moving on the road easily during rehabilitation works, but the others who have their own cars or tractors answered that they can use another alternative road to move during this period.

The concrete mixer trucks are not expected to be affected by the rainwater pools in the winter season, but 44% of the responders who use the private cars to access to their lands, said that the traffic during winter is so hard because of the rainwater pools, and 83% of the responders predicted that the cars and carts movement in the road will be more smoother in the winter

after finishing the project, since it will eliminate the pools, which are usually found in the winter season in holes/damaged parts in the existed Asphalt.
Regarding to passage of school's students from the proposed access road, and Since there are few numbers of houses on both sides of road; Respondents reported that they didn't witness significant number of school students passing from the road. Residents said that their children use cars to go to schools, and they expect the implementation of the project will facilitate the movement of students.

Asking about the speed of the vehicles after the rehabilitation process, 33% of the responders expected that the speed of vehicles is to be increased.

During the investigation with the responders, they confirmed that the donum prices along the road estimated at 10,000 to 35,000 J.D. The price of land is gradually decreasing as it approaches the landfill site. The survey revealed that the rehabilitation project will has a positive effect on the lands prices, only 11% of the responders didn't expect significant increase on the land prices because of the bad economic situation in Gaza Strip.

The responders from Al-Shuka area said they were suffering from the solid waste random disposal points in the road, and 70% of total responders expected that the solid waste collection process will be more efficient after rehabilitating the street. The other 30% (living close to Salah Al-Deen Street), said they are comfortable to the collection process which is provided by the municipality, and there is a daily collection by donkey carts passing their houses and lands.

Respondents were asked if they know how to submit a complaint, and it was found that 30% of respondents do not know how to submit a complaint and where, whereas the remaining 70% said they are aware that they can submit complaint to the JSC-KRM, and they will communicate with the supervisor engineer in the landfill camp office to submit their grievances. In addition, all the responders confirmed that they will share the information about the project activities with others in the targeted area.

Images 5-6. Questionnaire with local community of the access road (2, Aug, 2018)



Images 7-9. Questionnaire with local community of the access road (2, Aug, 2018)

Project's Safeguard specialists conducted a consultation meeting with the Mayor and engineers of Al-Fukhary Municipality; they discussed the proposed concerns of the people during working phase and confirmed that the municipality will refer the grievances to the JSC-KRM social specialist for following up with the contracted company. The municipality is also ready to contribute in controlling the alternative accesses for residents and solid waste trucks during the project period.

Images 10. Consultation meeting with Al-Fukhary Mayor (5, Aug,2018)

Images 11. Consultation meeting with Al-Shuka Mayor (9, October,2018)

6.3 Consultation Meeting

Consultation Meeting was carried out with the local residents (famers, land owners, and mayor of Al Shuka municipality) who will get benefit from the rehabilitated landfill access road. The consultation meeting was held in Al-Shuka Municipality' meeting room on October 9th, 2018, and it included a presentation descripting the project construction works, project duration, and environmental and social expected impacts.

Images 12. Consultation meeting with the local community (9, October,2018)

The attendees suggested some additional mitigation measures which can be implemented during both construction and operation phases of the project. All suggested measures were taken into consideration, and they were merged in the ESMP table to be followed. Most of the suggested mitigation measures were related to the possibility of damaging the agricultural water pipes at both sides of the access road, the measures such as fixing/maintaining any broken pipes by the contractor immediately. Furthermore, the mitigation measures during the use of alternative roads during construction phase such as keeping the accessibility for heavy trucks and private cars all the time, and once it is necessary to close all width of the access road for short time, the contractor is to spray water in any used alternative road to mitigate any possible dust emissions, as well the contractor is requested to level any alternative roads especially during the rainy season. The contractor is requested to consult with farmers during excavation works for less damage of agricultural water pipelines as farmers know the location of their pipelines. Suggested mitigation measures were also included installation of traffic signs for safety concerns as heavy vehicles pass through the access road, and advising the contractor to hire his workers from the local community.

It was agreed also to add the Municipality of Al-Shuka as a new channel for any possible complaints upon the request of attendees. The municipality has a good relation with local community, and they will reflect any complaints to the Project Management staff.

7. Summary ESMP Table

Table (5) provides the summary ESMP table for the rehabilitation of the Sofa landfill access road. It includes measures that are currently applied during construction of the sanitary landfill) as well as measures specific to the construction works in the access road.

7.1 Monitoring of Effectiveness of Mitigation Measures

Implementation of the mitigation measures will be monitored during the rehabilitation of the Sofa landfill access road by PDSU and TOU. The Environmental and Social Management Plan is considered a flexible and dynamic document which can be updated every time according to the situation and the new unforeseen impacts. New additional mitigation measures will be implemented and monitored when needed.

