

Preface

Japan International Cooperation Agency (JICA) has been conducting the Preparatory Survey, Feasibility Study (F/S) on Greater Cairo Metro Line No.4. Towards on the completion of the F/S, both NAT and JICA agreed to conduct the Supplementary Survey (S/S) before conducting Basic Design Study which is subject to appraisal and approval of JICA ODA Loan Program.

Objective of the Supplementary Study is to review & update of Preliminary Design on Cairo Metro Line 4 Phase 1A & Phase 1B with consideration of following changes.

- Change of the power supply system to 3rd Rail from OHC
- Change of the HVS location
- Change & extension of Phase 1B route
- New station in Phase 1B section
- Change of station location in Phase 1A section
- Study on El-Malek El-Saleh St. for Phase 2 (eastern route) connection
- No connection with ENR line
- Study on Rolling Stock transportation plan
- To reduce the size and cost on station structure with consideration of disaster/emergency standards and regulation

Study contents for the Supplementary Survey are as follows;

- 1) Principle Components and Scale of the Project
- 2) Collection of Information/Data necessary for Basic Design for Phase 1 Section
- 3) Review and Update on Feasibility Study for Phase 1 Section
- 4) Environmental & Social Considerations for Phase 1 Section
- 5) Archeological Supplementary Study for Phase 1 Section
- 6) Project Implementation Plan & Project Cost Estimation
- 7) Preliminary Design Works for Basic Design

Supplementary Survey Report consists of summary report with six volumes as shown in the following table. **Present document is Supplementary Survey Report Volume 5, Environmental & Social Consideration and Archeological Assessment Study.**

Table Contents of Supplementary Survey Report

No.	Title	Code No.
1	Summary Report	SS-L4-SR
2	Vol. 1 Transportation & Station Development Plan	SS-L4-TS
3	Vol. 2 Emergency/Disaster Incident Management	SS-L4-ED
4	Vol. 3 Supplementary Study (Civil & Architectural Works)	SS-L4-CW
5	Vol. 4 Supplementary Study (E&M and Rolling Stock)	SS-L4-EM
6	Vol. 5 Environmental & Social Consideration and Archeological Assessment Study	SS-L4-EV
7	Vol. 6 Contract Package, Implementation Program, Project Cost and Economic & Financial Analysis	SS-L4-CT

Main feature and major changes from Feasibility Study are shown in table below.

Table Comparison on Main Feature (Changes) on Metro Line 4 Phase 1 Section

Item	Feasibility Study	Supplementary Study
Phase 1 Length	Approx. 16 km	Approx. 17 km
No. of Station (Under Ground) (Trench Section)	15 (14) (1)	16 (15) (1)
Location of GEM Station	Behind of GEM Area	Front of GEM Entrance
Traction Power Supply	Overhead Rigid Conductor 1500V DC	3rd Rail 750V DC
No. of Rectifier Substation	5	18
Tunnel Diameter (Outer)	6.8 m	6.4 m
Platform Length	170 m	ditto
Gauge	1435 mm	ditto
Train Composition	8 cars (20m car body length)	ditto
Platform Screen Door	Full Height	Half Height
Disaster Prevention	NFPA	Japanese Standard
Others		
Phase 2 Route	To El Sawah Sq.	To Nasr City
ENR Connection	Considered	Not Considered
HVS Location	Inside Workshop/Depot	New Location

**SUPPLEMENTARY SURVEY
FOR
JICA PREPARATORY SURVEY ON GREATER CAIRO METRO LINE NO.4**

**Environmental & Social Consideration and
Archaeological Assessment Study**

PREFACE

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CHAPTER 1 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

1.1 Introduction

The objectives of the Environmental Impact Assessment (EIA) for the Cairo Metro Line 4 (the project) are to examine the potential impacts during the construction and operation phase and to prepare appropriate mitigation measures for the expected adverse impacts, in order to avoid an unfavourable environmental and social situation. In the course of conducting the EIA, it is necessary to consider the Egyptian environmental regulations as well as the JICA Guidelines for Environmental and Social Considerations (April 2004) (hereinafter the old Guidelines), the JICA Guidelines for Environmental and Social Considerations (July 2010) (hereinafter the new Guidelines), and ex-JBIC Guidelines for Confirmation of Environment and Social Considerations (hereinafter the ex-JBIC) as donor policies.

During the Feasibility Study (F/S), the Initial Environmental Examination (IEE) and the EIA were conducted for the Phase 1. The EIA report was submitted to Egyptian Environmental Affairs Agency (EEAA) in March 2010 (hereinafter original EIA). The comments from EEAA to the original EIA report were obtained in April 2010, and the response to them was submitted in June 2010. As the result, approval for the original EIA was obtained in July 2010.

After the submission of F/S Report, major decisions have been made by NAT and several modifications and update are required. Toward the completion of the F/S, both NAT and JICA agreed to conduct the Supplementary Survey (S/S) before conducting Basic Design Study which is subject to appraisal and approval of JICA ODA Loan Program.

Objective of the S/S is to review & update of Preliminary Design on Cairo Metro Line 4 Phase 1A & Phase 1B with consideration of following major changes.

- To change and extend Phase 1B route
- To settle a new station in Phase 1B section
- To change the High Voltage Station (HVS) location
- To arrange the location of the stations in Phase 1A section
- To change the traction power supply system from Over Head Catenary system to 3rd rail system
- To minimize the size and the cost of the station structures according to the disaster/emergency policy and regulations

In this context, JICA Study Team carries out the addendum EIA of the Phase 1 in S/S stage.

1.2 The new Guidelines of JICA

According to the merger of JICA and JBIC, JICA revised its guidelines for environmental consideration at April 2010, which was enforced from July 2010. It is applied for a project whose application is made by a project proponent after 1st July 2010. Therefore this project is applied for the new Guideline.

The major requirements and the key points of the process of environmental and social examination in new Guidelines are not different from old JICA/ex JBIC Guidelines, and which have been fulfilled on the F/S and the original EIA report.

Main Points of the new Guideline relevant to this EIA are as following;

(1) Enhancing Information Disclosure

Environmental permit certifications, RAP (Resettlement Action Plans), IPP (Indigenous People Plans) and monitoring results, are newly added as information to be disclosed. JICA discloses the result of categorization on the website before making the decision to undertake preparatory surveys. For the category A projects (likely to have significant adverse impacts), JICA discloses a)final reports or equivalent documents of preparatory surveys, b)EIA reports (120 days prior to concluding agreement documents) and environmental permit certifications, c)RAP and IPP (if preparations are required) prior to environmental review.

Further, JICA discloses the results of environmental reviews after the agreement documents are concluded and also the results of monitoring subject to approval by project proponents, on the website.

(2) Enhancing involvement of Advisory Committee

Under the new guideline, Advisory Committee consists of external experts gives advice as needed mainly on the Category A projects, not only in preparatory surveys but also at the environmental review and monitoring stages.

(3) Strengthening the requirements for environmental review

The requirements for environmental and social considerations are strengthened. For example, in case of involuntary resettlement, prior compensation at full replacement cost must be provided as far as possible. When projects may have adverse impacts on indigenous people, effort must be made to obtain the consent of indigenous people in a process of "free, prior, and informed consultation". With such revision, the consistency with the World Bank's Safeguard Policies is increased.

1.3 Initial Environmental Examination

1.3.1 Screening and categorization of the project

Category A projects defined by the new Guidelines of JICA generally include i) vital sectors, such as transportation, having sensitive characteristics, or ii) projects located in/ around sensitive areas. Moreover, a project causing large-scale involuntary resettlement is classified under Category A project by the guidelines. Under this circumstance, there is a strong possibility that the project would be classified as a Category A project, since it belongs to the transportation sector, despite the low expected large-scale involuntary resettlement in the study area.

The subway projects are automatically defined as List C projects under the Egyptian EIA guidelines, considering their potential impact on the environment due to project type and scale.

Accordingly, the project needs to proceed into the official procedure for EIA approval prescribed in Egyptian legislation.

Although there is a minor changes at Phase 1A stations such as shrunk the cut-and-cover area and shifting two stations location slightly, as for the Phase 1B, route was changed & extended, and additional station is planned.

Therefore, an addendum of the EIA for Phase 1 is required in order to achieve the objectives under the Egyptian environmental legal framework.

Table 1-1 Outline of changing the project description/ Plan

Section	Change from Original EIA
Phase 1A	<p>The necessary areas of cut-and-cover for station construction will be minimized in Station No.2, No.3, No.4, No.5, No.6, No.7, No.8, No.9, No.10, No.11 and No.12, because the structural layout of these underground stations are changed, and then they will require only less areas compared with the original one.</p> <p>The areas of cut-and-cover for station construction will be extended at El Malek El Saleh (No.1) Station for the track arrangement.</p> <p>The locations of Stations No.10 and No.11 will be slightly shifted to the westward from the original locations. However, the areas for cut-and-cover of these 2 stations remain on the El Haram Street.</p>
Phase 1B	<p>One station (No.14) is planned additionally near the Remaya Apartment. Therefore, the total number of the stations in Phase 1 (A&B) will be 16.</p> <p>The route around the Grand Egyptian Museum (GEM) is changed from running backside of GEM to running front gate side of GEM.</p> <p>Station No.13 will be located in front of GEM.</p> <p>Station No.16 will be located the area along Road 7-7 where is in a desert.</p> <p>Basically, almost all the tunnel of Phase 1B will be constructed by Tunnel Boring Machine (TBM). The construction of a tunnel used by cut-and-cover method will be applied at the section of the western area located from Ring Road to the final station in a desert. The depot layout will be changed also.</p>

Source: JICA Study Team

1.3.2 Examination of potential environmental impact and scoping

The part of the project detail is changed from the original EIA, but sector, scale and area are not changed. Thus, potential impact is not changed from the examination result at the F/S.

1.4 Environmental Impact Assessment

1.4.1 Baseline of Environmental and Social Conditions

Modifications that had occurred to the design of the route of Metro line 4 Phase 1 are within the geographical boundaries as that of the original design. Therefore, the physical and biological baseline information as well as the field surveys conducted for the original EIA apply for the modified route including the area of extension.

As for the socio-economic environment, the newly located terminal station will be located in a vacant area within the borders of 6th October governorate, which was established by the presidential decree (114/2008), issued in April 2008. Before this period, 6th of October city was affiliated to Giza Governorate. Available information regarding the 6th October governorate is detailed under the socio-economic section below.

The following table shows basic socio economic information of 6th October Districts.

Table 1-2 Basic Socio-economic Information of 6th October Districts

Governorate and District/ Item	6th October City		
	Kism1 Dis.	Kism2 Dis.	Sheikh Zayed Dis.
Population	38,791	115,302	29,422
No. of Households	10,540	29,405	8,265
Ave. size of Household (person)	3.7	3.9	3.6
Illiteracy Rate (%)	7.9	12.0	8.1
Unemployment Rate (%)	7.5	7.2	3.2
No. of Business Establishments	2,356	4,488	601

Source: CAPMAS 2006

Other notes on socio-economic aspects are itemized below.

- The accessible rates to the public services such as potable water network, sanitation, electricity and natural gas are about 89.7%, 21.8%, 96.1% and 6.3%, respectively. These figures seem to be higher than national averages and Cairo Governorate, except for water and sanitation.
- The total governmental expenditure on health in 6th of October is included in Giza Governorate accounts, which is 4.88% of the total expenditure on health in Egypt.
- Industry is considered an important economic activity for the city. There are two main industrial areas which is the Industrial Area of Abou Rawash and 6th of October Industrial Zone. Both industrial areas are fully equipped with the infrastructure of roads, electricity supply and water supply.
- The illiteracy rate in 6th October city is 10% and 25% of the population are enrolled in university or obtained a university degree.

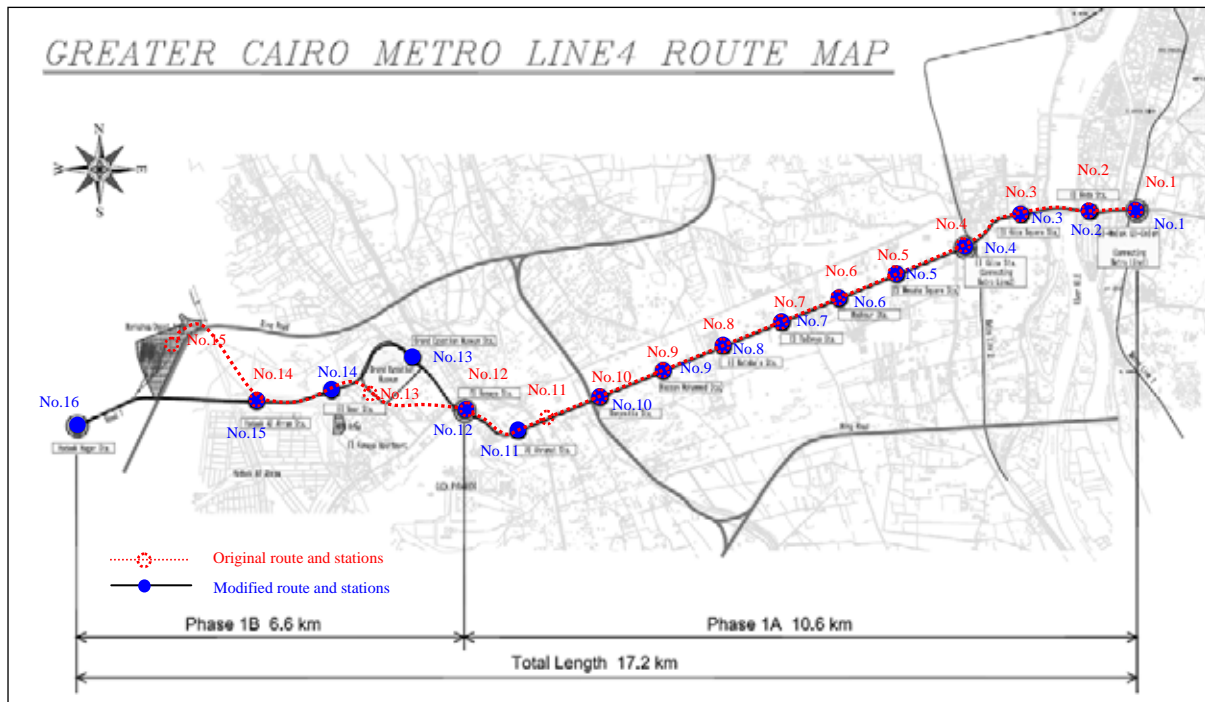
1.4.2 Impact Identification and Mitigation Measures Proposed

The following figure shows the original and modified Metro Line 4 phase 1 route.

Stations 1 to 10 and station 12 remained in the same location but the area of the cut and cover is extended or reduced 20-100 meters. These modifications are minor and will not be considered further in this addendum as their impacts have been already considered in the original EIA. As for

station 11, the station will be shifted 400 meters westwards in El Haram Street. However, the impacts of its construction and operation are similar to those described in the original EIA and will not be considered further in this addendum. There is not modification for Station No.15 which is settled the similar location with the previous Station No.14 in Hadaek Al Ahram, except the connecting direction to the Depot.

Therefore, the addendum EIA will assess the impacts associated with the construction and operation of stations 13, 14 and 16, according to the tunnel route modification and extension of the route, and relocation of the high voltage station.



Source: JICA Study Team

Figure 1-1 Original and Modified Metro Line 4 phase 1 route.

