

CHAPTER 9: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

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The Environmental and Social Management Plan (ESMP) presented in this chapter reflects the implementation procedures and mechanisms for the mitigation measures and monitoring activities of the expected impacts previously discussed in Chapter 6 and 7. The ESMP assigns certain tasks for different stakeholders according to their roles and responsibilities in the project. The roles of supervision and monitoring for the implementation of the various impacts are presented in the matrixes/tables from 9.2 to 9.17. Generally, the information presented in these matrices applies to both the southern and northern sites. Where specific impacts and mitigation measure relate to certain specific site, it is mentioned in the matrix.

The ESMP is adding on the FS recommendation for the project management, which comprise the following main features:

- A Project Development and Safeguards Unit (PDSU) will be established for managing the investments and provide overall supervision on the project progress. The FS recommends that the PDSU shall be under the auspices of the UNDP-PAPP or the MLDF.
- Two Joint Services Councils (JSC) will be responsible for the project operation during the first years of operation, one will be for North Gaza and the other will be for South Gaza including Deir Al-Balah and Rafah (JSC-DBR). The North Gaza JSC (JSC-NG) will be responsible for the operation of the solid waste management system (collection, transfer and disposal at Johr El Deek landfill) for the waste of North Gaza, Gaza Municipality and UNRWA camps in correspondent areas. While the JSC-DBR will be responsible for the operation of solid waste management system (collection, transfer, composting/recycling and disposal at El Fukhary landfill) for the waste of Deir Al Balah, Khan Yonus, Rafah and UNRWA camps in correspondent areas.

It would be expected that the PDSU will assign a contractor, at the first stages of the project, for construction of landfills service areas (administration building, leachate pond, parking area and truck washing area) recycling/composting plants and transfer stations, in addition to excavation of the first cell of the two long-term landfills (and subsequently other cells in due course), preparing the roads, placing the liners and digging the monitoring wells. The work shall be under supervision of engineering consultants who shall approve the contractor's performance for releasing his payments. The PDSU is expected also to procure landfill equipment, transfer and collection trucks and different electrometrical components from correspondent suppliers. The operation of the system shall be carried out by the two JSCs as mentioned earlier.

The roles and responsibilities of the ESMP have been recommended based on the previous setting.

9.1 Institutional Setting of the ESMP

The PDSU shall include an Environmental Manager (PDSU-EM) who will have the overall responsibility for implementing the ESMP and shall report directly to the PDSU Manager. During the construction phase (before starting the operation) the contract of the Engineering Consultant (EC), who will supervise construction work, should include supervision component on the relevant mitigation measures that will be implemented by the construction contractor. The EC representative in each construction site should report directly to the PDSU-EM about the performance of the

contractor in implementing ESMP measures during his work, the approval of the contractor's invoices should include the signature of the PDSU-EM based on the reports he receives about the contractor performance in implementing the ESMP measures. The PDSU-EM should not totally depend on the reports he receives from the EC, but he should also make site visits on regular basis to confirm the reports he receives about the implementation of the ESMP measures by the construction contractor.

The two JSCs would be under the supervision of a Ramallah – (West Bank-) based SWM Development Committee (DC). It would include representatives of the ministries, UNDP, MDLF, JSC and other key stakeholders.

Efficient implementation for the social management plan should involve tailored efforts for maximizing the positive social impacts and ensuring that they are reaching the local communities and minimizing the negative impacts that may hit the poor and vulnerable groups. The potentially-affected groups (particularly waste pickers, land owners and communities near the proposed facilities) should be consulted along the process in order to ensure that their views are considered and that suitable measures are in place to eliminate the severity of negative impacts. Efficient consultations with stakeholders and high level of participation are seen as a prerequisite for a successful ESMP. It is strongly recommended to appoint a Social Development Officer (SDO) within the PDSU. The SDO should be leading the various participatory activities.

During the operation phase each of the two JSC managers (JSCM) of the landfill sites will generally be responsible for implementing mitigation measures and monitoring activities. During the first six years of operation, the two JSCMs will supervise the ESMP measures at the two sites in addition to the correspondent transfer stations and the composting/recycling plants., they will report to the PDSU-EM. Following the first six years of operation, it is expected that the PDSU will cease to operate and its responsibilities will be transferred to the JSC.

During the after closure phase the two JSC should provide the resources sufficient of timely implementing monitoring activities.

The monitoring activities referred to above represent self or internal monitoring, it is expected that compliance/regulatory monitoring will be also performed by MENA or other relevant ministries as will be indicated later in Tables 9-3 to 9-14.

9.2 Roles and Responsibilities for Implementation and Supervision

The mitigation measures and monitoring activities that were recommended in Chapter 6 and 7 shall be implemented according to the above-mentioned institutional set-up. Environmental Management and Monitoring matrices have been prepared for the actions to be carried during design, construction, operation and after closure phase. The matrices present the responsibilities of different stakeholders for mitigation measures and monitoring activities for both the landfill site (including the composting/recycling plants) and the related transfer stations. These matrices are presented in Tables 9-3 to 9-14.

The reporting of ESMP measures should be done on monthly basis during construction, operation and after closure phases, and should be prepared either by the EC or the JSCM for correspondent

phase of the project. The monthly reports will be presented to the PDSU-EM who shall make sure that the ESMP measures are implemented in due course according to the progress report. The PDSU-EM should report for the PDSU Manager and the project Steering Committee on annual basis. In case a corrective action is needed the PDSU-EM should ask the PDSU Manager for the resources to take this corrective action and should adequately report this corrective action. These reports should include the following components:

- Monthly reports prepared by EC and submitted to PDSU-EM:
- Monthly reports prepared by JSCM and submitted to PDSU-EM:
- Annual report prepared by the PDSU-EM and submitted to the PDSU Manager and the Steering Committee.

The specific roles and responsibilities of the SDO planned to be appointed under the PDSU are presented in Box 9.1 Below.