Table 5. Summary of Environmental and Social Management Plan for Rehabilitation of Access Road during the Construction Phase

Potential Impact	Proposed Mitigation Measures	Implementation Responsibility	Compliance Monitoring Approach	Monitoring Frequency	Responsibility for Compliance Monitoring
1. Noise produced due to construction works	Limiting the works time to daytime only	Contractor	Visual observation	Weekly	MDLF, JSC-KRM
	Regular maintenance of machinery	Contractor	Visual observation	Twice a month	MDLF, JSC-KRM
2. Air quality contamination due to dust emissions during construction works	Spraying water over the working area as required.[7]	Contractor	Visual inspection	In dry and windy days, and once dust is emitted from the working area	MDLF, JSC-KRM
	Spraying water over the alternative access. The alternative access is expected to be used by municipal SW trucks and the local residents; parts of the alternative access is not paved/damaged which is expected to emit dusts	Contractor	Visual inspection	Daily	MDLF, JSC-KRM
	Installation of silt fence along with any affected cultivated land	Contractor	Visual inspection	Once the client receives a complaint	MDLF, JSC-KRM
3. Workers Safety and Health	Complying with wearing the protective clothes especially masks, shoes and helmets.	Contractor	Visual inspection	Weekly	MDLF, JSC-KRM
	The contractor is prohibited to hire any worker who is under 18 years old	Contractor	Visual inspection	Daily	MDLF, JSC-KRM
	Provide first aid kits in the construction site	Contractor	Visual inspection	Weekly	MDLF, JSC-KRM
	Conducting induction OHS training for workers	Contractor	Visual observation	once	MDLF, JSC-KRM
	Installing safety signs around the site	Contractor	Visual observation	Weekly	MDLF, JSC-KRM
	Restriction the access of unauthorized people in the working area	Contractor	Visual observation	Weekly	MDLF, JSC-KRM
	Fencing any of excavated areas, the contractor is suggested to close any of excavations day by day	Contractor	Visual observation	weekly	MDLF, JSC-KRM
	Workers should be covered by a valid insurance for any possible accidents	Contractor	Review the insurance documents	Prior the start of work	MDLF, JSC-KRM
4. Vehicles safety	Using appropriate vehicles during the work	Contractor	Visual observation	Weekly	MDLF, JSC-KRM

[7] **Source of water**: The water to be transferred by a tanker vehicle (e.g 5 cubic meter) from any of the nearest water wells.

Potential Impact	Proposed Mitigation Measures	Implementation Responsibility	Compliance Monitoring Approach	Monitoring Frequency	Responsibility for Compliance Monitoring
	Machinery should be parked/stored in a safe place, and they should not be left in the construction site	Contractor	Visual observation	Weekly	MDLF, JSC-KRM
5. Contamination by Hazardous materials (oil, fuel …etc)	Regular maintenance/filling fuel of the used vehicles outside the construction site	Contractor	Visual inspection	Weekly	MDLF, JSC-KRM
6. Inconvenience of residents/farmers/school students	Accidental damage to assets should be appropriate and immediate/fixing by the contractor	Contractor	Visual inspection	Daily	MDLF, JSC-KRM
	Define accessible and convenient complaint channels and raising community's awareness of it.	JSC-KRM, Al-Fukhary Municipality, Al Shouka Municipality	Logbook	Weekly	MDLF, JSC-KRM
	Information sharing with the community including indicative banner at the site with full of communication details	JSC-KRM, Contractor	Logbook	monthly	MDLF, JSC-KRM
	Sort, process, and communicate complains to respective parties (contractor) and follow up action.	JSC-KRM	Monthly Report	Daily	MDLF, JSC-KRM
	Maintain visual and written record of community complaints and responsive actions.	JSC-KRM	Monthly Report	On demand	MDLF, JSC-KRM
	Special attention should be taken for the school students who may pass from the street, the work should be stopped during the passage of students if it is found affecting the passage of students	Contractor	Visual observations	Weekly	MDLF, JSC-KRM
	The contractor should fix any damage caused directly by the construction works in any of existing water pipes within the same day	Contractor	Visual observations	Daily	MDLF, JSC-KRM