1.4.3 Impact Identification and Mitigation Measures Proposed

(1) Positive Impact

Establishment of stations, No.13, 14 and 16 have the following positive socio-economic impacts:

- Provision of public access to the Grand Egyptian Museum through metro line 4 will reduce traffic congestions that may occur due to use of cars and buses as a mode of access to the Museum.
- Improved access and mobility to and from the Remayah residential area which is currently inhabited but is poorly connected to public modes of transportation.
- Improved access to the 6th October governorate as it currently connected to the Greater Cairo region mainly with road networks.

(2) Impacts that are Not Applicable

The following impacts are not applicable due to the absence of the specific receptor at certain location or due to the absence of the exposure pathway between the activity and the receptor. These include:

- Impact on surface water and aquatic life are not applicable in the newly introduced stations as they are far from surface water bodies.
- The stations are located in an area devoid of biodiversity and thus there will be no negative impact from construction and operation activities of the depot on biological environment.
- The three new stations will be located in vacant spots of land and so there will be no loss of land or property.

(3) Assessment of Negative Impacts and Mitigation Measures

Impact identification due to implementing the project was conducted based on the analysis of the project characteristics and associated activities, as well as baseline information collected in the course of literature review and the original EIA report.

Following table shows the impact identified and mitigation measures proposed. Basically, the sector, scale, land use, modification of the project are not change from the original EIA, thus the Impact Identification and mitigation measures are the same as that mention in the original EIA.

Table 1-3 Impact Identification and Mitigation Measures

Type of Impact	Impact Identification	Mitigation Measures
Pre Construction Stage		
Utility Restoration	- The utilities such as power distribution and communication lines are possibly installed under the road. The construction works for tunnelling may damage these utilities.	- Coordinate with relevant authorities to get accurate maps and set procedures for utility diversion.
Land Compensation and Resettlement	- The magnitude of involuntary resettlement has been minimized as far as the stations' design and construction method will be applied as proposed in this study. - There is a possibility of the loss of land where land acquisition is unavoidable. - Station 16 and HVS locate vacant plot and no resettlement.	- Compensate for lost assets following Egyptian Laws and the new guidelines. - Carry out consultation and negotiations with potential project affected persons (PAPs) in order to reach satisfactory agreements on compensations or provided alternatives or relocation, and handling of grievance and monitoring systems.
Construction Stage		
Physical Environment	- Impacts associated with the construction of stations will mainly result from dust Emissions, Emissions, Noise, Construction Waste, Health and safety, accidents from vehicles & equipment, Soil erosion. - Impacts resulting from the above on the ambient air quality and ambient noise are considered minor, short term, local, direct and reversible as there are no	- Proper maintenance and regular checking of heavy equipment and vehicles for construction should be performed. - The construction of temporary physical noise barriers. The reduction in noise level increases with height of barrier. - The contractor will ensure efficient implementation of the solid waste management plan.

	sensitive receptors such as schools and hospitals around station 16.	
Socio-economic Environment	<ul style="list-style-type: none"> - Impacts on Disruption to Communities, Livelihood and Services, Public Health and Safety Measures, and Workplace Health and Safety Measures are considered moderate around stations 13 and 14 due to the presence of residential areas and hotels. - As for the high voltage station (HVS), it will be located in vacant plot that belongs to the Army and next to three high voltage lines. Impact is considered minor as the design will incorporate the required safety measures during its design, construction and operation. 	<ul style="list-style-type: none"> - Coordinating with the governorate and relevant authorities for providing sufficient pedestrian crossing points, planning for entrances and exits for services, timely management of activities, following traffic diversion plans and disseminating information on activity schedules - Surround the construction site with a safety fence to prevent unauthorized access to the site and hence accidents. - Design effective emergency response plans and fire fighting plans - Incorporate stringent HSE plans in contractors contracts and purchase adequate personal protective equipment
Man-Made Environment	<ul style="list-style-type: none"> - Traffic congestion is expected to become worse from the current conditions due to the temporary occupation of roads' width for 13 and 14 stations construction. 	<ul style="list-style-type: none"> - Coordination will be done with the traffic department of the Ministry of Interior to plan for the construction of each station. Measures include: - Temporary traffic lane acquisition to a minimum that does not affect traffic flow. Use temporary steel structures such as road decks or flyover to allow for vehicle movement within or above construction sites.
Operation Stage		
Physical Environment	<ul style="list-style-type: none"> - The main incremental impacts are the secondary impacts associated with the attraction of other modes of transportation to the new stations locations and the secondary development which is expected to develop around the terminal station. 	<ul style="list-style-type: none"> - Planning for parking areas for buses and cars near stations in-advance with relevant authorities (Ministry of Interior, Governorate, etc) will reduce impacts associated with the attraction of other modes of transportation to the new stations locations. - Moreover, land use planning is crucial at the terminal station to reduce the secondary impacts due to uncontrolled land use change likely caused by attracting the secondary development. Coordination with related agencies and local authorities will be made to reduce the secondary impact.
Socio-economic Environment	<ul style="list-style-type: none"> - Impact on workers' health and safety is short term, direct, temporary but may result in reversible or irreversible effects such as in the case of accidents. 	<ul style="list-style-type: none"> - Monitor of indoor air and noise quality related to Occupational Health and safety will be done on frequent basis to record levels of humidity and heat stresses at work place environment.
Man-made Environment	<ul style="list-style-type: none"> - There is a possibility that the presence of unplanned and informal public transportation such as minibuses and taxis, located in front of metro stations, blocking the traffic flow in the surrounding streets. 	<ul style="list-style-type: none"> - ECM will coordinate with traffic departments on the Ministry of Interior to ensure traffic flow at station areas.

Source: JICA Study Team

1.4.4 Direction of Environmental Monitoring

After examining the impact identification and mitigation measures based on the modification route, the components of the Environmental Management Plan (EMP) of the addendum EIA are same as the original EIA. Following table shows the summary of monitoring items and directions proposed in the original EIA. Detailed plan of environmental monitoring is proposed in the original EIA report prepared separately, including the parameters, methods, frequency, locations, institutional arrangement, etc.

Table 1-4 Monitoring Items and Directions Proposed (Phase1)

Items	Directions
Resettlement and Land Acquisition	- Monitoring of the level of restoring the livelihood and other impacts through comparison with the socio-economic information of PAPs to be obtained in census and surveys in the project design stage.
Air Quality	- Periodic monitoring at major construction sites especially for stations during construction stage. - Monitoring of the secondary impacts likely caused by transportation modes routing the new stations at identified hot spots during O&M stage.
Noise and Vibrations	- Periodic monitoring at the major construction sites especially for stations during construction stage. - Monitoring of the secondary impacts likely caused by transportation modes routing the new stations at identified hot spots during O&M stage.
Groundwater	- Regular monitoring of groundwater level and quality at the existing wells near the project route during construction stage. - Regular monitoring of groundwater level to ensure a minimal impact and equilibrium during O&M stage.
Waste Management	- Monitoring and recording of construction waste stream during the construction stage. - Monitoring and recording of utilization/control of oils and other chemicals if any, during construction stage.
Traffic Condition	- Observation of traffic conditions in and around the construction sites to be ready for necessary actions in case of identifying significance during construction stage. - Observation of traffic conditions in and around the new stations to be ready for necessary coordination with related authorities during O&M stage.
Sanitation and Health Hazard Risk	- Observation of sanitary conditions at the construction sites as well as workers camps during construction stage. - Recording of health checks of workers as well as risk response to health hazard during construction stage, if any.
Other Miscellaneous Items	- Observation of significance of land use change in the vicinity of new stations to be ready for necessary coordination with related authorities during O&M stage. - Monitoring and recording of occupational health and safety conditions of workers in the metro operating company according to legislative requirements of Egypt. - Monitoring and recording of public health and safety conditions of passengers of the metro according to the legislative requirements of Egypt.

Source: JICA Study Team

1.4.5 Interagency Coordination and Public Consultation

As the planned modification and extension to Metro Line 4 Phase 1 are within the same geographical context as the original EIA, there was no need to conduct further public consultations or interagency coordination according to Egyptian regulations. Two types stakeholder meeting have been held in the original EIA.

- The 1st meeting at scoping stage has been done from June to August 2009. This meeting was Individual meeting with key stakeholders.
- The 2nd meeting at disclosure stage has been done at 28th December 2009. This meeting was town meeting style.

CHAPTER 2 RESETTLEMENT ACTION PLAN FRAMEWORK STUDY

2.1 Introduction

The purpose of the Resettlement Action Policy Framework (RPF) study was to be examined and utilized it by NAT as a basis for resettlement and land acquisition to be conducted. The RPF study was conducted for Phase 1 and Phase 2 (northern route) of the Greater Cairo Metro Line 4 (the Project) at the time of Feasibility Study (FS) by reflecting regional conditions which were studied through site reconnaissance and a socio-economic interview survey, and by considering donor policies such as JICA Guidelines for Environmental and Social Considerations (April 2002) (hereafter old JICA guidelines), JBIC Guidelines for Confirmation of Environmental and Social Considerations (hereafter ex-JBIC guidelines) and World Bank Operational Policies 4.12 Involuntary Resettlement (OP 4.12).

The study level of the Project between Phase 1 and Phase 2 (northern route) was different such as preliminary design at the Phase 1 and outline design at the Phase 2 (northern route). Therefore, project implementation schedule differed between the 2 phases, and the RPF study was conducted in different levels accordingly, as indicated below:

- Detailed examination of potential impact due to land acquisition and resettlement in Phase 1
- Preliminary examination of potential impact due to land acquisition and resettlement in Phase 2 (northern route)
- Examination of policy for compensation in Phase 1 and Phase 2 (northern route)

According to revision of organizational structure in JICA, JICA revised its old JICA Guidelines at April 2010, which was enforced from July 2010. Thus, it is applied for a project whose application is made by a project proponent after 1st July 2010. In addition to such condition, realization of the Project at Phase 1 is expected to be soon. Then, RPF studied in the FS is necessary to be reviewed and revised, and it is updated only for the Phase 1 by referring previous experience of NAT in order to prepare the practical policy for NAT as well as satisfactory level at the donor policies. The revised RPF is separately prepared, and this chapter is the extraction from the revised RPF.

2.2 Legislative System on Resettlement in Egypt

2.2.1 Fundamental Laws and Regulations on Land Acquisition and Resettlement

Although the fundamental laws and regulations on land acquisition and resettlement are not changed from the time of FS, additional regulation of the Social Insurance Law (Law No. 79/1975) is necessary to be considered since it stipulates indemnity to unemployed people.

2.2.2 Procedure for Land Acquisition and Resettlement

The fundamental law on land acquisition and resettlement is the Law No. 10/1990 concerning the Expropriation of Real Estates for Public Interest. The law defines the public interests and the procedure of land acquisition and resettlement regarding public interests. According to the law, the general procedure of land acquisition and resettlement is defined below.

(1) General Procedure

Several governmental bodies are involved in land acquisition or resettlement. An assessment committee plays the key role in land acquisition and resettlement under the supervision of the Egyptian General Survey Authority (EGSA). An assessment committee is established in each governorate by the decree of the Minister of Water Resources and Irrigation, and membership is changed every two years.

1) Preparation for Issuing a Prime Minister Decree of Land Acquisition due to Public Interest

A project proponent requests a governorate preparation of issuing a Prime Minister Decree of Land Acquisition. A governorate conducts a survey for confirmation of property loss and for estimation of compensation amount. A governorate requests Prime Minister to issue a decree of land acquisition based on the survey result. Compensation amount estimated by the survey is deposited to governorate or governorate office of Egyptian General Survey Authority (EGSA).

2) Issuing a Decree of Land Acquisition due to Public Interest

Prime Minister decree of land acquisition due to public interest is issued with a memorandum covering the project description and necessary area for land acquisition. Such decree is announced at headquarters of a governorate office and first instance court in the jurisdiction area where land acquisition is conducted.

3) Property Assessment

An owner of a property to be acquired is informed by an official letter and requested to attend assessment of a property. An assessment committee consisted of an administrative officer and financial officer in a governorate and an officer from a project proponent identifies properties affected by a project, and confirms the location and legal status of affected properties with a property owner. The survey result is disclosed at the governorate and municipality office, and it is also informed to a property owner with an official letter.

Compensation amount is calculated according to the price prevailing at the time of assessment by another committee consisted of a delegate from regional office of EGSA as the leader of assessment committee, department of agriculture in a governorate, department of housing and utilities in a governorate, and department of real estate taxes in a governorate. As the result of compensation calculation, a project proponent deposit necessary amount.

4) Disclosure of the Assessment Result

The assessment result (i.e., surface area, location, owner name, compensation evaluation) is disclosed at the governorate office of EGSA and governorate office for one month. A property owner is informed the assessment result by an official letter. In addition, a project description, and period and place of disclosure about assessment result are announced at Egyptian Gazette, official journal and two daily newspapers for one week.

5) Ownership Transfer

If there is no grievance, a property ownership is transferred by signing on a document.

6) Grievance Redress

The Egyptian legal framework ensures two steps of grievance redress. First step of grievance is property ownership. A property owner is entitled grievance to information about property such as legal status for one month after its announcement, and a project proponent or governorate office is the contact window of such grievance. The second step of grievance is evaluation of compensation amount. Both of a property owner and a project proponent are entitled grievance to assessment result at the first instance court in a governorate where acquisition will be conducted.

(2) Land Acquisition and Resettlement in Cairo and Giza Governorate

By referring the available documents and interview to relevant authorities such as EGSA, Cairo and Giza governorates on previous experience of land acquisition in public interest, the following actual procedure was found.

1) Cairo Governorate

Cairo governorate is the only governorate which has a function to conduct a survey by itself before Prime Minister Decree issued. Land acquisition and resettlement at Metro Line No. 3 locating in Cairo governorate was conducted with the procedure shown below.

A project proponent requests Cairo governorate to prepare issuing Prime Minister Decree. A project proponent provides a map with necessary information such as land acquisition area. Based on the provided map, the Land Propitiation Department in Cairo governorate conducts a desk study to confirm information such as necessary land acquisition area, building number, owner's name and legal status by available data. After desk study, field survey to confirm the result of desk study is conducted. By compiling study data on land acquisition, Cairo governorate requests to issue a Prime Minister Decree on land acquisition for public interests. After a Prime Minister decree is issued, the procedure defined in the Law No. 10/1990 is applied.

Grievance is treated according to the law No. 10/1990.

2) Giza Governorate

In the case of land acquisition and resettlement in Giza governorate, the assessment committee and Giza governorate are the responsible executer. In this framework of land acquisition and resettlement, Giza governorate is in the position of supervision for the entire procedure. This is the procedure defined from collected information.

A project proponent requests Giza governorate to prepare issuing Prime Minister Decree by providing a map with necessary land acquisition area. The Public Property Department in Giza governorate holds a hearing to the interior committee¹ about a project. If there is an objection, the Public Property Department solves it. Then, the Public Property Department requests the governorate office of EGSA to conduct the initial survey. The general department for census in the governorate office of EGSA confirms area for land acquisition and the general department for evaluation in the governorate office of EGSA calculates compensation amount. The initial survey result is compiled into a report and submitted to a project proponent. A project proponent deposit necessary amount, and Giza governorate requests to issue Prime Minister decree. After that, the procedure defined in the Law No. 10/1990 is applied.

¹ This is the committee composed of delegates from communities in Giza governorate.