Box 9.1 Key responsibilities of the Social Development Officer (SDO)

- Establish dialogue with project affected groups, including local communities in the TS and landfills sites, landowners and waste pickers and ensure the project is implemented in a socially sensitive manner that consider the interests of these groups.
 - Monitor the project performance and report challenges and propose measures to improve project performance.
 - Design and implement awareness raising campaigns
 - Facilitate the formation of various community based mechanisms including community-based monitoring committee and social committee as part of implantation of the ARAP.
 - Prepare ToRs for the formed community based mechanisms, share with the members of the committees and follow the performance of these committees.
 - Close facilitation for the execution of the ARAP and ensuring that compensations are reaching the PAPs.
 - Maintain databases and efficient records for the PAPs as part of the ARAP
 - Maintain database and efficient records of the waste pickers and work to integrate them in the various programmes and interventions to minimize the potential negative impact on them.
 - Prepare ToRs for external consultants that could be needed during the project cycle and follow up on the delivery of the consultancy service.
 - Assist in developing strategies for the implementing the long term measures (e.g. raising the profile of SWM, develop and enforce financial sustainability instruments)
 - Ensure adapting participatory mechanisms in monitoring the project impacts and evaluating outcomes
 - Prepare quarterly progress reports and raise it to the PDSU and report to the World Bank where applicable.
- Coordinate with other successful models (e.g. the model of Al-Menya Landfill in the West Bank) to benefit from the experience and lesson learnt

The SDO should have a degree in social science or social development practice. He/she should be familiar with work in projects with similar scope and has very high communication and facilitation skills. Local university graduates, particularly women, should be encouraged to apply. To enable the SDO to efficiently fulfill his/her responsibilities, the capacity building and training modules

presented in Box 9.2 are proposed. The SDO should receive these capacity building programmes before start of the construction phase of the project.

Box 9.2 Proposed Capacity Building Programmes for the SDO

- OP 4.12 and Palestinian laws related to land ownership
- Communication Skills
- Community Participation Tools
- Consensus Building Techniques
- Participatory Monitoring and Evaluation (PM&E)
- Promotion of Awareness Raising Activities

Moreover, the implementation of the ESMP involves other voluntary community-based mechanisms to assist the SDO in reaching local communities and to facilitate access to information and feedbacks. It is suggested to benefit from existing mechanisms like the voluntary “Districts Committees” by involving them and activating their roles wherever applicable. These committees are composed of trustworthy individuals in their communities. The members should also be motivated and willing to contribute to the project with time and effort. It is suggested to form 1 voluntary Community- Based Monitoring committees in the area of Al Fukhary landfill and work to activate the role of existing “Districts Committees” in the other 3 communities near the transfer stations. Moreover, additional voluntary Community- Based Monitoring committees in the area of Johr al Deek landfill and other 2 communities near the transfer stations are also recommended to be formed. The PDSU should facilitate the establishment/activation of the following voluntary community based committees:

1. Voluntary Community- Based Monitoring Committee from El-Fukhary and Al Buyuki community near El-Fukhary Landfill.
2. Voluntary Community- Based Monitoring Committee from Al Namsawi
3. Voluntary Community- Based Monitoring Committee from Tal El Sultan
4. Voluntary Community- Based Monitoring Committee from Deir El Balah (from the nearest area close to the TS site after it is identified)
5. Voluntary Community- Based Monitoring Committee from Johr al Deek neighboring community to the Landfill.
6. Voluntary Community- Based Monitoring Committee from Beit Lahia
7. Voluntary Community- Based Monitoring Committee from Al Maslakh

The nomination and selection of the Committee members should be done in coordination between the municipalities/JSC and the PDSU. The section should also be done in consultation with the neighboring communities. The appropriate selection mechanisms for the Committees should be designed by the SDO of the PDSU. It is suggested that every voluntary Community- Based Monitoring Committee should include a balanced representation of various community groups including trustworthy community leaders, residents representing different economic and professional background, various age groups (including youth), representatives of commercial activities, NGOs, women, schools and other educational institutes health care institutes ...etc.

It worth noting that the formed committees with the assistance of the PDSU will play the role of the non- technical monitoring including all the monitoring aspects related to communities feedbacks, complaints and measuring satisfaction levels.

Box 9.3 Key responsibilities for the Community- Based Monitoring committees

- Facilitate the PDSU and the SDO access to the local communities
- Conduct various surveys and consultation activities as part of engaging local communities in monitoring the project various phases and assessing various impacts.
- Assist in the delivery of awareness raising campaigns
- Facilitate the consultancy assignments arranged for different purposes during the project cycle through the provision of data and assistance and connecting consultants to local communities
- Coordinate with local organizations to facilitate the access of the neighborhoods near the project sites to services.

It should be the responsibility of the PDSU to work to strengthen the capacity of the members of these committees in order to enable them to fulfill their proposed responsibilities above. It is recommended that the SDO invests time in providing hands-on training and transferring experience to the committees' members. Subjects of the hands-on training may include, but are not limited to, communication and community surveying skills, delivering of awareness messages, measuring changes in behavior and writing report.

Moreover and as part of the supervisory role anticipated by the Palestinian regulatory authority, it is recommended that capacity building and training programmes be developed to target the staff that will be involved in supervising the project. Box 9.4 below presents a generic list of the topics that could be included in the capacity building modules for regulatory authority.

Box 9.4: Generic tentative list of the key capacity building modules for regulatory authorities

- SWM cycle and relation to environment and local communities
- ESMP implementation for SWM projects
- Inspection on landfill sites
- Labour standards and conducting site inspections
- Health and safety standards and conducting site inspections

9.3 ESMP Budget

The ESMP matrices presented in Tables 9-3 to 9-14 includes many items that needs to be allocated in the final budget of the project. Because the project is basically an environmental project the distinction between the budget for engineering works and environmental safeguard measures is difficult because ultimately the whole project will have clear environmental and social benefits. For distinguishing the ESMP budget from other cost items needed to implement the project, it has been assumed that all the measures included in Tables 9-3 to 9-14 are included in the project budget except for the following items (related to project management, capacity building, consultancy awareness and compensations for the resulting involuntary resettlement) presented in Table 9-2, that may be considered distinct from the pure engineering components of the project.