Potential Impact	Proposed Mitigation Measures	Implementation Responsibility	Compliance Monitoring Approach	Monitoring Frequency	Responsibility for Compliance Monitoring
	Alternative routes should be available all the time for vehicles to access to their proprieties	Contractor, Municipality of Al Fukhary, Municipality of Al Shouka	Visual observations, Traffic Plan document	Daily	MDLF, JSC-KRM
	Workers should be controlled for not communicating with the local farmers/residents to avoid any conflicts	Contractor	Visual observations	Weekly	MDLF, JSC-KRM
	The contractor is advised to hire workers from the local community	Contractor	Visual observations	Monthly	MDLF, JSC-KRM
	No Workers under 18 years old are allowed to work in this construction site	Contractor	Visual observations	Weekly	MDLF, JSC-KRM
7. Traffic jam due to construction works	The contractor should prepare a traffic plan prior the start of implementation	Contractor	Submitting a document	Prior the implementation	MDLF, JSC-KRM
	Indicative signs around the site and access road	Contractor	Visual observations	monthly	MDLF, JSC-KRM
	Manage movement of incoming/outgoing SW Municipal trucks into landfill and avoid conflict with earth work	Rafah Municipality Contractor	Visual observations	Daily	MDLF, JSC-KRM
	Manage movement of incoming/outgoing private vehicles, and avoid conflict with any traffic jam	Contractor	Visual observations	Weekly	MDLF, JSC-KRM
	The contractor should not open more than one section of work in the same time; an access should be available all the time for passing cars/trucks.	Contractor	Visual observations	Daily	MDLF, JSC-KRM
	Hiring flagmen to control/organize any of traffic jam	Contractor	Visual observations	Daily	MDLF, JSC-KRM
8. Soil erosion and flooding during the winter season	The contractor should evacuate/drain the stormwater away from the cultivated lands/residents' houses	Contractor	Visual observations	In rainy days	MDLF, JSC-KRM
	The contractor should level any of the alternative access roads by his machinery, especially in rainy season	Contractor	Visual observations	In rainy days	MDLF, JSC-KRM

Potential Impact	Proposed Mitigation Measures	Implementation Responsibility	Compliance Monitoring Approach	Monitoring Frequency	Responsibility for Compliance Monitoring
9. Storage of Construction waste	The contractor should store the construction waste away from the cultivated lands and houses, and he should transfer them safely to the appropriate disposal site	Contractor	Visual observations	Weekly	MDLF, JSC-KRM
10. Land Use (Property Rights)	Avoid any use of private land for material storage/construction camp, and avoid removal of any fence or trees during the construction phase	Contractor	Visual observations	Daily	MDLF, JSC-KRM

Table 6. Summary of Environmental and Social Management Plan Rehabilitation of Access Road during the operation Phase

Potential Impact	Proposed Mitigation Measures	Implementation Responsibility	Compliance Monitoring Approach	Monitoring Frequency	Responsibility for Compliance Monitoring
1. Vehicles safety	Using appropriate vehicles for transporting the SW to the landfill	Municipalities	Visual observation	Weekly	MDLF, JSC-KRM
	Insurance should cover all the SW trucks	Municipalities	Visual observation	Weekly	MDLF, JSC-KRM
2. Inconvenience of residents/farmers	The access road should be cleaned from any of random dumping sites	Municipalities	Visual observation		
	SW trucks should be covered during transferring the SW	Municipalities, JSC-KRM	Visual observation		
	Define accessible and convenient complaint channels and raising community's awareness of it	JSC-KRM, Khan Younis Municipality, Al-Fukhary Municipality	Logbook	Weekly	MDLF, JSC-KRM
	Reduce the number of SW truck trips during rush hours	Contractor	Visual observation	Weekly	MDLF, JSC-KRM
	Sort, process of complains and follow up action.	JSC-KRM	Monthly Report	Daily	MDLF, JSC-KRM
	Maintain visual and written record of community complaints and responsive actions.	JSC-KRM	Monthly Report	On demand	MDLF, JSC-KRM
3. Potential for increase in vehicle speed, leading to accidents and safety concerns on the local residents	Traffic signs along the access road to limit the driving speed	Contractor	Visual observations	monthly	MDLF, JSC-KRM
	Manage movement of incoming/outgoing SW Municipal trucks into landfill, and monitor the driving speed limit	JSC-KRM	Visual observations	Daily	MDLF, JSC-KRM
	Open an access during the construction phase on the junction of Al Fukkhary landfill access road with Salah AL Dien Street, it will ease the flow of vehicles	Contractor, JSC-KRM	Visual observations	Weekly	MDLF, JSC-KRM
	Insurance to cover Municipal drivers who transfer the waste to the landfill	Municipalities	Visual inspection	Periodically	MDLF, JSC-KRM

ANNEX I: Endorsement of The Access Road by The Central Committee of planning at the MoLG

State of Palestine
Ministry of Local Government

دولة فلسطين
وزارة الحكم المحلي

رقم الملف (1672)

قرار رقم (1) جلسة رقم (27) بتاريخ 25/ 7 /2018

بشأن/ التصديق النهائي على المخطط التفصيلي للشارع رقم (2) شارع صوفا – الفخاري.