Since Giza governorate namely the Public Property Department is in a position to supervise the procedure of land acquisition and resettlement, it also takes care of grievance from public.

2.2.3 Consistency with JICA Guidelines

(1) Requirement of the Guidelines

In the case of an ODA loan project, the following items are requested in the JICA Guidelines to borrowers:

- Effective measures to minimize impact and compensate for losses must be agreed upon with the people who will be affected if involuntary resettlement is inevitable.
- People who will be resettled involuntarily and people whose means of livelihood will be affected must be sufficiently compensated in a timely manner at full replacement cost as much as possible.
- Project proponents must make efforts to enable the people affected by the project, improve their standard of living, income opportunities and production levels, or at least restore them to status prior to the project.
- Appropriate participation by the community affected must be promoted in planning, implementation and monitoring of involuntary resettlement plans and measures against the loss of their means of livelihood.
- Resettlement action plans must be prepared and made available to the public for the projects that will result in large-scale involuntary resettlement. In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance.

(2) Comparison and Verification between Egyptian System and Guidelines

1) Experience of Donor Funding Project

It was observed from examination of the previous experience of donor funding projects in Egypt that there was no actual operational policy on resettlement in donor-funded projects in Egypt so far though RPF reports were prepared at some projects by considering donor policies.

In the case of Metro Line No. 1 to No. 3, it was observed from interview to NAT that land acquisition and resettlement was conducted according to Egyptian regulation. Thus, it is said that the Project is the first experience for NAT to conduct land acquisition and resettlement by considering donor policies.

2) Policy Gap between Egyptian System and Guidelines

Table 2-1 identifies gap between JICA Guidelines and Egyptian regulations regarding land acquisition and resettlement.

Table 2-1 Gap between JICA Guidelines and Egyptian Regulations

	Item	JICA Policy	Egyptian Regulation	Egyptian Operational Experience	Gap between JICA Policy and Egyptian Regulations
1	Support for socially vulnerable people	“Appropriate consideration must be given to vulnerable social groups, such as women, children, the elderly, the poor, and ethnic minorities.” (JICA GL p29)	There is no official definition as well as category of socially vulnerable people. Thus, there is no description in legal description.	Regarding restoration of livelihood, there is no record in previous NAT projects to provide supports individually to socially vulnerable people.	There is not special measure to support socially vulnerable people in order to rehabilitate their livelihood in Egyptian legal framework and operational practice.
2	Assistance for restoration and improvement of living standard	“Host countries must make efforts to enable people affected by projects and to improve their standard of living, income opportunities, and production levels or at least restore these to pre-project level”. (JICA GL p30)	There is no legal description.	Assistance by NAT is basically to physical properties such as providing substitute residence that is equal or better quality than the pre-project level to non legal title holders, or assistance for shops in order to resume their business including registration since target of land acquisition was basically residential area or small scale shops so far.	Gap between JICA policy and Egyptian regulation is assistance to restore or improve living standard. However in the practical operation in previous NAT projects, NAT provided assistance to resume business or restore livelihood by providing adequate properties and necessary cash assistance. Thus, there is no significant gap between JICA policy and Egyptian actual operation.
3	Assistance for loss of business and income	“Host countries must make efforts to enable people affected by projects and to improve their standard of living, income opportunities, and production levels or at least restore these to pre-project level”. (p30)	Any person affected by some activities/actions will be compensated to his/her loss.	<ul style="list-style-type: none"> - Compensation to business owners included assistance for loss of business and income practically. - NAT provided cash assistance for temporal income loss caused by project implementation if shop submitted necessary evidence. 	Gap between JICA policy and Egyptian regulation is assistance for loss of business and income. However in the practical operation, NAT assisted for business and income loss to business owners. PAPs those who were employees were not especially supported in the previous NAT projects, which is necessary to be considered in the Project.
4	Compensation based on	“Prior compensation, at full	Compensation amount for land	It was found from interview to	Compensation by considering

	Item	JICA Policy	Egyptian Regulation	Egyptian Operational Experience	Gap between JICA Policy and Egyptian Regulations
	full replacement cost	replacement cost, must be provided as much as possible.” (p30)	and structures is calculated based on the market value.	relevant authorities that compensation was calculated based on the current market value and depreciation was considered ² . Registration fee and moving were included in the compensation amount.	depreciation is the gap.
5	Eligibility of non-title holders	Illegal occupants are to be provided resettlement assistance. “People to be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by the project proponents, etc. in timely manner.” (JICA GL p30)	Although there is no description about assistance to illegal occupants, illegal occupants are not compensated to their properties ³ .	Occupants were compensated if they provide the necessary documents to prove their occupancy.	Assistance to non-title holder is the gap.
6	Public participation into planning and implementation of resettlement plan	“Appropriate participation by the people affected and their communities must be promoted in planning, implementation and monitoring of involuntary resettlement plans and measures against the loss of their means of livelihood”. (JICA GL p30)	Property owners whose properties will be taken are requested to attend identification of property. However, there is no description of participation of PAPs into preparation and implementation and monitoring of resettlement plan since Egyptian regulation does not request to prepare resettlement plan.	Same as the Egyptian Regulation.	Participation of PAPs at the early stage of project design is the gap.
7	Grievance redress	“Appropriate and accessible	- The Law No. 10/1990	- Cairo governorate	Gap between JICA policy and

² Confirmation whether depreciation is considered or not in the previous project is impossible from the available data since breakdown or calculation method of compensation amount is not disclosed.

³ Generally, illegal occupation is not expected in urban area since any structures are requested to obtain construction permission from governorate.

	Item	JICA Policy	Egyptian Regulation	Egyptian Operational Experience	Gap between JICA Policy and Egyptian Regulations
	mechanism	grievance mechanisms must be established for the affected people and their communities. (JICA GL p30)	ensures grievance mechanism at the limited period during confirmation of ownership and assessment evaluation in the land acquisition procedure. Complains after compensation payment or completion of resettlement is handed by court according to Civil Law.	Legal Dept. in Cairo governorate was usually contact window to receive complains. After receiving complains, such complains were handled according to the Law No. 10/1990. - Giza governorate Public Property Dept. handled complains on land acquisition and compensation as a part of supervision task ⁴ . - EGSA Complain on land acquisition and compensation was handled according to the Law No. 10/1990.	Egyptian regulations is whether one comprehensive contact window at an entire project period (requirement in JICA policy) or a few periodic contact windows at each stage during project period (Egyptian regulations).
8	Monitoring	“Appropriate follow-up plans and systems, such as monitoring plans and environmental management plans, must be prepared; and costs of implementing such plans and systems, and financial methods to fund such costs, must be determined.” (JICA Guideline, p13~14)	There is no description about monitoring	- Cairo governorate Compensation payment was monitored by NAT with the report from Cairo governorate in Metro Line No.3. - Giza Governorate Public Property Dept. in Giza governorate supervised land acquisition and compensation payment procedure prior to operation. - EGSA EGSA reported compensation payment to a project proponent at each stage.	Comprehensive monitoring system for follow-up PAPs in the current Egyptian legal framework is not yet established, which is the gap.

⁴ It was found from the interview to Public Property Dept. in Giza governorate that the department supervised the works from the initial survey to compensation payment (i.e., after transferring land ownership to a project proponent) conducted by the regional office of EGSA.

	Item	JICA Policy	Egyptian Regulation	Egyptian Operational Experience	Gap between JICA Policy and Egyptian Regulations
				Social environmental factor such as rehabilitation of livelihood was not monitored.	

Source: JICA Guidelines

2.3 Baseline Information of Social Conditions

The baseline information of social condition at the study area is not changed since there is no modification of the study area despite of minor modification of station location.

2.4 Policy and Framework of Resettlement for the Project

2.4.1 Basic Policy

Considering donor policies such as JICA Guidelines, OP 4.12, Egyptian regulations and practical operations, the policies of land acquisition and involuntary resettlement to be applied for the Project are described as follows.

- Land and property acquisition shall be avoided or minimized as much as possible by examining all possible alternatives from engineering as well as environmental and social viewpoints.
- PAPs shall be meaningfully consulted in appropriate timing in order to reflect their opinions and preferences on resettlement plans and options, whereby their participation for planning and implementing of resettlement plan shall be promoted.
- Compensation shall be provided in timely manner based on the agreement with PAPs, and will be completed before the date of evacuation.
- Compensation on loss of assets shall be provided with replacement cost in order to compensate for their livelihoods, standards of living, or income opportunities, or at least to restore them to their pre-project levels.
- All PAPs living, working, doing business in the project area at the time of cut-off date⁵ will have entitlement of compensation and/or assistance.
- All affected people will be eligible for compensation and rehabilitation assistance, irrespective of tenure status.
- Necessary institutional arrangement shall be ensured for preparation and implementation of resettlement in timely manner.
- Adequate financial arrangement shall be ensured and enforced within the time frame to cover the cost of land acquisition, resettlement, and rehabilitation.
- Appropriate mechanisms for monitoring, reporting, and evaluation shall be developed and ensured within the resettlement management system.
- Appropriate mechanism for grievance shall be established.

2.4.2 Eligibility and Entitlement

(1) Eligibility

According to JICA Guidelines and OP 4.12, two sets of criterion are used to define eligibility. The first is the cut-off date. Persons identified within the census survey are eligible for compensation on their loss of properties and/or assistance for livelihood stabilization. On the other hand, persons who encroached on the project area after the cut-off date are not eligible for any compensation. The second is the legal status of property.

⁵ Cut-off date is generally the date when detailed assessment census begins, according to OP4.12.

Under Egyptian regulations and Prime Minister decrees issued in the previous metro projects, the property owners and occupants were entitled to be compensated if they provide the necessary documents to prove their occupancy⁶.

For the Project, compensation and assistance are defined below.

Compensation: Money or payment in kind to which the PAPs with legal title of the property affected and occupants with necessary documents mentioned in the footnote No.4 are entitled in order to replace their lost asset, resource or income.

Assistance: Financial or technical support in kind to which the PAPs not entitled for compensation under the Egyptian regulations such as the poor and employees have a right in order to restore their livelihood

Considering the donor policies and the Egyptian practice, the following eligibility is proposed for the Project.

I. Compensation under Egyptian Regulations and Custom

i) Household or Individual (Property Owners and Occupants/Tenants)

Those who are identified at the time of cut-off date and meet the following conditions.

- a) Those who have legal rights to land and/or property (including customary and traditional rights recognized under the laws of the country)
- b) Those who are regarded as occupants, or tenants by providing necessary documents under Egyptian regulation and custom
- c) Those who do not have recognizable legal right or claim they are occupying at the time of cut-off date

ii) Business Owners

Those who are identified at the time of cut-off date and meet the following conditions.

- a) Those who have business licence (including customary and traditional rights recognized under the laws of the country)
- b) Those who have no recognizable legal license of business despite of its tenure status

II. Assistance (Compensation under Responsibility of NAT)

Those who are identified at the time of cut-off date, and meet the following conditions.

- a) Those who are under the poverty line and identified as PAPs;
- b) Those who are employees/hired workers and identified as PAPs

(2) Entitlement

The entitlement for compensation and assistance of livelihood stabilization shall be defined according to Egyptian regulations in compliance with donors' policies. Entitlement shall be

⁶ One of the documents from; i) certified contract, ii) initial contract, iii) invoice for water, gas or power supply, iv) license for commercial activity, v) tax certificate for commercial activity, or vi) ID card, are necessary to be provided.

categorized based on the proposed eligibility to the loss of; i) affected land, ii) affected houses, structures, and other establishments, and iii) affected income sources, and type of loss as follows.

I. Compensation

I-1. Compensation for Property Loss

1) Land Loss

Project affected land users, households and individuals defined in the 1-I-i)-a) in Eligibility shall be compensated as follows;

a) Permanent Loss

- Allocation of land with equivalent value and same use purposes, OR
- Cash compensation for acquired land at full replacement cost.

2) House, Structure, and Other Establishment Loss (Property owners with legal rights or a claim):

Project affected households and individuals defined in the (1)-I-i)-a) in Eligibility shall be compensated as follows;

a) Permanent Loss

- Cash compensation for acquired properties at full replacement cost, OR
- Allocation of equivalent value of property with equivalent social convenience, OR
- Cash compensation at full replacement cost for the partially affected part in case repair is appropriate

3) House, Structure, and Other Establishment Loss (Occupants/Tenants):

Project affected households and individuals defined in the (1)-I-i)-b) in Eligibility shall be compensated as follows;

a) Permanent Loss

- Allocation of equivalent value of property with equivalent social convenience, OR
- Cash assistance according to evaluation by the assessment committee including adequate cost for finding new living place

b) Temporal Loss⁷

- Providing allowance of moving and administration for a temporal substitute residence

⁷ Temporal loss means the loss caused by the construction activities, i.e., residence or shops is very close to the construction activity and has some risks for daily life or running business, which is compensated by NAT. Regarding temporal loss such as temporal land acquisition for construction yard or construction camp, compensation shall be done by the contractor by full replacement cost or returning the temporally acquired land at the same condition of pre-project. Such condition shall be described as the obligation of the contractor in the construction contract.

4) Households for House, Structure, and Other Establishment Loss:

Project affected households and individuals defined in the (1)-I-i)-c) in Eligibility if such persons are identified at population census shall be compensated as follows⁸;

a) Permanent and Temporal Loss

- Cash assistance at full replacement cost to property affected excluding land, AND
- Assistance for obtaining legal title

5) Compensation for Public Properties

Hospital and the public company in Station 1, bus terminal (or bus pool) in Station 4, parking and green area in Station 14 are regarded as public property. The public property will be acquired through transferring ownership between relevant ministries. In case structure is demolished, necessary facility will be provided as necessary based on discussion between relevant ministries not to prevent production activities.

6) Social Service

Orphanage in Station 1 is regarded as social service in this report, which shall be compensated with the followings;

- Orphanage affected partially shall be relocated and renewed in the same site or another site with same condition and convenience

I-2. Compensation for Income Loss

1) Business Owners:

Business owners defined at the eligibility in the (1)-I-ii) in Eligibility shall be compensated income loss;

a) Permanent Loss

- Providing equivalent place and property to resume business with appropriate amount of income loss, moving fee, administration cost OR
- Cash compensation for decoration of property including appropriate amount of income loss, moving fee, administration cost, necessary amount to find new business place

b) Temporal Loss

- Cash compensation for income loss during actual evacuation period which is defined by NAT

2) Street Stalls

There are three categories for street stalls such as kiosk (a shop with licensed immovable establishment), licensed booth (a licensed immovable establishment despite of less quality than less than a kiosk), and unlicensed booth. Compensation for them is proposed as follows.

⁸ At the urban area, the possibility of illegal residence/occupants is very low since structure construction requests construction permission and the governorate has a right to demolish an illegal structure by force. Under such situation, compensation for illegal residents will be limited only for the person who does not have any conflict with a land owner in case of a private land or those who do not have any claim/conflict for their illegal occupation from relevant authorities in case of public land.