Table 9 -1: Proposed Budget for the ESMP

Category	Item	Budget (US \$)
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Project management ⁶³	Salary of the PDSU Manager in 6 years X 2 offices	216,000
	Salary of the PDSU-EM in 6 years X 2 offices	144,000
	Salary for the SDO in 6 years X 2 offices	144,000
Capacity building	Capacity Development for the SDO	20,000
	Training courses on Hygiene and Hazardous Waste Management for project staff	40,000
	Capacity building and training activities for staff of the regulatory Ministries including MEnA, MoH, MoL, MDLF	100,000
Consultancy	Contracting consulting firm for carrying out environmental/social audit for the project performance and recommending improvement measures (3 audits in 6 years)	200,000
	Allowance for contracting experts in some needed ESMP measures, such as pesticides consultant, groundwater expert, energy expert, safety expert ... etc.	120,000
	Consultancy services (strategy for raising SWM profile in GS and strategies for developing financial instruments)	200,000
Awareness	Designing and implementing awareness raisin campaigns	80,000
Compensations	Transition assistance for the waste pickers of Al Namsawi and Tal El Sultan (southern section)	126,420 ⁶⁴
	Transition assistance for the waste pickers of Al Maslakh and Beit Lahia (northern section)	192,640 ⁶⁵
	ARAP for landowners at El-Fukhary landfill	8,876,500 ⁶⁶
	ARAP for landowners at Johr al Deek landfill	8,660,000 ⁶⁷
	ARAP for waste pickers in El-Fukhary landfill	228,600 ⁶⁸

⁶³ The implementation of Gaza SWMP will be divided into two separate projects; El Fukhary implemented by the MDLF and JaD implemented by the UNDP which requires two separate PDSUs that needs to be mentioned and considered in the required personnel of the PDSUs and in turn the cost.

⁶⁴ This was calculated on the basis of :

C) Cash Assistance: 21 waste picker x USD 230/ month (as transition allowance) x 24 month (transition period) = USD 115,920

D) Capacity development (hands on training): 21 waste picker x USD 500/training = USD 10,500

⁶⁵ This was calculated on the basis of :

B) Cash Assistance: 32 waste picker x USD 230/ month (as transition allowance) x 24 month (transition period) = USD 176,640

B) Capacity development (hands on training): 32 waste picker x USD 500/training = USD 16,000

⁶⁶ This figure was suggested by the ARAP against calculating not only the areas needed for the project but the actual areas owned by landowners who showed interest in selling to the project. Securing additional land is recommended from environmental and social point of view. The figure also counted for an amount of USD 50,000 for external monitoring to be provided for the resettlement process

⁶⁷ This include the estimated cost of average market price for purchasing the land space needed for the landfill, estimated figure for compensation for the rest of land located adjacent to the buffer zone and will not be used by the project and an amount of USD 50,000 for external monitoring to be provided for the resettlement process

	ARAP for waste pickers in Johr al Deek landfill	419,100 ⁶⁹
	Total	19,767,260

It is worth noting that the following ESMP related items are already included in the project budget presented in the Feasibility Study:

- Base sealing and leachate collection and recirculation
- Surface sealing, final cover and re-cultivation layer
- Gas collection and flaring
- Surface water collection and retention
- Internal roads preparation and pavement
- Groundwater monitoring wells
- Roofs for waste areas in the recycling plant, composting plant and transfer stations
- Landfill vehicles and equipment for waste and cover laying (loaders, compactors ... etc.)
- Project management costs including staff salaries, consumables and O&P of equipment

The following items are also expected to be included in the project budget, however, they are not specifically identified in the Feasibility Study

Areas for spoil storage	Considered above
Additional waste containers to safeguard against emergency situation when access to the landfill is denied	two containers 14,000\$
Windbreak trees surrounding the landfill site and the leachate evaporation pond	30,000\$
Adequate PPE for the staff	6,000 \$/year
Firefighting equipment	90,000\$
Application of pesticides	10,000\$
Possible need for movable acoustic barriers	3,000\$
Project management costs, staff salaries, consumables and O&P of equipment after the closure of the two landfills	300,000 \$/year
Source of water for possible need for watering the soil before excavation works	Stored surface/run-off water
Laboratory to carry out soil, gas and noise monitoring activities recommended in the ESMP – during the construction phase as part of the project budget.	7500\$
Laboratory to carry out leachate, groundwater, gas and noise monitoring	7500\$/year

⁶⁸ This allocation could be provided by several projects and it will be the responsibility of the PDSU with the assistance of community based mechanisms to ensure that they are assisting the affected waste pickers in finding an institution that can secure funds for assisting the waste pickers

This was calculated on the basis of: Initial cost for micro grants for the PAPs to start small business: USD 10,000 x 18 waste pickers = 180,000 + Monthly salary of 450 US\$ for 6 months transition period x 18 families = 48,600 (Total = 228,600)

⁶⁹ **This was calculated on the basis of:** Initial cost for micro grants for the PAPs to start small business: USD 10,000 x 33 waste pickers = 330,000 + Monthly salary of 450 US\$ for 6 months transition period x 33 families = 89,100 (Total = 419,100)

activities recommended in the ESMP as part of the project budget.	
Construction of six groundwater wells (three at each landfill)	24,000 \$

Table 9-2: Environmental management matrix for the landfill site during design phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of indirect supervision (During the course of the ESIA study)	Responsibility of direct supervision	Means of supervision
Impacts of Excavated Soil	Allocate adequate areas for spoil storage in the final design	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
	Ensure that the spoil will not cause un-favored changes to surface water drainage	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
	The spoil height should be designed so as to have acceptable visual impacts	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
Odour impacts	Detailed design to include landfill operation manual identifying waste progression in cells, waste compaction requirements and daily cover (at least 15 cm)	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
Impacts of landfill gas	The detailed design and tender documents of the degassing system should be designed to handle the maximum gas volumes with operational manuals for handling low gas volumes and implementing maintenance schedules	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
Impacts of leachate and surface water	Include the proposed leachate collection system in the design and tender documents. The design should include maintenance schedule for the system	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of indirect supervision (During the course of the ESIA study)	Responsibility of direct supervision	Means of supervision
	The leachate collection pond and the pumping station should be designed to receive maximum expected leachate quantities with minimum retention time	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
	Transfer stations and composting/recycling plants should have adequate roofs to prevent rain water from getting to the waste	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
Impacts on Birds and on possible future operation of Gaza Airport	Obtain written approval from the Palestinian Civil Aviation Authority stating that El Fuhary landfill site is considered to be non-hazardous to civil aviation	MDLF and JSCs (This has been investigated by EcoConS erv as shown in)	ECS	MDLF, UNDP, JSCs	Review written approval and include any conditions in the detailed design
Risks of receiving hazardous wastes mixed with municipal waste (these measures shall be in	Coordinate with planning authorities and the donor community to initiate a project for hazardous waste management	MDLF	ECS	MDLF, UNDP, JSCs	Review reports and progress meetings
	The landfill operation manual should include list of accepted and non accepted waste	Design consultant	ECS	MDLF, UNDP, JSCs	Review design and tender document