القـــــــــــرار

- بعد الاطلاع على قرار اللجنة المركزية بجلستها رقم (2018/16) بتاريخ 2018/4/25 المتضمن تشكيل لجنة لدراسة الاعتراضات الواردة على المخطط التفصيلي للشارع رقم (2) شارع صوفا الواقع ضمن نفوذ بلدية الفخاري ومنطقة الشوكة الاقليمية ومنطقة الفخاري الاقليمية المحصورة بين شارع رقم (4) صلاح الدين غرباً والخط الأخضر شرقاً.
- وبعد الاطلاع على تقرير دراسة الاعتراضات المعدة من قبل لجنة دراسة الاعتراضات المؤرخ في 2018/7/16 وبعد المناقشة قررت اللجنة المركزية مايلي:-

أولاً: قبول الاعتراضات شكلاً ورفضها في المضمون.

ثانياً: التصديق النهائي على المخطط التفصيلي للشارع رقم (2) شارع صوفا بعرض (34) متر بدون ارتداد.

م. سعيد عمار

رئيس اللجنة المركزية للأبنية وتنظيم المدن

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ANNEX II: Questionnaire to measure views of surrounding population

2018/ 08 /02

مشروع إدارة النفايات الصلبة في قطاع غزة (GSWMP)

استبانة لتصميم الخطة البيئية والاجتماعية لمشروع تأهيل شارع رقم 2 في منطقة الفخاري

اسم المستجيب:		علاقة المستجيب بالمشروع:	
العمر:	الجنس:	المهنة:	
أولا: مرحلة العمل في المشروع (فترة التنفيذ):			
1	هل تعتقد أنه أثناء العمل في إعادة تأهيل الشارع سيزيد كمية الغبار في المنطقة؟	أ. نعم	ب. لا
1.1	في حال الإجابة في سؤال رقم (1) بنعم، ما هي اقتراحاتكم للتخفيف من ذلك ؟ ----------		
2	ما هي اقتراحاتكم للتسهيل حركة المرور في الشارع أثناء العمل في المشروع؟ ----------		
3	هل تعاني من تراكم مياه الأمطار في الشارع ؟ وهل يعيقك ذلك من الوصول لأرضك/بيتك؟	أ. نعم	ب. لا
4	هل تعاني من تراكم النفايات الصلبة في الشارع؟	أ. نعم	ب. لا
4.1	في حال الإجابة في سؤال رقم (4) بنعم، ما هي اقتراحاتكم لحل تلك المشكلة ؟ ----------		
5	هل تعتقد أن نسبة الضجيج ستزداد وقت العمل في المشروع؟	أ. نعم	ب. لا
5.1	ما هي اقتراحاتكم للتقليل من الضجيج وقت العمل في المشروع؟ ----------		
6	ما هي وسيلة المواصلات التي تتخذها للوصول لأرضك/ بيتك؟ ----------		
7	ما هي توصيات للمقاول للتخفيف من الآثار الناتجة عن المشروع ؟ ----------		
ثانياً: بعد الانتهاء من المشروع (فترة المتابعة):			
8	برأيك بعد رصف الشارع هل ستقل كمية الغبار الناتجة عن حركة السيارات في المنطقة؟	أ. نعم	ب. لا
9	برأيك بعد رصف الشارع وعمل قنوات لتصريف المياه هل ستسحسن حركة السير في الشتاء؟	أ. نعم	ب. لا
10	برأيك بعد رصف الشارع سيتم تقليل الازدحام المروري في الشارع؟	أ. نعم	ب. لا
11	برأيك رصف الشارع سيسهل حركة طلاب المدارس والأطفال في المنطقة؟	أ. نعم	ب. لا
12	برأيك رصف الشارع سيؤثر على أسعار الأراضي والعقارات في المنطقة؟	أ. نعم	ب. لا

13	برأيك رصف الشارع سيحسن عملية جمع النفايات الصلبة ويمنع تراكمها على أطراف الشارع؟ أ. نعم ب. لا
14	برأيك هل رصف الشارع سيزيد من سرعة السيارات وبالتالي ازدياد الحوادث المرورية؟ أ. نعم ب. لا
ثالثاً: المشاركة المجتمعية والمسائلة الاجتماعية:	
15	هل تعلم من هي الجهة التي ستشرف على مشروع إعادة التأهيل؟ ----------
16	ما هي قناة التواصل التي تفضلها من أجل تسليم الشكاوى والاقتراحات أثناء العمل في المشروع؟ ----------
17	ما هي قناة التواصل التي تفضلها من أجل تسليم الشكاوى والاقتراحات بعد الانتهاء من المشروع؟ ----------
18	هل أنت مستعد للتطوع بالتواصل مع الجيران للمساهمة في نشر المعلومات الخاصة بالمشروع والعمل على التبليغ عن اقتراحاتهم وشكواهم؟ ----------