- Providing equivalent land and moving properties if there is available land, OR
- Cash compensation of appropriate amount to income loss, moving fee, administration cost

II. Assistance

1) Very Poor

In the course of site reconnaissance, habitation of very poor was not confirmed. However, those who are less than poverty line will be provided the following assistance in addition to compensation for property loss described in I-1-1) to 3) if such persons are identified as PAPs at the time of socio-economic survey⁹;

- Support to provide a job in a project including a job training for it, AND
- Support of assistance from Ministry of Social Insurance

2) Employees and Hired Workers:

Employees and hired labors whose job will be affected shall be assisted in order to stabilize their livelihood.

a) Permanent Loss

- Support to provide a job in a project including job training for it, OR
- Support to secure a new job by cooperating relevant ministries, AND
- Providing cash assistance of the equivalent salary to the remaining employment contract period

b) Temporal Loss

- Cash assistance for income loss during actual evacuation period

⁹ Socio-economic survey will be conducted together with population census and asset inventory after completion of BD and Prime Minister Decree issued.

2.4.3 Institutional and Organizational Arrangement

(1) Responsibility at Authorities Concerned

Regarding agencies concerned for land acquisition and compensation, it is defined that NAT has the overall responsibility for land acquisition and compensation for the Project as the project executer. Relevant governorates such as Cairo and Giza governorates, assessment committee and EGSA are the responsible executers of land acquisition and compensation for the Project within the Egyptian legal framework. With respect to compensation/ assistance beyond the Egyptian legal framework, NAT has a responsibility to conduct as shown in Table 2-2.

Table 2-2 Outline of Responsibility at Authority Concerned

Agency	Responsibility
NAT	<ul style="list-style-type: none"> • Overall responsible agency for land acquisition and compensation of the Project • Preparation of necessary budget for land acquisition and compensation • Responsible executer to conduct compensation/ assistant which is not defined within the Egyptian legal framework such as income loss, livelihood stabilization and socially vulnerable people
Assessment Committee and Cairo Governorate	Responsible executer to conduct land acquisition and compensation/assistant payment at Cairo governorate within Egyptian legal framework
Assessment Committee and Giza Governorate	Responsible executer to conduct land acquisition and compensation/assistant payment at Giza governorate within Egyptian legal framework

Source: JICA Study Team

(2) Organizational Structure at Authorities Concerned

1) NAT

NAT has an overall responsibility for land acquisition and resettlement as the project proponent, and has established horizontal committee, namely environmental committee, to deal with environmental and social consideration for the Project during FS and SS period. The committee composed of all departments in NAT; Civil Department (CWD), Electric and Mechanical Department (EMD), Study Department, Financial and Administration Department, Planning, Legal and Real Estate Department. The main duties of the committee are outlined as follows¹⁰.

- Follow-up EIA and RPF study
- Follow-up decision of land acquisition caused by the Project
- Coordinate with relevant authorities
- Follow-up resettlement procedure
- Follow-up resettlement grievance and find solution
- Coordinate in resettlement

In addition to the above main duties, environmental unit will have responsibility for socio-economic survey and monitoring of the Project.

As of middle of October 2010, it is found from interview to NAT officers that a new department namely, Environment Department, to deal with environmental and social issues proposed at EIA

¹⁰ The duties mentioned are for the environmental committee, and there is not specific job description for each member.

report is in the process to establish. Since it is under establishment, there is not fixed information about functional description, job description and staff number at this moment. However, it is said that the department takes over duties of environmental committee including land acquisition and resettlement once established, and the environmental committee has duties mentioned until the department established.

2) Assessment Committee

Each governorate has a permanent committee composed of assessment for property loss with the member of administrative officer and financial officer in a governorate, and assessment for compensation evaluation headed by the officer from EGSA governorate office and the members from directorate of agriculture in a governorate, directorate of housing and utilities in a governorate, and directorate of real estate taxes in a governorate, according to the decree of the Minister of Water Resources and Irrigation as described in 2.2.2. Main duties of assessment for property loss are i) confirmation of property ownership, ii) confirmation of property size, and iii) assessment property loss. The main duties of assessment for compensation evaluation are; i) reviewing the survey result conducted before Prime Minister decree issued, ii) assessment compensation amount, iii) payment assessment amount, and iv) conducting land acquisition and resettlement. Assessment committee plays the key role of land acquisition and resettlement, and is independent body since it is established under the decree issued by Ministry of Water Resources and Irrigation.

In addition, there is a project-wise temporal assessment committee which is established by the governor's decree and has responsibility to evaluate compensation for occupants. This committee is headed by a head of an affected district in a governorate, and has a member from officers from governorates and a project proponent.

3) EGSA

EGSA is composed of headquarter and five regional offices. Under regional offices, there are governorate offices at each governorate. EGSA headquarter has a responsibility to supervise land acquisition and resettlement in Egypt, and governorate offices are in the position of the leader of assessment committee for compensation. Detailed information such as organization structure is under confirmation as of middle of October 2010¹¹.

4) Cairo Governorate

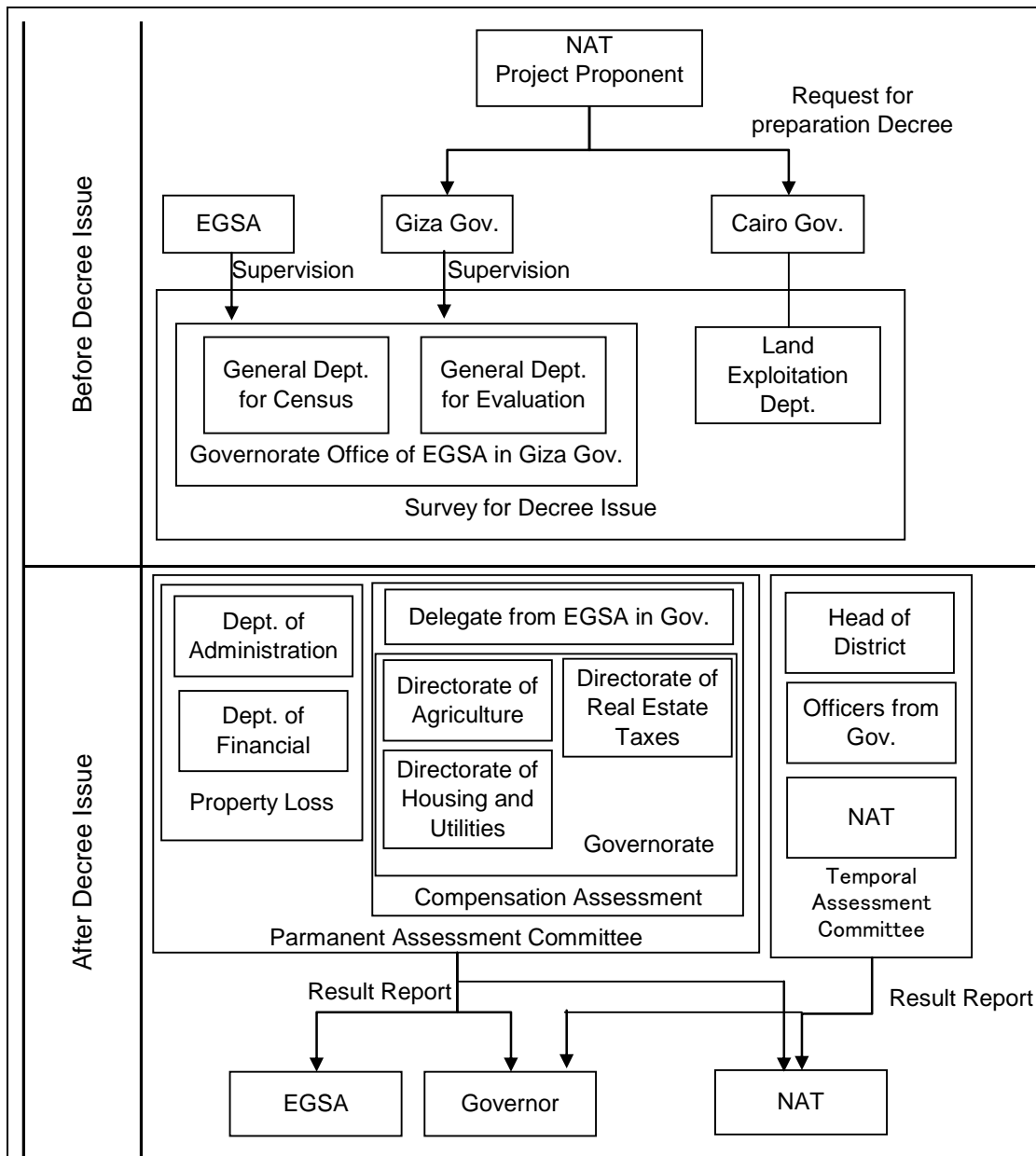
Cairo governorate has a department namely Land Exploitation Department to study land acquisition and resettlement before issuing Prime Minister Decree. Detailed information about the department such as organization structure is under confirmation as of middle of October 2010.

5) Giza Governorate

Giza governorate has a department namely Public Property Department to supervise land acquisition and resettlement. Detailed information about the department such as organization structure is under confirmation as of middle of October 2010.

¹¹ Once information under confirmation to relevant authorities is obtained, NAT will update revised RPF by including such information and submits the updated RPF to JICA.

Organization structure for assessment before and after Prime Minister Decree issue is summarized in Figure 2-1.



Source: JICA Study Team

Figure 2-1 Organization Structure for Property/Compensation Assessment

Table 2-3 Entitlement Matrix

Type of Loss/Impact	Application	Loss Type	Entitled Person	Compensation/Assistance	Compensation Policy	Responsible Executer ¹²
1. Loss of Land						
1.1 Permanent loss of land	Households and individuals whose land will be acquired.	Permanent Loss	Land owners with legal title	Compensation	a) Allocation of land with equivalent value and same use purposes, OR b) Cash compensation for acquired land at full replacement cost	a)-b) Permanent Assessment Committee, Governorates and NAT
2. Loss of Houses, Structures and Other Establishments for Property Owners						
2.1 Affected establishments	Households and individuals whose houses or establishments will be affected severely (i.e. impossible to live or use)	Permanent Loss	Property owners with legal title	Compensation	a) Cash compensation at full replacement cost, OR b) Allocation of equivalent value of property with equivalent social convenience	a)-b) Permanent Assessment Committee, Governorates and NAT
	Households and individuals whose houses or establishments will be affected marginally (i.e. possible to live or use)	Permanent Loss	Property owners with legal title	Compensation	a) Cash compensation at full replacement cost for the partially affected part	a) Permanent Assessment Committee, Governorates and NAT
3. Loss of Houses, Structures and Other Establishments for Illegal Property Owners						
3.1 Affected establishments	Households and individuals whose houses or establishments will be affected	Permanent/Temporal Loss	Property owners without legal title	Assistance	a) Cash compensation at full replacement cost for the establishment affected (land is not included) if they obtain legal title, AND b) Assisting to obtain legal title	a)-b) Permanent Assessment Committee, Governorates and NAT
4. Affected Houses, Structures and Other Establishments for Occupants/Tenants						
4.1 Right of Tenancy	Households and individuals whose houses or establishments will be	Permanent Loss	Tenants/Occupants	Compensation	a) Providing substitute residence, cost for moving and administration , OR	a)-b) Temporal Assessment Committee, Governorates

¹² Each role of responsible executer shall be defined as follows.

- Governorates: i) Conducting land acquisition and resettlement within the framework of Egyptian, ii) Providing necessary amount of compensation in timely manner.
- NAT: i) Preparation of necessary budget of compensation, ii) Assisting compensation which is provided under NAT responsibility.

Type of Loss/Impact	Application	Loss Type	Entitled Person	Compensation/Assistance	Compensation Policy	Responsible Executer ¹²
	affected severely (i.e. impossible to live or use)				b) Cash assistance according to evaluation by the assessment committee which includes adequate support finding new residence	and NAT
	Households and individuals whose houses or establishments will be affected temporarily during construction (possible to live or use but difficult to live or use due to safety reason)	Temporal Loss	Tenants/Occupants	Assistance	a) Providing allowance for moving and administration for a temporal substitute residence	a) NAT
5. Affected Public Properties						
5.1 Affected public properties	Affected public properties	Permanent Loss	Relevant ministries or governorates	Compensation	a) Transferring ownership and providing substitute facility if necessary not to prevent production activities, based on negotiation	a) NAT
6. Affected Social Properties						
6.1 Affected social properties	Affected social properties	Permanent Loss	Relevant organization such as NGOs	Compensation	a) Relocation or re-build a structure with the same condition and convenience	a) NAT
7. Affected Business						
7.1 Affected business and income sources	Permanent loss of business or income source, i.e. relocation business	Permanent Loss	Business owners	Compensation	a) Providing equivalent place and property to resume business with appropriate amount of income loss moving fee, administration cost, OR b) Cash compensation for decoration of property including appropriate amount of income loss, moving fee, administration cost, necessary amount to find	a)-b) Temporal Assessment Committee, Governorates and NAT

Type of Loss/Impact	Application	Loss Type	Entitled Person	Compensation/Assistance	Compensation Policy	Responsible Executer ¹²
					new business place	
		Permanent Loss	Employees and hired labors	Assistance	a) Support to provide job in a project including job training for it, OR b) Support to secure a new job by cooperating relevant ministries, AND c) Providing cash assistance of the equivalent salary to the remaining employment contract period	a)-c) NAT
	Temporal loss of business or income source (i.e. temporal evacuation during construction despite of any physical loss)	Temporal Loss	Licensed business owners	Compensation	a) Cash compensation for income loss during actual evacuation period	a) NAT
Unlicensed business owners			Assistance			
Employees and hired labors			Assistance			
8. Street Stalls						
8.1 Affected business and income source	Relocation of business	Owners of immovable street stalls		Compensation	a) Providing equivalent land and shifting properties if there is available land, OR b) Cash compensation of appropriate amount to income loss, moving fee, administration cost	a)-b) Temporal Assessment Committee, Governorates and NAT
9. Very Poor						
9.1	Affected properties and livelihood	Individuals and households who are less than poverty line		Assistance	a) Support to provide a job in a project including a job training for it, AND b) Support of assistance from Ministry of Social Insurance	a)-d) NAT

Source: JICA Study Team

2.4.4 Overall Procedure

According to the Egyptian regulation, the procedure for land acquisition and resettlement described in section 2.2.2 will be applied for the Project though consideration of the requirements in donor policies is necessary.

2.4.5 Monitoring and Evaluation

The major objective to conduct monitoring and evaluation will be defined below.

- a) Verification of proposed activities in resettlement plan
- b) Evaluation of implementation situation and the effectiveness of the mitigation measures proposed
- c) Confirmation of any unforeseeable situation at the time of preparation of resettlement plan for preparing additional support

It is important to monitor implementation of resettlement, and therefore monitoring shall be conducted internally by project proponent and externally by independent consultant in order to secure transparency and fairness. There is no systematic framework of monitoring and evaluation in Egyptian legal system, and it has not been conducted at the previous projects. Proposed monitoring form is included in Appendix-2.

(1) Internal Monitoring

1) Monitoring System

In the implementation of monitoring for land acquisition, resettlement and necessary assistance, NAT environmental committee¹³ will serve as the Project's internal monitoring body with the following structure.

a) Land Acquisition and Compensation within Egyptian Legal Framework

NAT environmental committee collects necessary data from Cairo and Giza governorates and update it periodically such as; i) at the time of completion of assessment result, and ii) at the time of completion of compensation payment. The compiled data is reported to the NAT headquarters.

b) Compensation and Assistance under Responsibility of NAT

Regarding assistance to income loss, livelihood restoration and socially vulnerable people, the environmental committee in NAT files and updates the data and reports to the headquarters in NAT quarterly.

c) Frequency for Monitoring and Reporting Monitoring Data

Internal monitoring with the following indicators will be commenced from the initial survey until transferring of property ownership to NAT, and will be conducted every month. Collected information will be updated. NAT environmental committee reports the internal monitoring result to NAT headquarter quarterly.