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of indirect supervision (During the course of the ESIA study)	Responsibility of direct supervision	Means of supervision
case that the project will operate with no parallel hazardous waste project)	In case that the landfill will operate without parallel hazardous waste facility a special cell should be constructed. The cell already existing at Johr al Deek shall resume operation.	Design consultant	ECS	MDLF, UNDP, JSCs	Review design and tender document
Noise impacts of recycling/composting plant	Tender documents should include noise specification for trommel, conveyors and compost mixing equipment	Design consultant	ECS	MDLF, UNDP, JSCs	Review tender document
Impacts of surface water	Identify a sufficient low elevation area to evaporate collected storm water	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents
Stability impacts	Detailed design should take into consideration the stresses on soil and on the waste body	Design Consultant	ECS	MDLF, UNDP, JSCs	Review of final design and tender documents

Table 9-3: Environmental management matrix for transfer station sites during design phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of indirect supervision (During the course of the ESIA study)	Responsibility of direct supervision	Means of supervision
Odour	Detailed design to include	Design	ECS	MDLF,	Review of

impacts	transfer station operation manual identifying waste unloading procedure through a hopper	Consultant		ECS, UNDP, JSCs	final design and tender documents
	Detailed design of the transfer station to include area for additional containers to accommodate waste in case of over capacity and emergency situations where there may be no access to the landfill	Design Consultant	ECS	MDLF, ECS, UNDP, JSCs	Review of final design and tender documents
Impacts of leachate and surface water	Transfer stations should have adequate roofs to prevent rain water from getting to the waste	Design Consultant	ECS	MDLF, ECS, UNDP, JSCs	Review of final design and tender documents

Table 9-4: Environmental management matrix for composting plants during design phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of indirect supervision (During the course of the ESIA study)	Responsibility of direct supervision	Means of supervision
Odour impacts	Detailed design to include composting plant process control identifying temperature and air flow control methodology and tools as well as measurement tools for the oxygen availability in the composting piles.	Design Consultant	ECS	MDLF, ECS, UNDP, JSCs	Review of final design and tender documents
Impacts of leachate and	Composting plants should be designed to have adequate roofs to	Design Consultant	ECS	MDLF, ECS, UNDP, JSCs	Review of final design and tender documents

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of indirect supervision (During the course of the ESIA study)	Responsibility of direct supervision	Means of supervision
surface water	prevent rain water from getting to the waste. A leachate collection and stoage system should be incorporated into the design.				

Table 9-5: Environmental management matrix for the landfill site during construction phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Responsibility of regulatory supervision	Means of supervision
Affecting air quality by dust emissions of construction works	Spoil of soil to be reused should be stored as near as possible from active cell	Contractor	EC	N/A	Field supervision
	Pavement of access road and ring road prior to usage in construction of each cell	Contractor	EC	N/A	Field supervision
	Watering soil before excavation if there were complaints from neighbors	Contractor	EC	MEnA (EQA)	Field supervision
Noise impacts	Optimize the use of noisy equipment	Contractor	EC	MEnA (EQA)	Field supervision
	Use acoustic barriers as necessary if complaints from neighbors were received	Contractor	EC	MEnA (EQA)	Field supervision
	Construction works should be stopped during night	Contractor	EC	MEnA (EQA)	Field supervision
Impacts of landfill gas	Ensure the lining system is adequately placed and tested	Contractor	EC	MEnA (EQA)	Field supervision
Impacts of	Leachate	Contractor	EC	MEnA (EQA)	Field

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Responsibility of regulatory supervision	Means of supervision
leachate and surface water	collection pond should be surrounded by wind barrier trees				supervision
Risks of hazardous wastes	Coordinate with planning authorities and the donor community to initiate a project for hazardous waste management	MDLF	MDLF	N/A	Review reports and progress meetings
	In case that the landfill will operate without parallel hazardous waste facility a special cell should be constructed	Design consultant to prepare specs and contractor to implement	MDLF	N/A	Review design and tender document
Affecting air quality by vehicles and equipment emissions	Implement preventive maintenance program for vehicles and equipment working in the site and promptly repair vehicles with visibly high exhaust	Contractor	EC	MEnA (EQA)	Field supervision
Impacts of construction waste other than excavated soil	Hazardous waste should be segregated and sent to a hazardous waste facility,	Contractor	EC	MEnA (EQA)	Field supervision

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Responsibility of regulatory supervision	Means of supervision
	if existing, or to the special cell				
	Other non hazardous waste to be collected and sent to the active cells	Contractor	EC	MEnA (EQA)	Field supervision
	Sewage should be periodically collected and sent to the adjacent WWTP	Contractor	EC	MEnA (EQA)	Field supervision
Risks of damaging chance-find antiquities	In case of chance-find the excavation should be stopped, the Ministry of Tourism and Antiquities	Contractor	EC	Ministry of Tourism and Antiquities	Field supervision

Table 9-6 Environmental management matrix for transfer station and composting plant sites during construction phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Responsibility of regulatory supervision	Means of supervision
Affecting air quality by dust emissions of construction works	Watering soil before excavation if there were complaints from neighbors	Contractor	EC	MEnA (EQA)	Field supervision
Noise impacts	Optimize the use of noisy equipment	Contractor	EC	MEnA (EQA)	Field supervision
	Use acoustic barriers as necessary if	Contractor	EC	MEnA (EQA)	Field supervision

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Responsibility of regulatory supervision	Means of supervision
	complaints from neighbors were received				
	Construction works should be stopped during night	Contractor	EC	MEnA (EQA)	Field supervision
Affecting air quality by vehicles and equipment emissions	Implement preventive maintenance program for vehicles and equipment working in the site and promptly repair vehicles with visibly high exhaust	Contractor	EC	MEnA (EQA)	Field supervision
Impacts of construction waste	Hazardous waste should be segregated and sent to a hazardous waste facility, if existing, or to the special cell	Contractor	EC	MEnA (EQA)	Field supervision
	Other non hazardous waste to be collected and sent to the active cells	Contractor	EC	MEnA (EQA)	Field supervision
	Sewage should be periodically collected and sent to WWTP	Contractor	EC	MEnA (EQA)	Field supervision

Table 9-7: Environmental monitoring matrix for the landfill site during construction phase