¹³ Once new department Environment Department is established, it has a responsibility for the parts mentioned as a responsibility of NAT environmental committee in this policy.

2) Monitoring Indicators

NAT environmental committee collects necessary information on the following indicators every month.

- Identification of entitlement about project affected people
- Implementation of compensation payment in various categories and resettlement with timely manner
- Restoration or relocation of affected public facilities
- Following the procedures of compensation payment and grievance based on Egyptian regulations and donor polices
- Implementation of rehabilitation assistance to PAPs
- Confirmation of completion of compensation payment and resettlement as well as commencement of civil work.

(2) Monitoring by Contracted Monitoring Specialist¹⁴

1) Objectives and Monitoring System

The general objective of monitoring by contracted monitoring specialist(s) is; i) to provide an independent periodic review and assessment, ii) to assess achievement of resettlement objectives, iii) to assess changes in living standards and livelihoods, iv) to assess restoration and/or improvement of the economic and social base of the affected people, v) to assess effectiveness and sustainability of entitlement, iv) to identify the need for further mitigation measures, and (v) to identify strategic lessons for future policy formulation and planning. Monitoring by contracted monitoring specialist(s) is conducted quarterly from the commencement of the official procedure of land acquisition until 6 months after completion of property ownership transferring. Monitoring result will be reported to NAT environmental committee.

2) Monitoring Indicators

The main indicators monitored by the independent organization or personnel are shown below.

- Reviewing of existing baseline data obtained through site investigation and population census
- Assessment of effectiveness, impact and sustainability of entitlement
- Assessment of appropriateness of compensation amount
- Assessment of discrepancy among donor polices, revised RPF and actual implementation
- Assessment of further mitigation measurements and recommendation for improvement of resettlement
- Monitoring and assessment of grievances mechanism
- Assessment of livelihood restoration
- Assessment of awareness of project affected people on compensation policy

¹⁴ It is planed that a specialist/expert of social environment and land valuator are hired by the general consultants as monitoring experts.

- Confirmation of appropriateness about temporal land acquisition and compensation conducted by a contractor.

(3) Organization of Monitoring

Monitoring data through internal and monitoring by contracted specialist(s) will be collected and compiled by NAT environmental committee, and compiled report of monitoring result will be submitted to NAT headquarter quarterly. The monitoring report is submitted from NAT headquarter to JICA quarterly. The structure of internal and external monitoring is shown in Figure 2-2.

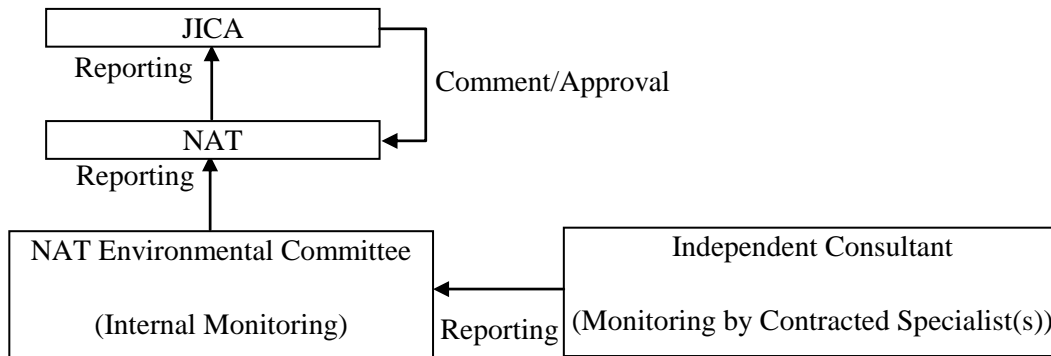


Figure 2-2 Monitoring Structure

2.4.6 Consideration of Grievance Redress

A mechanism of grievance shall be developed in a way to ensure that all complaints from different project stakeholders are appropriately dealt with and measures are taken to resolve matters of concern.

The Law No. 10/1990 defines the procedure of grievance both of PAPs and project proponent of land acquisition and compensation below.

- All PAPs are entitled to complain assessment result of property ownership to the project proponent within 30 days after expiring publication of assessment result
- All PAPs and project proponent are given four months after expiring of the public announcement to contest the evaluation to the court
- The court defines compensation amount by appointing compensation evaluator who assesses the loss in case compensation amount evaluated by the assessment committee is not agreeable

It is important that grievance mechanism covers entire procedure of land acquisition and resettlement after compensation of payment. Since all PAPs are entitled to complain any aspect of the land acquisition and resettlement requirements such as, entitlements, compensation amount and payment and procedures for resettlement and income restoration programs, a well-defined system of grievance redress is necessary to be established.

According to the interview to relevant governorates, the followings were observed as existing system or practical operation.

(1) Cairo governorate

Legal department in Cairo governorates mainly receives complains, and deals with them according to Law No.10/1990.

(2) Giza governorate

Property department in Giza governorate deals with complains of land acquisition and compensation, and the Court deals with complain of land acquisition and compensation after operation stage.

In addition, NAT has established a horizontal unit namely environmental committee which is composed of several departments to deal with environmental and social considerations. By utilizing current grievance system in the governorates and function of the environmental committee in NAT, the following system can be applied for the Project.

- The general contact window of any grievances during the project is NAT.
- Cairo and Giza governorates are also the contact windows for one month (i.e, the period which the Egyptian regulation defines) under the Egyptian regulation.
- The grievance under Egyptian regulation is handled by the governorates, and the grievance under responsibility of NAT is handled by NAT.
- Grievance is treated by the court if amicable settlement is not reached between the governorates and PAPs in the case of compensation and/or assistance under the Egyptian regulation, between NAT and PAPs in the case of compensation and/or assistance under responsibility of NAT.

Above procedure shall be informed to all PAPs during the stakeholder meeting.

2.4.7 Additional Stakeholder Meeting

Preparation of resettlement action plan is not stipulated in the Egyptian regulation. Instead of preparation such plan as a report, Egyptian regulation has a system to announce necessity of land acquisition and result of assessment to all public including PAPs step by step. In this procedure, consultation with PAPs at the early stage of project design was not mandatory, and individual consultation was held at the time of negotiation on land acquisition and resettlement with owners of property affected so far in the practical operation. Although unnecessary unrest of public including PAPs to land acquisition and resettlement might be avoidable with such method, reflecting public opinion to the project, encourage of public participation to the project design or avoidance of potential conflict with PAPs on land acquisition and resettlement will not be achieved.

Although stakeholder meeting was held at the time of scoping in EIA study and preparation of the draft final EIA report during FS, it was held from the viewpoint of EIA study. Since JICA Guidelines was renewed and realization of Phase 1 is expected to be soon, additional consultation is decided to be held during SS with the purpose of explanation of compensation policy on the Project including grievance redress and monitoring system to stakeholders.

The additional stakeholder meeting was held on 16th October 2010 at Safir Hotel in Giza Governorate. The meeting was hosted by NAT as the project proponent, and announcement on the meeting was made on newspaper advertisement beforehand to invite public people including PAPs and invitation to relevant authorities, NGOs, academic persons, etc.

The key points of revised RPF were distributed in Arabic to the attendees at the registration of the meeting, and a comment form and envelop for the purpose that the attendees might intend to raise further comments after the meeting were also distributed.

The meeting was opened by the speech and overall introduction of the Project by NAT Chairman. After the explanation of the Project description of Phase 1 and key points of revised RPF, the meeting came to the open discussion, question and answers.

The attendees to the meeting as well as the major topics raised in the meeting are summarized in Table 2-4 and Table 2-5 respectively, and main issues raised at the meeting are enumerated in the Appendix-3. All of the records of the meeting are compiled in the separately prepared report namely revised RPF report, including discussion records, materials distributed at the meeting, presentation.

Table 2-4 Summary of the Attendants

Governmental bodies	NAT (host of the meeting), Cairo Governorate, Giza Governorate, 6th of October Governorate, SCA, EGSA, etc
Other Bodies and Attendants	Member of Parliaments, Member of Local Councils, NGOs, etc

Source: JICA Study Team

Table 2-5 Major Topics Raised

- Cooperation between NAT and Governorates	- The findings of the ESIA study
- Utilities diversion and upgrading	- Implementation schedules
- Emergency response plans	- Compensation issues
- Land acquisition for parking areas	- Working opportunities of PAPs
- Upgrading and maintenance of existing metro lines	- Land and property value

Source: JICA Study Team

2.4.8 Implementation Schedule

Land acquisition and resettlement is basically implemented according to the procedures of Egyptian regulations, while taking donor policies into account. The major procedure is proposed as follows, which is summarized in Table 2-6.

i) Preliminary Survey and Individual Consultation

The first step is identification of potential PAPs. Relevant departments in a governorate will conduct a preliminary survey to identify ownership of land and properties to be acquired upon project implementation.

ii) Issuing Prime Minister Decree on Public Interest

The Prime Minister Decree on land acquisition in the public interest will issued when the preliminary survey is completed. The decree will include the detailed procedure to be applied for land acquisition and compensation.

iii) Detailed Survey

When the decree on land acquisition in the public interest is issued by the Prime Minister, a detailed survey for property owners and occupants (i.e., population census and asset inventory) will be conducted by the assessment committee¹⁵. In addition, socio-economic survey will be conducted by NAT at this stage in order to confirm socio-economic condition for all PAPs as baseline information in order to provide assistance under NAT responsibility as well as to confirm any difference between compensation evaluation by the assessment committees and evaluation by considering JICA Guidelines.

iv) Updating revised RPF

Based on the survey result, revised RPF will be updated especially project magnitude and compensation amount though compensation policy shall be same.

v) Compensation and Evacuation

Compensation will be paid to PAPs according to the updated RPF, and evacuation must be completed within five months after completion of compensation payment according to Law No.10/1990. If there is difference of the assessment between assessment committee and contracted monitoring specialist(s), top-up will be covered by NAT according to the instruction by the court¹⁶.

vi) Monitoring

Internal monitoring and monitoring by contracted specialist(s) will be conducted regularly during and after implementation of resettlement to examine and confirm its appropriateness and fairness. It will provide a basis for preparation of additional measures on compensation if the necessity for these is confirmed during monitoring.

vii) Preparation of Addendum RPF

Updated RPF will be finalized according to the result of actual compensation payment.

¹⁵ The Law No.10/1990 stipulates that the executer of land acquisition is entitled to access into the land to be acquired after Prime Minister Decree of land acquisition is issued. Therefore, it is impossible under Egyptian legal framework to contact PAPs before the decree issued. In addition, it is confirmed that a project proponent is not the member of permanent assessment committee. Therefore, NAT is not in a position to participate in population census.

¹⁶ If there is any difference, NAT asks the court for judgment and follows instruction from the court.

Table 2-6 Proposed Schedule of Land Acquisition and Resettlement for Phase 1

Responsibility	2010			2011			2012			2013			2014							
	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
<Japanese Side>																				
1 Review of Updated RPF		▲																		
2 Appraisal of RPF		▲																		
3 Loan Agreement (LA)						▲														
<Project Implementation>																				
1 Procurement of Consultant (BD & Tender Doc.)																				
2 Basic Design (BD) & Tender Document Preparation																				
3 General Consulting (GC) Service																				
4 Procurement of Contractor																				
5 Construction Work																				
<Land Acquisition & Resettlement>																				
1 Updating RPF																				
2 Preparation for Draft Decree																				
3 Official Procedure under Egyptian Regulation																				
3-1 Issuing a Decree																				
3-2 Cut-off-date (date of the decree issued)																				
3-3 Population Census																				
3-4 Measurement of Property (Detailed Survey)																				
3-5 Socio-Economic Survey																				
4 Compensation Payment																				
4-1 Assessment of Compensation under Egyptian regulations																				
4-2 Assessment of Compensation under NAT Responsibility																				
4-3 Disclosure of assessment result under Egyptian regulation																				
4-4 Compensation Payment																				
5 Transferring Ownership & Evacuation																				
<Monitoring>																				
Internal Monitoring																				
External Monitoring																				

Source: JICA Study Team

2.5 Preliminary Cost Estimation for Compensation

2.5.1 Objective, Methodology and Limitation

The objective is to estimate the compensation cost as an input for the project capital cost estimate and for the economic and financial appraisal of the project.

The compensation estimate is based on available secondary data, such as the census data issued by CAPMAS on December 2008, socio-economic data related to the project area obtained from a household interview survey conducted by JICA Study Team in July 2009, market value of land and property collected from interview, and records of previous NAT projects. Since the available data is very limited, detailed examination in the course of official procedure of land acquisition and resettlement is necessary.

2.5.2 Consideration of Minimizing Resettlement

The route and the station location have been designed with due consideration during the FS in order to minimize potential impacts of land acquisition and resettlement. Further consideration was made in SS for minimizing potential impact of land acquisition and resettlement as mentioned below.

A typical effort to minimize the negative impact of land acquisition and resettlement examined in SS is described as follows:

Table 2-7 Typical Effort to Minimize Negative Impact caused by Land Acquisition

Sta. No.	Station Name	Modification	Description
2	El Rauda Station	The area of cut & cover section will be minimized and shifted to the east to avoid some residential buildings.	Since the location of entrances is shifted to the public space such as sidewalk, land acquisition area will be minimized.
4	El Giza Station	The area of cut & cover section will be minimized.	Although modification is examined, necessary land acquisition area is not changed in case of considering appropriate traffic arrangement around the station.
11	Al Ahramat Station	The area of cut & cover section will be increased and shifted 400 meters to the west.	The station will be constructed in the middle of the El Ahram Street though its location is changed. Necessary area for entrances will be kept in the sidewalk and/or public space.
12	El Remyah Station	The area of cut & cover section will be reduced.	Less total land will be used for construction of the station and the station will be constructed in the middle of the Cairo Alexandria Road. Land acquisition is not expected. Necessary area for the entrances will be kept in the sidewalk and/or public space.

Source: JICA Study Team

2.5.3 Estimated Magnitude of Socio-Economic Impacts

Prior to construction for Phase 1, land acquisition and resettlement for construction of stations, entrances and annex structures will be necessary at the following stations though some mitigation measures will be taken as mentioned above. In addition, land acquisition of installing electric facility for emergency case with approximately 120 square meters is necessary at each station. Although exact location of such facility is under examination as of end of October 2010, vacant private or public area will be used. Therefore, resettlement due to installing such facility is not expected. Table 2-8 gives a summary of the estimated magnitude of the proposed land acquisition and resettlement, while Appendix-1 provides detailed information on the properties to be demolished.

a) Station 1

Land acquisition is necessary since the station is planned to be made with the cut and cover method. Due to construction of the station, land acquisition of one residential building, one public company, a part of an orphanage, a part of a garden in public hospital, and eleven shops including four opening street stalls (immovable kiosks) and one closed street stall will be necessary. In addition, installing shaft for tunnel construction requires area of 500 square meters though resettlement is not expected.

b) Station 2

Land acquisition for entrances and station construction is necessary. It will be necessary to acquire one gas station and two fast food restaurants to permit construction. However, resettlement of residents due to land acquisition is not expected.

c) Station 3

No land acquisition for construction of station, entrances and other annex structures.

d) Station 4

This is the connection to El Giza station of Metro Line 2, and therefore an appropriate traffic arrangement, such as preparation of mini-bus terminal, is necessary as a development of the area. Even if a traffic plaza will not be established, land acquisition is necessary to allow as the station facilities space in a part of the vacant area at least.

e) Stations 5 to 15 except Station 14

No land acquisition for construction of station, entrances and other annex structures.

f) Station 14

Due to construction of station, parking space and garden space in the El Remaya Residential Area is necessary though resettlement is not expected. It is said that El Remaya Residential Area belongs to Ministry of Defence. Therefore it is expected that land acquisition will be done through negotiation with relevant ministries.

Table 2-8 Expected Magnitude of Land Acquisition and Resettlement at Phase 1

Sta. No.	Governorate	Land		Residential Building			Shops		Social Service	Displaced Persons ¹⁷
		Private (m2) (*1)(*9)	Public (m2) (*1)	Total Area (m2) (*2)	Affected Building (*3)	Affected Family (*4)	Total Area (m2) (*2)	Affected Shop No. (*3)	Affected Area (*2)	Expected Number (person)
1. Permanent Loss										
1	Cairo	3,340(10)	6,587	3,375(*5)	1	11	674	11(*6)	2,880	47
2	Cairo	120	739	-	-	-	2,227(*7)	3	-	-
3	Giza	120	1,193	-	-	-	-	-	-	-
4	Giza	120	7,796(*8)	-	-	-	-	-	-	-
5	Giza	120	567	-	-	-	-	-	-	-
6	Giza	120	1,338	-	-	-	-	-	-	-
7	Giza	120	1,057	-	-	-	-	-	-	-
8	Giza	120	941	-	-	-	-	-	-	-
9	Giza	120	810	-	-	-	-	-	-	-
10	Giza	120	1,324	-	-	-	-	-	-	-
11	Giza	120	973	-	-	-	-	-	-	-
12	Giza	120	652	-	-	-	-	-	-	-
13	Giza	120	1,400	-	-	-	-	-	-	-
14	Giza	120	1,469	-	-	-	-	-	-	-
15	Giza	120	102	-	-	-	-	-	-	-
16	6th of Oct. ¹⁸	-	-	-	-	-	-	-	-	-
Total		8,360	26,948	3,375	1	11	2,901	14	2,880	47

Remarks:

*1: Private land means vacant private land, and public land means land on public sidewalk. Information about total area is obtained from the drawings based on satellite image and topographic survey at FS.

*2: Information is obtained from the drawing based on satellite image and topographic survey at FS.

*3: Information is obtained through site investigation.

*4: Information about affected family number is obtained from site investigation and interviews with the neighbourhood

*5: shop area in the ground floor is included.

*6: Four opening street stalls (immovable kiosk) and one closed street stall are included.

*7: Parking area is counted into each restaurant respectively.

*8: Necessary area for traffic arrangement is included.

*9: 120 m2 of private area at each station is tentatively estimated for necessary area to install electric facility for emergency case though exact location is under examination. Land acquisition at the station in 6th of October Governorate is said not to be expected.

*10: It includes substitute land for public company though it is not sure at this study stage whether substitute land is necessary for public company or not since it will be fixed according to discussion with relevant ministries and NAT.

Source: JICA Study Team

2.5.4 Preliminary Cost Estimation for Compensation

(1) Condition for Preliminary Estimation of Compensation Cost

Preliminary compensation estimation is composed of costs such as i) private land acquisition; ii) private property acquisition (mainly residential flat); iii) commercial property acquisition (mainly small shops); iv) allowances for flat tenants including moving cost; v) allowances of income restoration for shops including moving cost; and vi) administration fee. In addition, preliminary compensation is estimated with the following conditions:

¹⁷ Displaced persons are defined as those who are requested physical displacement in this report. The number of displaced persons is estimated based on the average family number obtained from household interview survey conducted at FS.

¹⁸ It is confirmed that station 16 is constructed to the area where 6 of October governorate arranges independently apart from the Project.

- i) Cash compensation is provided to all PAPs, instead of providing alternatives.
- ii) For public lands such as sidewalks, land in governmental hospital and land in public company, compensation amount is not estimated since it is said that land acquisition of public land is done through ownership transfer between relevant ministries.
- iii) Properties which are difficult to distinguish as public or private from external appearance are regarded as privately owned.
- iv) Since during the F/S stage, it is impossible to distinguish the status of property ownership for flats whether they are owners or tenants. Therefore, a residential building is considered as owned by one owner and households living in flats are regarded as tenants.
- v) The unit cost of flats is composed of costs for land and property. These costs cannot be separated in any practical manner.
- vi) The unit price of land and flats is identified from interviews with local real estate agents at each station location, and applied the highest price in the area.
- vii) The allowance for tenants is assumed to be based from the experience with the Metro Line 3 project, without any modification. In addition, one family is estimated to have three rooms in their flat.
- viii) Allowance for shops, such as rehabilitation assistance, is estimated by referring to the experience of Metro Line No.3 without any modification since JICA Study Team does not have any authorization to contact potential PAPs to confirm their socio-economic condition.

(2) Estimated Cost for Compensation for Phase 1

Based on the conditions mentioned in Section 2.5.4(1), the cost of land acquisition and compensation are estimated as shown in Table 2-9.

Table 2-9 Estimated Cost for Land Acquisition and Compensation for Phase 1

Sta. No.	Category	Area (sq.m)	Unit (LE)	Total (LE)	Remarks
I. Permanent Loss					
1	Land	3,340	10,000	33,400,000	Amount for land acquisition
	Flat	3,375	3,000	10,125,000	Amount for land and property acquisition
	Shop (*1)	674	8,000	5,392,000	Amount for land and property acquisition
	Construction (*2)	4,808	2,500	12,020,000	Renewal or restoration of orphanage and public company
	Allowance to Family	11 families	15,000	495,000	Amount for compensation
	Allowance to Shop (*3)(*4)	6 shops(*6)	-	660,000	Amount for compensation
	Allowance to Street Stall (*5)	5 shops	7,000	35,000	Amount for compensation
2	Land	2,347	14,000	32,858,000	Amount for land and property acquisition
	Structure	1,517	-	11,600,558	Amount for compensation
	Allowance to Shop (*6)	3 shops	-	506,700	Amount for compensation
3	Land	120	11,000	1,320,000	Amount for land acquisition
4	Land	120	10,000	1,200,000	Amount for land acquisition
5	Land	120	10,000	1,200,000	Amount for land acquisition
6	Land	120	11,000	1,320,000	Amount for land acquisition

7	Land	120	10,000	1,200,000	Amount for land acquisition
8	Land	120	6,500	780,000	Amount for land acquisition
9	Land	120	6,000	720,000	Amount for land acquisition
10	Land	120	7,000	840,000	Amount for land acquisition
11	Land	120	10,000	1,200,000	Amount for land acquisition
12	Land	120	9,000	1,080,000	Amount for land acquisition
13	Land	120	5,000	600,000	Amount for land acquisition
14	Land	120	3,500	420,000	Amount for land acquisition
15	Land	120	2,700	324,000	Amount for land acquisition
16	-	-	-	-	-
II. Temporal Loss					
3	Shop	20 shops(*7)	8,400 (*8)	504,000	Evacuation during construction due to safety reason
3	Household	12 families(*7)	130 (*9) 10,000 (*10)	124,680	Evacuation during construction due to safety reason
III. Others					
	Job Training	3 months	15,000	45,000	Job training for employees and the poor
	Contracted Monitoring(*11)	20 months	-	178,000	Monitoring of compensation amount and socio-economic issue
	Administration Fee	-	-	2,402,943	2% of total amount of I, II, job training and contracted monitoring
Total	-	-	-	122,550,073	-

Remarks:

*1: Shops located at the ground floor in the flat is included in the category of flat.

*2: Amount to construct a building with same size and convenience.

*3: Compensation for shops which did not open at the time of site investigation is included.

*4: Allowance to shop includes; i) LE2,000 per m² for shop space as rehabilitation of loss for income source, ii) LE5,000 for licence/administration/moving cost, iii) LE5,000 for decoration cost.

*5: Unit cost is referred from the Metro Line.3 project.

*6: In the case of Station 2, large scale shops are considered to be affected. Since information of allowances for similar sizes of shops was not obtained from the Metro Line 3 project, allowances are estimated specifically by referring to the experience of other countries.

*7: Shop and household number were confirmed at site investigation at SS by JST.

*8: Unit price is estimated based on the interview survey to shops conducted at FS.

*9: This is the rental fee of flat, which is estimated based on the household interview survey conducted at FS.

*10: This is the one-round moving fee, which is collected from interview to people.

*11: The amount of contracted monitoring will be covered by general consultant Fee.

Source: JICA Study Team

2.6 Plan of Population Census and Socio-Economic Survey for Potential PAPs

2.6.1 Plan of Population Census for Potential PAPs

As mentioned in the procedure of land acquisition in Section 2.2.2, identifying potential PAPs is the first step for implementing land acquisition and resettlement. Identification of potential PAPs in the early stages of a project will help avoid influx of squatters and unnecessary compensation to them. In addition, it is also expected that cooperation from potential PAPs will enhance by disclosing appropriate information in a timely manner.

Potential PAPs will be identified by two steps of property ownership confirmation; i) indirect confirmation at the desk study before issuing Prime Minister Decree, and ii) direct confirmation at the detailed survey after Prime Minister Decree issued. The preliminary survey (i.e., indirect ownership confirmation) will be conducted by the relevant departments in governorates in cooperation with NAT after the project area is almost delineated. The detailed survey (i.e., direct ownership confirmation namely population census) will be conducted by the assessment committee in Cairo and Giza governorates respectively. In these circumstances, it is emphasized that all relevant bodies should have close communications for the smooth execution of census. The implementation schedule is given in Table 2-6.

At the population census, the following items will be confirmed.

1) Property Owners

- Location and address of the target properties
- Size of the target properties
- Land type and use
- Legal status

2) Occupants/Tenants

- Location and address of the target properties
- Number of rooms
- Tenant Status

2.6.2 Plan of Socio-Economic Survey for Potential PAPs

It is important to confirm socio-economic condition of potential PAPs in order to examine impact caused by the Project implementation and to examine appropriate compensation for PAPs. For the light of this concern, socio-economic survey is planned to be conducted by NAT independently or cooperated with the governorates and the assessment committee after Prime Minister Decree issued. The implementation schedule is given in Table 2-6, and the following items are necessary to be confirmed.

1) Property Owners and Occupants/Tenants

- Family structure, number, gender, age
- Occupation of every family member
- Primary and secondary income sources and monthly/ annual income

2) Business Owners

- Net monthly/ annual income
- Monthly/ annual expenditure
- Number of employees
- Business license

3) Employees and Hired Workers

- Identification of PAPs

- Net monthly/ annual income
- Monthly expenditure
- Family structure
- Main income source of a family

CHAPTER 3 ARCHEOLOGICAL ASSESSMENT STUDY

3.1 Soil observation on the Sample from Boreholes

The objective in the S/S stage is to complete archaeological observation on soil samples from boreholes by the geological survey covering area from El Malek El Saleh to Grand Egyptian Museum via Pyramids Road. As of the submission of the F/S report, just half of the 36 boreholes in total have left to be observed. In addition, further boreholes were carried out in this S/S stage. Observations on these borehole soils were completed by the end of September 2010.

This observation is useful to examine the existence of the buried archaeological properties, and indeed archaeological artefacts (pottery sherds) have been retrieved although fragmental movables. This result is focal information for the Risk Assessment as well as for the archaeological salvage research during the Basic Design stage.

3.2 Observation Items

The soil observation is carried out according to the items below.

- Soil description of layers in the profile
- Identification of artefact
- Depth of the layer including the artefact
- Analysis on the artifact (date, type etc.)

3.3 Results

As the result¹, pottery sherds were retrieved from Borehole Nos. 18, 23, 24, 25, 32, 34, 35, 36, 52, 62, 64 (Figure 3-1). The artifact descriptions are as follows, which were confirmed by Mr. Ashraf Senussi who is most prominent ceramist among the SCA Egyptologist and was in charge of publication of the AMBRIC rescue excavation at the Giza.

3.4 Remarks

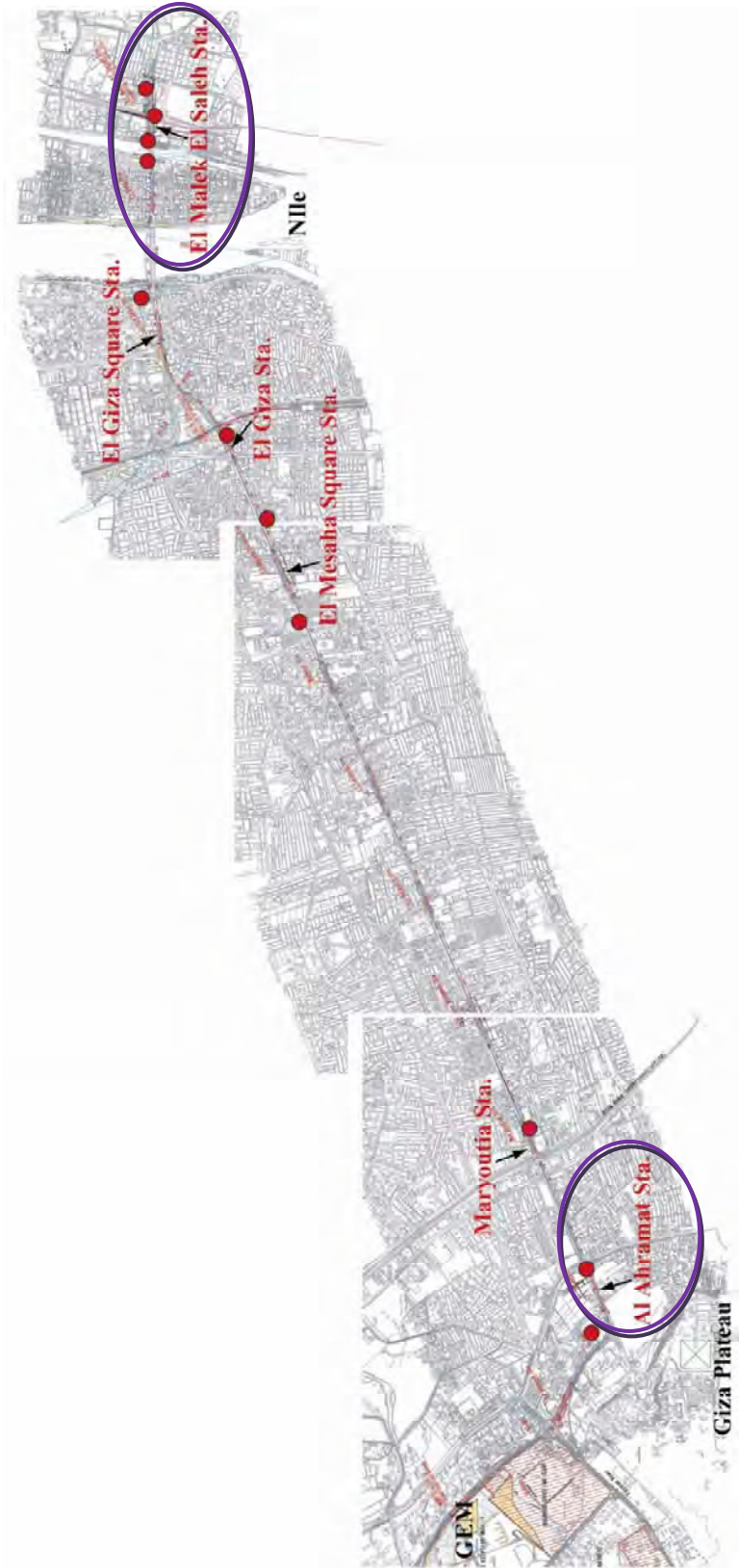
Based on the fabric and surface features, all collected sherds which mainly came from within depth of 10m with the outliers (up to 16.5m), could belong not to the Modern, but to the Ancient, Roman and Islamic pottery. This, however, does not directly mean the existence of buried archaeological property, because the pottery sherds are the movable artifacts, and are not immovable architectural remains such as temple or settlement/cemetery. Moreover, the depth of the retrieved sherds is closer to surface, which suggests that these artifacts came from just dumped layer. This assumption is supported by the different periods of the collected sherds.