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	
					Self (Internal)	Regulatory (External)
Impacts of Excavated soil	Volume of excavated soil	Site of landfill	Review invoices of excavation contractor	To be recorded after the excavation of each cell and documented in the next monthly report	EC	N/A
	COD, BOD, pH, TDS, total N, total P, heavy metals (Pb,Cd,Cr,Cu,Hg, Ni, Zn), TPH of the soluble content of excavated soil	Site of the landfill	Active collection of undisturbed soil samples and laboratory analysis	Once prior to the excavation of each cell	Landfill laboratory	MEnA (EQA)
	Volume of soil exported from the site and end use of this volume	Site of landfill	Keeping these records from the exporting entity	Annual	PDSU-EM,	N/A
Affecting air quality by dust emissions of construction works	Ambient PM	Border of active cell and the two farm houses areas at the north and west	Active collection of samples and laboratory analysis	Once during the excavation of each cell	Landfill laboratory	MEnA (EQA)
	Dust complaints from neighbors	Landfill location	Recording and documentation of complaints	Monthly	PDSU EM,	MEnA (EQA)
Noise	Ambient noise	The two	Portable	Once	Landfill	MEnA

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	
					Self (Internal)	Regulatory (External)
impacts		farm houses areas at the north and west	noise meter to take representative average noise and background noise before construction works	before construction and once during the excavation of each cell	laboratory	(EQA)
	Noise complaints from neighbors	Landfill location	Recording and documentation of complaints	Monthly	PDSU EM,	MEnA (EQA)
Impacts of construction waste other than excavated soil	Amounts of hazardous waste generated	Landfill location	Visual estimation of the hazardous waste weight by type	Monthly	Contractor	MEnA (EQA)
	Amounts of evacuated sewage	Landfill location	Number of truck loads multiplied to the truck capacity	Monthly	Contractor	MEnA (EQA)
Risks of damaging chance-find antiquities	Type, location, condition of antiquity object and followed procedures	Landfill	Documentation of data and photography	Once in case of chance-finds	EC	Ministry of Tourism and Antiquities

Table 9-8: Environmental monitoring matrix for transfer station and composting plant sites during construction phase

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	
					Self (Internal)	Regulatory (External)
Affecting air quality by	Dust complaints	Transfer station	Recording and documentation	Monthly	PDSU EM	MEnA(EQA)

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	
dust emissions of construction works	from neighbors	location	of complaints			
Noise impacts	Noise complaints from neighbors	Transfer station location	Recording and documentation of complaints	Monthly	PDSU EM	MEnA(EQA)
Impacts of construction waste	Amounts of hazardous waste generated	Transfer station location	Visual estimation of the hazardous waste weight by type	Monthly	Contractor	MEnA(EQA)
	Amounts of evacuated sewage	Transfer station location	Number of truck loads multiplied to the truck capacity	Monthly	Contractor	MEnA(EQA)

Table 9-9: Environmental management matrix for the landfill site during operation phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision (Internal)		Responsibility of regulatory supervision	Means of supervision
			During the first 6 years	Beyond the first 6 years		
Odour impacts	Upgrade the rates of compaction and application of soil cover in case of receiving complaints	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
Impacts of landfill gas	Ensure the waste filling schedule is followed, the gas vents are progressively placed, the final cover is adequately maintained and the degassing system is adequately maintained	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
Impacts of leachate and surface water	Leachate evaporation pond should be surrounded by wind barrier trees	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
	Implement preventive maintenance schedule for the leachate collection system	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision (Internal)		Responsibility of regulatory supervision	Means of supervision
			During the first 6 years	Beyond the first 6 years		
	For El-Fukhary landfill, in case some leachate amounts will need to be discharged to the WWTP a prior coordination with the WWTP management should be maintained. This should be also done for sludge being removed from evaporation pond and sent to WWTP	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and correspondence with WWTP
	In case the monitoring wells indicated high pollution loads that could be related to leak of leachate, this leak should be identified and adequately handled	JSC experts or an external consultant	PDSU-EM	JSC	ME nA (EQA)	Review monitoring reports after repair
Impacts on Birds and on possible future operation of Gaza Airport	For El- Fukhary landfill, implement any conditions to distract birds that might be included in the approval of the Palestinian Civil Aviation Authority	JSCM	PDSU-EM	JSC	Palestinian Civil Aviation Authority	Review of progress reports and field supervision

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision (Internal)		Responsibility of regulatory supervision	Means of supervision
			During the first 6 years	Beyond the first 6 years		
Risks of receiving hazardous wastes mixed with municipal waste (these measures shall be in case that the project will operate with no parallel hazardous waste project)	Provide hazardous waste training to staff working in the project	Hazardous waste safety consultant	PDSU-EM	JSC	MEnA (EQA) MoL	Review training reports and attendance sheets
	Asbestos waste should be wetted once received in the landfill	JSCM	PDSU-EM	JSC	MEnA (EQA)	Review of progress reports and field supervision
	Flammable and explosive waste should be prevented from admission	JSCM	PDSU-EM	JSC	MEnA (EQA)	Review of progress reports and field supervision
	Provide workers with PPE and make sure they are adequately using it	JSCM	PDSU-EM	JSC	MEnA (EQA) MoL	Review of progress reports and field supervision
	Prepare an emergency response plan for spills or fires	JSCM	PDSU-EM	JSC	MEnA (EQA) MoL	Review of the plan
Risks to occupational health and hygiene	Provide hygiene training to the staff working in the project and provide suitable PPE, showers, washing and cleansing facilities	JSCM	PDSU-EM	JSC	MEnA (EQA) MoL	Review of progress reports and field supervision
	Prevention of unauthorized admission to the landfill, recycling/composting and transfer stations	JSCM	PDSU-EM	JSC	MEnA (EQA)	Review of progress reports and field supervision

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision (Internal)		Responsibility of regulatory supervision	Means of supervision
			During the first 6 years	Beyond the first 6 years		
	Effective application of the waste filling plan and daily cover	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
	Apply pesticides as needed through an application plan that would give preference to biological pesticides, then to other pesticides with negligible impact on humans and minimum impact on untargeted species and the environment	Pesticides Expert	JSCM and PDSU-EM	JSC	ME nA (EQA)	Review of pesticides plan and field supervision
Noise impacts	Optimize the use of noisy machines	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
	Use acoustic barriers as necessary if complaints from neighbors were received	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
	Landfill operations and the recycling/composting plants should be stopped during night	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision (Internal)		Responsibility of regulatory supervision	Means of supervision
			During the first 6 years	Beyond the first 6 years		
	Planting wind break trees around the landfill	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
Affecting air quality by air emissions of vehicles and equipment	Implement preventive maintenance program for vehicles and equipment working in the site and promptly repair vehicles with visibly high exhaust	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
Visual impacts and aesthetics	Surrounding composting/recycling plant with windbreak trees	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review of progress reports and field supervision
Risks of unforeseen exceeding of landfill capacity	If landfill capacity monitoring shown rapid filling, early planning for new site should be initiated	JSCM	PDSU-EM	JSC	ME nA (EQA)	Review monitoring reports

Table 9-10: Environmental management matrix for transfer station sites during operation phase

Potential	Proposed Mitigation	Institutional	Responsibility of direct supervision	Responsibility of	Means of supervision
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Impact	Measures	Responsibility for Implementation	(Internal)		regulatory supervision	on
			During the first 6 years	Beyond the first 6 years		
Odour impacts	Provide additional waste containers at the transfer station to ensure smooth operation and reduce vehicles waiting time	JSCM	PDSU-EM	JSC	MEEnA (EQA)	Review of progress reports and field supervision
Impacts of leachate and surface water	Ensure that waste is unloaded in covered areas during rain	JSCM	PDSU-EM	JSC	MEEnA (EQA)	Review of progress reports
Risks to occupational health and hygiene	Provide hygiene training to the staff working in the project and provide suitable PPE, showers, washing and cleansing facilities	JSCM	PDSU-EM, MoH, MoL	JSC	MEEnA (EQA) MoL and MoH	Review of progress reports and field supervision
	Prevention of unauthorized admission to the transfer stations	JSCM	PDSU-EM	JSC	MoL and MoH	Review of progress reports and field supervision
	Apply pesticides as needed through an application plan that would give preference to biological pesticides, then to other pesticides with negligible impact on humans and minimum impact on untargeted species and the environment	Pesticides Expert	JSCM and PDSU-EM	JSC	MEEnA (EQA)	Review of pesticides plan and field supervision

Table 9-11: Environmental management matrix for composting plant sites during operation phase

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision		Responsibility of regulatory supervision	Means of supervision
			During the first 6 years	Beyond the first 6 years		
Odour impacts	Provide a list of the types of wastes that should be screened out from the input stream. Ensure a process control is in place for the following: <ul style="list-style-type: none"> • Temperature control • Air flow control 	JSCM	PDSU-EM	JSC	MEnA (EQA)	Review of progress reports and field supervision
Impacts of leachate and surface water	Ensure that the composting plant is roofed and that the leachate collection and storage system is in place. An impervious floor should be constructed with suitable slopes to allow for leachate collection.	JSCM	PDSU-EM	JSC	MEnA (EQA)	Review of progress reports
Risks to occupational health and hygiene	Provide hygiene training to the staff working at the composting plant and provide suitable PPE, showers, washing and cleansing facilities	JSCM	PDSU-EM	JSC	MEnA (EQA) MoL	Review of progress reports and field supervision

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision		Responsibility of regulatory supervision	Means of supervision
			During the first 6 years	Beyond the first 6 years		
	Prevention of unauthorized admission to the composting plant	JSCM	PDSU-EM	JSC	MoL	Review of progress reports and field supervision

Table 9-12: Environmental monitoring matrix for the landfill site during operation phase

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Self Monitoring Responsibility		Regulatory/Compliance Monitoring Responsibility
					During the first 6 years	Beyond the first 6 years	
Odour impacts	Odor complaints from neighbors	Landfill location	Recording and documentation of complaints	Monthly	PDSU EM	JSCM	ME nA (EQA)
Impacts of landfill gas	Volume of collected landfill gas	Gas compression station	Gas flow meter	Continuous monitoring with monthly collection of records	Landfill laboratory	Landfill laboratory	ME nA (EQA)
	CH ₄ , CO ₂ , NH ₃ , H ₂ S and VOCs in ambient air	Samples to be collected from the western border of the landfill	Active collection of samples and laboratory analysis	Annual	Landfill laboratory	Landfill laboratory	ME nA (EQA)
	Acidity and hardness of	Monitoring wells	Pumping out samples	Quarterly	Landfill laboratory	Landfill laboratory	ME nA (EQA)

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Self Monitoring Responsibility		Regulatory/Compliance Monitoring Responsibility
					During the first 6 years	Beyond the first 6 years	
	groundwater						
Impacts of leachate and surface water	Amount of collected and recycled leachate amounts	Leachate collection pond	Level measurement of the leachate pond and records of pumping station	Monthly	JSCM	JSCM	MEnA (EQA)
	COD, BOD, pH, TDS, total N, total P, heavy metals, TPH of leachate	Leachate collection pond	Representative grab sampling and laboratory analysis	Quarterly for COD, BOD and pH and annually for the rest	Landfill laboratory	Landfill laboratory	MEnA (EQA)
	COD, BOD, pH, TDS, total N, total P, heavy metals, TPH of groundwater	3 groundwater monitoring wells	Pumping from monitoring wells and laboratory analysis	Quarterly for COD, BOD and pH and annually for the rest	Landfill laboratory	Landfill laboratory	MEnA (EQA)
	Amounts of collected sludge	Leachate collection pond	Records of sludge pump	Once upon de-sludging event	JSCM	JSCM	MEnA (EQA)
Impacts on Birds and on possible future operation	Complaints from the airport about improper	Al Fukhary Landfill location	Recording and documentation of complaints	Monthly	PDSU EM,	JSCM	MEnA (EQA)

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Self Monitoring Responsibility		Regulatory/Compliance Monitoring Responsibility
					During the first 6 years	Beyond the first 6 years	
Impact of Gaza Airport	Operational practices						
Risks of hazardous wastes	Amounts of hazardous waste received	Landfill location	Visual estimation of the hazardous waste in relation to the truck capacity	Daily	Admission staff	Admission staff	MEnA (EQA)
	Amounts of flammable and explosive waste refused	Landfill location	Visual estimation of the hazardous waste in relation to the truck capacity	Daily	Admission staff	Admission staff	MEnA (EQA)
	Area and volume of hazardous waste placed in special cell	Special cell	Topographic survey	Annual	Survey consultant	Survey consultant	MEnA (EQA)
	Health records about occupational injuries and infectious diseases among workers	Clinic contracted by the project	Medical reporting on received cases	Quarterly	Occupational health clinic	Occupational health clinic	MEnA (EQA) MoL