However, attention should be paid to two areas: El Malek El Saleh Station and Al Ahramat Station (Figure 3-1, Purple circles). El Malek El Saleh Station is located in the Historical Cairo area and there is a concentration of boreholes with artefact around this station. Al Ahramat Station is placed near the Giza Plateau, and based on the Literature Survey which tells us discovery of

¹ The soil samples were stored and analyzed at Ardaman-ACE, Shehab Street where I observed samples.

architectural remains belonging to Khuhu's Pyramid (See FS Report), there is a possibility for archaeological property to be buried around the station.

As the conclusion, salvage research as trench excavation should be carried out on at least these two areas before construction stage in order to reduce the risk.



Source: JICA Study Team

Figure 3-1 Location of boreholes with artifacts

JICA PREPARATORY SURVEY ON GREATER CAIRO METRO LINE NO.4
SUPPLEMENTARY SURVEY

No.	Fig.	Bore No.	Depth and Soil	Part	Colors	Fabric	Period
1	#	BH18	13.5m Fill: sand with silt	Shoulder of jar	Ext: Bright reddish brown (2.5YR 5/6) Int: Bright reddish brown (2.5YR 5/6) Break: Bright reddish brown (2.5YR 5/6)	Nile Silt with calcite, grit and mica	[Ancient] The surface color and fabric are typical of rough ware during the Old-New Kingdom.
2	11-12a	BH23	7.5m Fill: clay and sand	Base of bowl	Ext: Black (7.5Y 2/1) Int: Black (7.5Y 2/1) Break: Brownish Black	Nile Silt	[Late Islamic] This black sherd is not common in Ancient and also in Modern.
3	#	BH23	16.5m Fill: sand with silt	Unknown	Ext: Very dark reddish brown (10YR 2/3) Int: Very dark reddish brown (10YR 2/3) Break: Black	Nile Silt with straw and grit, yellow coated surface and refired at high temp.	[Unknown]
4	11-12b	BH24	0.6-1.5m Fill: surface layer	Shoulder of large jar	Ext: Dark reddish brown (2.5YR 3/6) Int: Dark reddish brown (2.5YR 3/6) Break: Dark reddish brown (2.5YR 3/6)	Nile Silt with straw and sand	[Late Islamic]
5	11-12c	BH24	0.6-1.5m Fill: surface layer	Shoulder of jar	Ext: Bright reddish brown (2.5YR 5/6) Int: Bright reddish brown (2.5YR 5/6) Break: Reddish brown (2.5YR 4/6)	Nile Silt with small amount of calcite, grit and Mica	[Islamic] Mica in fabric is not included among Modern pots because Nile flood was finished now.
6	11-12d	BH24	0.6-1.5m Fill: surface layer	Unknown	Ext: Dark red (7.5R 3/6) Int: Brown (7.5YR 4/6) Break: Brown (7.5YR 4/6)	Nile Silt with large amount of straw and sand	[Ancient] This rough ware is typical of Meat or Beer jar during the Old-New Kingdom.
7	11-12e	BH24	0.6-1.5m Fill: surface layer	Base of plate or bowl with glazed surface decoration	Ext: Light yellow (7.5Y 7/4) Int: Light yellow (7.5Y 7/4) Break: Orange (7.5YR 6/6)	Calcareous Marl Clay	[Late Islamic] Although the glazed surface is also common in Modern, the fabric is higher quality than Modern one.

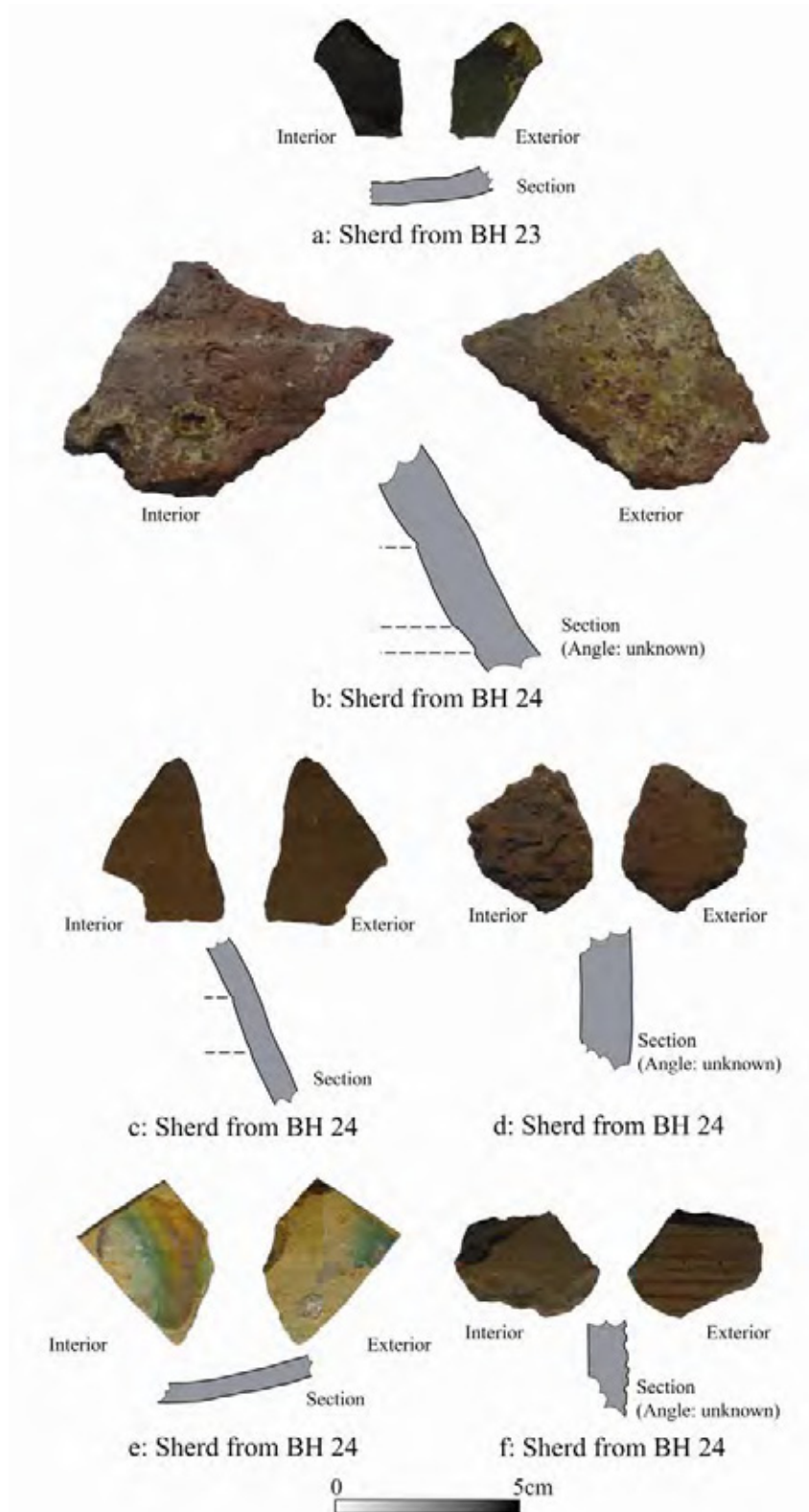
JICA PREPARATORY SURVEY ON GREATER CAIRO METRO LINE NO.4
SUPPLEMENTARY SURVEY

8	11-12f	BH24	3.9m Fill: Clay and Sand	Part of Amphora	Ext: bright brown (7.5YR 5/6) Int: Red (10R 4/6) Break: Grayish yellow brown (10YR 5/2)	Nile Silt with small amount of calcite and mica	[Late Roman] The thick sherd with horizontal lines on the exterior is a feature of Late Roman Amphora.
9	11-13a	BH25	6.0-6.45m Fill: sandy clay	Rim	Ext: Bright reddish brown (2.5YR 5/6) Int: Bright reddish brown (2.5YR 5/6) Break: Light Reddish gray (2.5YR 7/1)	Nile Silt with straw, grit and mica and self slip	[Ancient] The surface color and fabric are typical of rough ware during the Old-New Kingdom.
10	#	BH25	6.0-6.45m Fill: sandy clay	Body	Ext: Bright brown (7.5YR 5/6) Int: Bright brown (7.5YR 5/6) Break: Bright brown (7.5YR 5/6)	Nile Silt with straw, grit and mica	[Ancient] The surface color and fabric are typical of rough ware during the Old-New Kingdom.
11	#	BH25	9.0m Fill: sandy clay	Body	Ext: Bright brown (7.5YR 5/6) Int: Bright brown (7.5YR 5/6) Break: Bright brown (7.5YR 5/6)	Nile Silt with straw, grit and black slip on ext. and red slip on int.	[Unknown]
12	11-13b	BH32	0.0-1.0m Fill: surface layer	Base with a hole in center	Ext: Olive gray (10Y 6/2) Int: Olive gray (10Y 6/2) (2.5YR 5/6) Break: Olive gray (10Y 6/2)	Marl Clay with calcite	[Ancient to Roman] Green marl fabric is common in Pharaonic and Roman period.
13	11-13c	BH34	0.6-2.5m Fill: surface layer	Rim of jar	Ext: Dark reddish brown (2.5YR 3/6) Int: Dark reddish brown (2.5YR 3/6) Break: Dark reddish brown (2.5YR 3/6)	Nile Silt with straw, calcite, grit and mica	[Ancient] This rough ware is typical of jar during the Old-New Kingdom.
14	11-13d	BH35	0.3-1.0m Fill: surface layer	Body of Amphora	Ext: Bright reddish brown (5YR 5/8) Int: Bright reddish brown (5YR 5/6) Break: Bright reddish brown (5YR 5/6)	Nile Silt with small amount of calcite and mica	[Roman] Horizontal lines on the exterior are a feature of Roman Amphora.
15	#	BH35	3.0-4.0m Fill: clay and sand	Body	Ext: Brown (7.5YR 4/3) Int: Brownish black brown	Nile Silt with small amount of calcite and	[Ancient to Roman] The fabric and surface treatment

JICA PREPARATORY SURVEY ON GREATER CAIRO METRO LINE NO.4
SUPPLEMENTARY SURVEY

					(7.5YR 3/1) Break: Brownish black brown (7.5YR 3/1)	mica	are common in Pharaonic and Roman period.
16	#	BH35	3.0-4.0m Fill: clay and sand	Shoulder of jar	Ext: Bright reddish brown (2.5YR 5/6) Int: Bright reddish brown (2.5YR 5/6) Break: Bright reddish brown (2.5YR 5/6)	Nile Silt with calcite and mica	[Ancient] The fabric is typical of jar during the Old-New Kingdom.
17	#	BH36	3.0-4.0m Fill: clay and sand	Rim of bowl	Ext: Bright reddish brown (2.5YR 5/6) Int: Bright reddish brown (2.5YR 5/6) Break: Bright reddish brown (2.5YR 5/6)	Nile Silt with straw, calcite, grit and mica	[Ancient] The fabric is typical of jar during the Old-New Kingdom.
18	#	BH36	7.5-9.0m Fill: clay	Three small pieces		Nile Silt	[Unknown]
19	11-13e	BH36	9.0-10.5m Fill: clay	Body of Amphora	Ext: Dark reddish brown (2.5YR 3/3) Int: Dark reddish brown (2.5YR 3/3) Break: Dark reddish brown (2.5YR 3/3)	Nile Silt with small amount of calcite and mica	[Roman] The thick sherd with wheel-marks on the int. is a feature of Roman Amphora.
20	11-13f	BH36	9.0-10.5m Fill: clay	Body of Amphora	Ext: Dark reddish brown (2.5YR 3/3) Int: Dark reddish brown (2.5YR 3/3) Break: Dark reddish brown (2.5YR 3/3)	Nile Silt with small amount of calcite and mica	[Roman] Horizontal lines on the exterior are a feature of Roman Amphora.
21	11-13g	BH36	9.0-10.5m Fill: clay	Rim of bowl	Ext: Reddish brown (2.5YR 4/6) Int: Reddish brown (2.5YR 4/6) Break: Reddish brown (2.5YR 4/6)	Nile Silt with straw, calcite and mica	[Ancient to Roman] The fabric and surface treatment are common in Pharaonic and Roman period.
22	#	BH52	3.0m Fill: still not confirmed	Body	Ext: Dull reddish brown (5YR 4/4) Int: Dull reddish brown (5YR 4/4) Break: Grayish brown (7.5YR 4/2)	Nile Silt with small amount of calcite and mica	[Roman?] The fabric is common in Roman period but uncertain.
23	#	BH62	13.5m Fill: still not	Four small pieces		Nile Silt	[Unknown]

24	BH64	confirmed 4.5-6.0m Fill: still not confirmed	Body	Ext: Brown (7.5YR 4/6) Int: Brown (7.5YR 4/6) Break: Black	Nile Silt with straw, calcite, grit and mica	[Ancient] The fabric is typical of jar during the Old-New Kingdom.
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Source: JICA Study Team

Figure 3-2 Sherds retrieved from borehole soils



Source: JICA Study Team

Figure 3-3 Sherds retrieved from borehole soils

CHAPTER 4 DRAFT ENVIRONMENTAL CHECKLIST OF JICA GUIDELINES

During each stages of Feasibility Study (F/S) and Supplementary Survey (S/S), various environmental and social considerations were examined and incorporated into the plan and design of the Project. EIA, Addendum EIA and RAP framework studies especially for Phase 1 have been also conducted in line with the Project planning and designing.

The key points obtained in the course of environmental and social studies as of F/S stage for Phase 1 of the Project has been summarized by using a Checklist defined by ex-JBIC Guidelines for confirmation of environmental and social considerations (April 2002).

At this S/S stage, JICA Study Team revises the environmental checklist, which was prepared during the F/S, since the scope of the project was changed, the format of the check list was renewed and RAP framework was revised.

The draft environmental checklist shows Table 4-1, by using a format of the Environmental Checklists, No. 8 for Railways, defined by JICA Guidelines for confirmation for environmental and social considerations (April 2010).

The draft environmental checklist needs to be provided to JICA for its review at least two weeks before the departure of the appraisal mission.