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Self Monitoring Responsibility		Regulatory/Compliance Monitoring Responsibility
					During the first 6 years	Beyond the first 6 years	
Risks to occupational health and hygiene	Type, quantity, date, location and method of application of pesticides	Landfill and transfer station	Documentation of data	Monthly	Pesticides Expert	Pesticides Expert	MEnA (EQA)
	Complaints from neighbors about insects and rodents	Landfill location	Recording and documentation of complaints	Monthly	PDSU EM	JSCM	MEnA (EQA)
Noise impacts	Ambient noise	The two farm houses areas at the north and west	Portable noise meter to take representative average noise	Annual during operation	Landfill laboratory	Landfill laboratory	MEnA (EQA)
	Noise complaints from neighbors	Landfill location	Recording and documentation of complaints	Monthly	PDSU EM	JSCM	MEnA (EQA)
Affecting air quality by vehicles emissions	Average CO2 emissions, traveled distance and consumed fuel of vehicles	Landfill and transfer station locations	Keeping traveled distance and consumed fuel records from vehicle datasheet and multiply in	Monthly	PDSU-EM	JSCM	MEnA (EQA)

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Self Monitoring Responsibility		Regulatory/Compliance Monitoring Responsibility
					During the first 6 years	Beyond the first 6 years	
			the average CO2 emissions identified by the manufacturer				
Visual impacts	Complaints from neighbors about littering	Landfill location	Recording and documentation of complaints	Monthly	PDSU EM	JSCM	MEnA (EQA)
Risks of unforeseen exceeding of landfill capacity	Filled area and height of active cells	Landfill location	Topographic survey	Annual	Survey consultant	Survey consultant	MEnA (EQA)

Table 9-13: Environmental monitoring matrix for transfer station and composting plant sites during operation phase

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Self Monitoring Responsibility		Regulatory/ Compliance Monitoring Responsibility
					During the first 6 years	Beyond the first 6 years	
Odour impacts	Odor complaints from neighbors	Transfer stations and composting plant locations	Recording and documentation of complaints	Monthly	PDSU EM	JSCM	MEnA (EQA)
Risks of hazardous wastes	Health records about occupational injuries and infectious diseases among workers	Clinic contracted by the project	Medical reporting on received cases	Quarterly	Occupational health clinic	Occupational health clinic	MEnA (EQA) MoL
Risks to occupational health and hygiene	Type, quantity, date, location and method of application of pesticides	Transfer station only	Documentation of data	Monthly	Pesticides Expert	Pesticides Expert	MEnA (EQA)
	Complaints from neighbors about insects and rodents	Transfer station and composting plants	Recording and documentation of complaints	Monthly	PDSU EM	JSCM	MEnA (EQA)

Table 9-14: Environmental management matrix after landfill closure

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Responsibility of regulatory supervision	Means of supervision
Impacts of landfill gas	Assign the responsibility for monitoring landfill gas to the same trained personnel who were responsible during the operation phase	JSC	PDSU Manager	MEnA (EQA)	Review institutional arrangements
	In case the monitoring indicated gas leak the reason for the leak should be identified and adequately handled	JSC experts or an external consultant	JSC	MEnA (EQA)	Review monitoring reports after repair
Impacts of leachate	Staff of leachate pumping station should continue their work after closure of the landfill so that maintenance and coordination with WWTP activities will be continued until leachate amounts are negligible	JSC	PDSU Manager	MEnA (EQA)	Review institutional arrangements
	Assign the responsibility for monitoring landfill leachate to the same trained personnel who were responsible	JSC	PDSU Manager	MEnA (EQA)	Review institutional arrangements

Potential Impact	Proposed Mitigation Measures	Institutional Responsibility for Implementation	Responsibility of direct supervision	Responsibility of regulatory supervision	Means of supervision
	during the operation phase until leachate amounts are negligible				
	In case the monitoring wells indicated high pollution loads that could be related to leak of leachate, this leak should be identified and adequately handled	JSC experts or an external consultant	JSC	MEnA (EQA)	Review monitoring reports after repair
Visual impacts	Plantation of adequate plants over the final cover of the landfill and maintain it	JSC	PDSU Manager	MEnA (EQA)	Review institutional arrangements

Table 9-15: Environmental monitoring matrix after landfill closure

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	
					Self (Internal)	Regulatory (External)
Impacts of landfill gas	Volume of collected landfill gas	Gas compression station	Gas flow meter	Continuous monitoring with monthly collection of records	Landfill laboratory	MEnA (EQA)
	CH ₄ , CO ₂ , NH ₃ , H ₂ S and VOCs in ambient air	Samples to be collected from the western border of the landfill	Active collection of samples and laboratory analysis	Annual	Landfill laboratory	MEnA (EQA)
	Acidity and hardness of	Monitoring wells	Pumping out samples	Annual	Landfill laboratory	MEnA (EQA)

	groundwater					
Impacts of leachate	Amount of collected and recycled leachate amounts	Leachate collection pond	Level measurement of the leachate pond and records of pumping station	Monthly	JSCM	ME nA (EQA)
	COD, BOD, pH, TDS, total N, total P, heavy metals, TPH of leachate	Leachate collection pond	Representative grab sampling and laboratory analysis	Quarterly for COD, BOD and pH and annually for the rest	Landfill laboratory	ME nA (EQA)
	COD, BOD, pH, TDS, total N, total P, heavy metals, TPH of groundwater	3 groundwater monitoring wells	Pumping from monitoring wells and laboratory analysis	Quarterly for COD, BOD and pH and annually for the rest	Landfill laboratory	ME nA (EQA)
	Amounts of collected sludge	Leachate collection pond	Records of sludge pump	Once upon de-sludging event	JSCM	ME nA (EQA)
Visual impacts	Green areas planted over the final cover	Landfill completed cells	Visual estimation of the green cover % of the completed cells	Annual	JSCM	ME nA (EQA)

Table 9-16: Social management plan matrix during the construction phase

Potential Impact	Proposed Mitigation Measures	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision
Inconvenience to local communities	Full adherence to the various environmental measures stated on the ESMP	Construction	Contractor	PDSU	Refer to relevant sections in the ESMP
	Establishing community-based monitoring committees (CBMC)	Pre-Construction	PDSU (SDO)	PDSU WB, MDLF, UNDP	MoMs CBMC reports
	Communicate information with local population	Construction	CBMC	PDSU (SDO)	Reports and other documentations
	Enforcing a clear complaints system	Construction	CBMC	PDSU (SDO)	Reports on actions taken to address complaints
	Restricting construction works during certain hours in the day	Construction	Contractor	PDSU	Site supervision
	Full restriction from access to the site	Construction	Contractor	PDSU	Site supervision
Impact on the livelihoods of the informal waste pickers	Short term mitigation measures				
	Scenario (A) The integration scenario				
	A-1 Transition Assistance	Pre-Construction	PDSU (SDO) in coordination with other relevant organizations	PDSU WB, UNDP, MDLF	Implementation of training Assessments of training Provision of cash and in kind assistance to PAPs
A-2 Provision	Operation	Municipalities,	PDSU (SDO)		

Potential Impact	Proposed Mitigation Measures	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision
	of Job opportunities		JSCs and other relevant operators		
Scenario (B) The non-integration scenario					
	B-1 Capacity development programmes in various areas outside SWM	Pre-Construction	DEEP, COOPI, MAAN, UNICEF, NGOs	PDSU (SDO)	Training reports Beneficiaries evaluation
	B-2 Facilitate access to micro-grants and sources of finance for improving livelihoods	Pre-Construction	UNDP (DEEP), COOPI, MAAN, UNICEF,	NGOs	Number of beneficiaries from micro-grants Outcome of the project on the family
Long Term and Strategic Mitigation measures					
	Assist informal sector groups in legalizing the conditions	Operation	PDSU (SDO) in coordination with the Labour Authority and other relevant organizations	PDSU (SDO)	Number of bonds/networks established
	Raising the profile of waste management	Operation	CBMC External Consultant	PDSU (SDO)	Awareness raising strategy prepared and implemented
Impacts of loss of privately owned land	Implementation of the prepared ARAP	Pre-Construction	PLA in cooperation with Rafah Municipality	PDSU (SDO)	Compensation documents
Impacts on cultural heritage	Monitoring of site excavations	Construction	Contractor	PDSU, municipalities, JSCs	Site supervision
	Immediate information sharing with concerned organizations in case of	Construction	Contractor	PDSU, municipalities, JSCs	Site supervision

Potential Impact	Proposed Mitigation Measures	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision
	finding information, signs or incidental finds				
	The provisions and terms of the Contract with the Contractor include a provision for dealing with this case.	Pre-Construction	Contractor	PDSU, municipalities, JSCs	Site supervision

Table 9-17: Social management plan matrix during the operation phase

Potential Impact	Proposed Mitigation Measures	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision
Changes in land use	Implementation of the prepared ARAP	Pre-Construction	PLA in cooperation with Rafah Municipality	PDSU (DSO)	Compensation documents
	Adherence to the other mitigation measures listed under various parts of the ESMP to ensure efficient site management	Construction and operation	Municipalities and JSC	PDSU	Site supervision reports
Traffic Impact	- For El Fukhary Landfill				
	Implementation for the project of	Not finally identified	This will be done as part of a separate project		

Potential Impact	Proposed Mitigation Measures	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision
	Rehabilitating Salah El Dein Road ⁷⁰				
	Restrict transport trucks travel to the hours outside the rush hours.	Operation	Landfill management	PDSU	Day to day supervision
	Strict monitoring to the road accidents as part of the monitoring plan	Operation	Landfill management in coordination with the Traffic Authority	PDSU (SDO)	Traffic Authority records
	Information sharing with the communities and establishments located by the road.	Operation	CBMC	PDSU (SDO)	Reports and other documentations
	Conduct monitoring survey to get the feedback of roads users and address any concerns	Operation	CBMC	PDSU (SDO)	Reports and other documentations
- For the Transfer Stations					
	Selecting appropriate model of waste transport vehicles	Pre-construction (design)	Municipalities and JSCs	PDSU	PDSU to participate in the selection of the collection vehicles
	Arrange the times of transporting waste to and from the TS to avoid traffic rush hours	Operation	TSs management in coordination with the Traffic Authority	PDSU	Field observations Community complaints
	Establishing CBMC	Pre-Construction	PDSU (SDO)	PDSU WB, UNDP	MoMs CBMC reports
	Conduct monitoring survey	Operation	CBMC	PDSU (SDO)	Surveys results

⁷⁰ This mitigation measure is relevant only to the southern section of the project since more stress on Salah El Dein road will result from the operation of Al Fukhary landfill and associated TSs

Potential Impact	Proposed Mitigation Measures	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision
	to get communities' feedback and address any concerns				Actions to address communities concerns
Higher cost to beneficiary communities particularly the poor	A) Short term measures				
	A-1 Municipalities and JSC to maintain the system of exempting/subsidizing poor families	Pre-Construction ⁷¹	Municipalities/JSC in coordination with various relevant institutions	PDSU (SDO)	Follow up with the various relevant institutions
	B) Strategic measures				
	Design plans to stimulate further economic instruments for SWM revenues	Pre-Construction ⁷²	External Consultant	PDSU (SDO)	Consultancy reports New financial instruments communicated and introduced
	C) Crosscutting measures				
	C-1 Awareness raising and building local communities' knowledge about issues related SWM	Operation	CBMC External Consultant	PDSU (SDO)	Awareness raising strategy prepared and implemented
C-2 Raising the profile of SWM including strengthening the recyclables market and encouraging community based initiative in segregation at source	Operation	CBMC External Consultant	PDSU (SDO)	Strategic plan developed (consultancy service) and actions enforced on various levels	
Depressing	Strict measures and	Constructio	Contractor	PDSU,	Site

⁷¹ Planning for this measure should start early before construction while the actual enforcement for the measure will be during project operation

⁷² Planning for this measure should start early before construction while the actual enforcement for the measure will be during project operation

Potential Impact	Proposed Mitigation Measures	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision
property values	best practices in managing the sites	n and operation		municipalities, JSCs	supervision
	Assist local communities in establishing community-based monitoring committees	Pre-Construction	PDSU (SDO)	Head of PDSU WB, UNDP	MoMs CBMC reports
	Community surveys and consultation to measure feedbacks about the sites management	Construction and operation	CBMC	PDSU (SDO)	Surveys results Actions to address communities concerns
Potential impact on the social and economic activities of the neighboring communities	Adherence to the other mitigation measures listed under various parts of the ESMP to ensure efficient site management	Construction and operation	Municipalities and JSC	PDSU	Site supervision reports
	Assist local communities in establishing community-based monitoring committees	Pre-Construction	PDSU (SDO)	Head of PDSU WB, UNDP	MoMs CBMC reports
	Community surveys and consultation to monitor the project impact on social and economic activities	Operation	CBMC	PDSU (SDO)	Surveys results Actions to address communities concerns