Table 4-1 Draft Environmental Checklist of JICA guidelines

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process?	Y/N	(a) The original EIA report has been completed and submitted to EEAA on March 2010. The addendum EIA report is under preparation as of September, 2010. Addendum EIA is planned to be submitted to EEAA in early October.
		(b) Are the EIA reports written in the official or widely used language?	Y	(b) EIA reports are written both in Arabic and in English. Arabic is the national language in Egypt.
		(c) Have EIA reports been approved by authorities of the host country's government?	Y/N	(c) The original EIA report has been approved on 11th July 2010. The addendum EIA report is under preparation as of September, 2010. Addendum EIA is expected to be approved in November.
		(d) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?	N	(d) The approval for original EIA includes some conditions. Plan to meet these conditions is also attached as Attachment A. As for addendum EIA, since the report has not been approved yet, it is not known whether the conditions are set or not .
		(e) Are the EIA reports available at all times for perusal by project stakeholders such as local residents, and is it allowed to make photocopy of it?	Y	(e) EIA reports will be available at the main office of NAT in Cairo, Website of NAT, EEAA, and Regional Branch Offices (RBOs) of EEAA, as well as JICA headquarter and its' website. It is allowed to make photocopy of them at JICA.
		(f) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	Y	(f) In addition to the above approvals, it is required to obtain a permission for implementing salvage research on buried cultural property to Supreme Council of Antiquities (SCA) by 5 months before survey commencement. The archeological survey is planned to be conducted during BD stage and NAT will submit the survey report to SCA before construction commencement. (It is note required to obtain a permission for construction from SCA.)
	(2) Explanation to the Local stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders?	Y	(a) Brief description of the project and the potential impacts were explained to the local stakeholders through group consultation at the scoping stage and stakeholder consultation meeting, held on 28 th December, at draft-report-stage. There was no opposition against the project from the participants.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(2) Explanation to the Local stakeholders	(b) Have the dates and places of stakeholder consultation been informed to the local stakeholders prior to the consultation meeting?	Y	(b) Dates and places of stakeholder meeting were informed by individual invitation letter and press advertising.
		(c) Have the project been explained to the public in the language which local stakeholders can understand?	Y	(c) Brief description of the project and its impacts were explained through stakeholder consultations in Arabic, which most of the local stakeholders can understand.
		(d) Have the minutes of stakeholder consultations been prepared?	Y	(d) Minutes of the stakeholder consultations were prepared and attached to the EIA report.
		(e) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	Y	(e) Various opinions and suggestions were exchanged at the stakeholder meetings. Comments raised at the meetings were integrated in the final EIA reports as well as project design accordingly. Major comments and reflection of those comments into the project are summarized in Attachment B.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	Y	(a) With the urbanization of Cairo, overdependence on roads and fast popularization of automobiles had been accelerated. Besides, traffic congestion has been aggravated and vehicle pollution such as air pollution and noise has been escalated. Since the capacity of existing public transportations such as buses and railways is limited, and it is difficult to expand roads because of land shortages, construction of MRT 4 is required. Without this project, existing traffic congestion and vehicle pollution will not be alleviated. As for route selection, environmental and social aspects such as air pollution, land acquisition and resettlement, noise, and landscape have been examined as well as technical and economic aspects. (Details are described in 4, (1), (a)) As for construction methods, shield tunneling method was chosen to minimize land acquisition and resettlement.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2 Pollution Control	(1) Air Quality	(a) Is there a possibility that emission from depot will cause air pollution in surrounding areas?	N	(a) Air pollution in surrounding area caused by emission from depot will be negligible because the depot will be located in the desert area without any residential areas or sensitive receptors nearby. Moreover, indoor air quality shall be maintained and monitored in accordance with legally complying "Health Safety and Environmental Plans" in the operation phase.
	(2) Water Quality	(a) Is there a possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas?	Y	(a) No earthmoving activities will be implemented during operation phase. The impact on water quality during construction and its mitigation measures are described in 5 (1) (a).
		(b) Do effluents from the project facilities, such as stations, comply with the country's effluent standards and ambient water quality standards? Is there a possibility that the effluents will cause areas not to comply with the country's ambient water quality standards?	Y	(b) The effluents from depot will be treated adequately such as management of pH and concentration in waste water to comply with the effluent standard in Egypt, namely Law 93/1962 and its new modification issued by the Ministerial Decree No. 44/2000 in the case of discharge into the sewage system and public network. There is no official sewage network plan around the depot site. Thus, the following two methods are considered in the current situation. The effluent treatment method will be basically decided at the stage of BD. 1) In the case that the governorate provides the maintenance plan of sewage system including maintenance completion time an effluent treatment plan of Depot area will be prepared in accordance with the governorate plan. 2) If a development plan of sewage system is not provided by governorate before BD starts, the following considerations are necessary. - The treatment equipment which satisfies the effluent standard is maintained. - A reservoir is established in Depot. The effluent will be reserved in the reservoir temporarily, and be used for watering in depot area. Recycling of water in the depot will be promoted as much as possible. As for effluents from the stations, since it does not contain the pollutants with high concentrations to be specifically treated, it will be discharged to public sewage. Therefore no or negligible impacts are expected.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2 Pollution Control	(3) Wastes	(a) Are wastes generated from the project facilities, such as stations and depot, properly treated and disposed of in accordance with the country's regulations?	Y	(a) Wastes generated from the Project facilities, such as stations and depot, are properly treated and disposed of in accordance with the Egyptian regulations such as Law 4/1994. Wastes will be collected by private collectors and be disposed to existing dumping site.
	(4) Noise and Vibration	(a) Do noise and vibrations from the vehicle and train traffic comply with the country's standards?	Y	<p>(a) In the case of this Project, stations from No. 1 to No. 15 and tracks are underground. The track level from ground surface level is approximately 20-30 m depth, and the Project route is almost located under the road area. Depot and station No.16, which will be constructed at-grade and in trench section, are in the desert area without any residential areas or sensitive receptors nearby. Therefore it is not expected that the noise from train service would cause the negative impact. As for Vibration, negligible impact from train service is expected, since the track level from ground surface level is approximately 20-30m depth and it is enough to damp the vibration level from the vibration-generating source (train service) to the receptors on the ground surface. Moreover in order to reduce the possible generation of vibration due to the train service, following measures will be taken.</p> <ul style="list-style-type: none"> • Surface of the rails will be grinded to restore the irregularities. • The rail will be continuously welded. • Elastic fastening system will be installed. <p>Besides, following measures will also be considered and be adopted if it's appropriate.</p> <ul style="list-style-type: none"> • Adoption of heavy rail. • Adoption of track on floating slab in sensitive areas, • Installation of parabolic noise/vibration reflecting walls. <p>There is no standard and regulation on railway noise and vibration in Egypt, which can be referred as the criteria. Regarding the railway noise, "Guideline for noise regarding new construction / major changes of railway lines" is applied in Japan. But, this guideline can not be applied to the railways underground. As for vibration, standard for railway does not exist in Japan, either. Thus there is no applicable standard for noise and vibrations from the train service to this Project.</p> <p>As for vibrations, the dilapidation survey performed at pre-construction will be used for basis of monitoring during and post construction to identify any potential impacts on sensitive structures due to construction vibration. When some influence will be confirmed by construction based on the result of this survey, additional treatment measures will be considered.</p>

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2 Pollution Control	(5) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence? (especially in case of Undergrounds/Subways)	N	(a) No or negligible impact of subsidence is expected, judging from geotechnical aspect and construction aspect as follows; - N-value of cohesive soil along the Project route is over 10. Therefore, the possibility of the ground subsidence is expected to be quite low. (It is said technically in general that there would be a possibility of ground subsidence in the case of N-value of cohesive with less than 2.) -Tunnel Boring Machine (TBM) will be applied to construct the waterproof tunnel which will not cause the groundwater penetration into the tunnel. - The watertight outer wall will be installed around the station construction sites before starting excavation works in order to prevent the groundwater penetration into the sites. Whenever necessary, the outer wall will be deepened to impermeable layer, as well as soil improvement on the bottom of the excavation sites will be provided to prevent the inflow of groundwater from the bottom of the sites.
	(6) Soil Contamination		N	There is no project component or activities which cause soil contamination.
3 Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	N	(a) The Project area does not include protected areas, and does not locate close to protected area. There is no possibility to affect the protected area due to Project.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	N	(a) The Project area is located in highly-urbanized metropolitan city. Therefore, there is no issue on ecosystem to be cautioned.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
3 Natural Environment	(2) Ecosystem	(b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?	N	Ditto
		(c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?	N/A	N/A
		(d) Are adequate protection measures taken to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock?	N/A	N/A
		(e) Is there a possibility that installation of rail roads will have impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered?	N	Same as (a)
		(f) In cases the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environments?	N/A	N/A

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
3 Natural Environment	(3) Hydrology	(a) Is there a possibility that alteration of topographic features and installation of structures, such as tunnels will adversely affect surface water and groundwater flows?	N	<p>(a) The scale of underground aquifer in and around the project area is large enough compared with the scale of the underground structure designed in the Project. (In most of the project area, the thickness of the aquifer, in which the tunnel will be constructed, is almost 70m. On the other hand, the tunnel constructed by the project will be 7m in diameter.) Therefore the structures constructed by the project will not block water off, and water can flow around the structures.</p> <p>There is a silt clay layer on top of the aquifer, but it is not completely in an artesian condition. (The water content of the silt clay is large and it is partially mixed with sand.) Therefore, it is not expected that the water will be burst in other places due to construction of the tunnel and the stations. (The cross-section diagram of geological layer, which was prepared based on boring investigation conducted in JICA feasibility study, is attached as Attachment C.)</p> <p>For the construction of the tunnel, Tunnel Boring Machine (TBM) will be applied to construct the waterproof tunnel which will not cause groundwater penetration into the tunnel. For construction of the stations, watertight outer wall will be installed around the station construction sites before starting excavation works in order to prevent the groundwater penetration into the sites. Whenever necessary, the outer wall will be deepened to impermeable layer, as well as soil improvement on the bottom of the excavation sites will be provided to prevent the inflow of groundwater from the bottom of the sites.</p> <p>Therefore, no or negligible impact on hydrology of surface and ground water flows is expected.</p> <p>Monitoring of groundwater level is proposed at the existing wells near the Project area during construction stage.</p> <p>According to the Hydro-geological map of The Research Institute for Groundwater (RIGW) and interview to Egyptian consultants of Feasibility Study, no ground water use has been identified in and around the project area.</p>
	(4) Topography and Geology	(a) Is there a soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed?	N	<p>(a) Existence of a soft ground is not reported along the Project route. And construction works of major facilities such as tracks and stations will be made underground. Therefore, no possibility of causing slope failures or landslides is expected.</p>

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
3 Natural Environment	(4) Topography and Geology	(b) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides?	N	Ditto
		(c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	Y	(c) The surface areas where cut and cover method will be applied are limited to the stations' construction, therefore the possibility of soil runoff due to construction work will be negligible. Soil runoff from soil disposal sites is not expected since there is little possibility to have heavy rainfall in Cairo.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	Y	(a) It is expected that 11 households (47 people), 14 shops and 5 street stalls will be relocated due to Project implementation. Necessary efforts to minimize the impacts due to resettlement have been made in the Project design. In the alternative analysis of the route at the Giza square, the alignment along the Pyramids road was chosen, because the impact of land acquisition and resettlement will be less in the case of Pyramids road compared with the other alignment case. Moreover, in order to minimize the magnitude of resettlement, the metro line 4 is planned to be constructed under the existing road area wherever possible, as well as TBM method without open-cut work is planned to be applied between the stations.
		(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?	Y	(b) At the 2nd stakeholder meeting at disclosure stage of draft EIA report held on 28 th December 2009, overall explanation was provided on resettlement and compensation. Moreover, an additional stakeholder meeting is planned to be held in October, 2010. In the meeting, the key points in the revised RPF such as; i) over all procedure of land acquisition and resettlement; ii) entitlement matrix in brief; iii) monitoring and grievance system will be explained (The date and place of the consultation meeting is under discussion with NAT as of 16 th September.) Dates and the places of the stakeholder meeting will be informed through newspaper, the website of NAT, and invitation letter to NGOs which supports street stall owners and vulnerable people, etc.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(1) Resettlement	(c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?	Y	(c) Resettlement Policy Framework (RPF) is under preparation based on results of the socio- economic survey conducted during Feasibility Study. People who are eligible for compensation or/and assistance are, owners and occupants (including those who do not have legal title) of lands and structures, public properties, shop owners, employees, tenants, and owners of street stalls. Land and structures will be compensated at full replacement cost. Non owners such as tenants and employees will be provided cash or the other kinds of assistance to restore their livelihoods and living standards.
		(d) Are the compensations going to be paid prior to the resettlement?	Y	(d) Compensation will be paid before resettlement.
		(e) Are the compensation policies prepared in document, and in case the scale of resettlement is large, has the resettlement plan been disclosed?	Y	(e) A report of RPF, in which compensation policies are described, is under preparation, and will be prepared by the end of October. When the report of RPF is completed, it will be disclosed in Egypt. (NAT assured to inform the name of the places where RPF is disclosed by the time of appraisal.)
		(f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?	Y	(f) People who are less than poverty line will be provided special assistance in addition to compensation for lands or assets.
		(g) Are agreements with the affected people obtained prior to resettlement?	Y	(g) There was no objection against the project implementation in past stakeholder consultations.
		(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?	Y	(h) Overall responsible agency for land acquisition and resettlement of the project is NAT. NAT will prepare the necessary budget. Cairo and Giza governorate will execute land acquisition and resettlement within Egyptian legal framework, while NAT will execute additional assistance to comply with the JICA policy. Compensation based on Egyptian regulation will be assessed and paid by Assessment Committee which will be established in Cairo and Giza governorate. Details of the implementation system for additional assistance based on JICA policy are under discussion with NAT.
		(i) Are any plans developed to monitor the impacts of resettlement?	Y	(i) Monitoring is planned to be implemented in terms of progress of resettlement, implementation of assistance, grievance redress, etc.
		(j) Is the grievance redress mechanism established?	Y	(j) The grievance redress mechanism is under consideration as of September 2010.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(2) Living and Livelihood	(a) Where railways are newly installed, is there a possibility that the project will affect the existing means of transportation and the associated workers? Is there a possibility that the project will cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts?	Y	(a) Based on the findings of stakeholder meetings, there is negligible possibility to affect negatively the existing traffic means such as taxi and minibus along the Project route, since these means are expected also to be beneficial through the increment of business opportunities promoted by the Project. Some possibility of uncontrolled land use change is expected due to the new stations of the Project, although this change is considered as secondary one. Close coordination with such authorities as local governorates is proposed for proper land use planning and development near the new stations.
		(b) Is there any possibility that the project will adversely affect the living conditions of inhabitants other than the affected inhabitants? Are adequate measures considered to reduce the impacts, if necessary?	Y	(b) No impact is expected, since the metro will be constructed underground and does not affect the land use at-grade.
		(c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary?	Y	(c) The health care system including prevention of communicable diseases will be planned for workers' camps by contractor(s) based on the recommendations of EIA such as preventing diseases, providing first aid treatment for onsite injuries and providing healthcare services to the workforce.
		(d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas (e.g., by causing increases in traffic congestion and traffic accidents)?	Y	(d) There is some possibility of blocking the traffic flow by attracting unplanned and informal public transportation such as minibuses and taxis in large numbers near the new stations. In order to reduce the possible impact on the traffic flow, parking areas for buses and cars near the new stations will be planned in cooperation with relevant authorities (Ministry of Interior, Governorate, etc) whenever necessary.
		(e) Is there any possibility that railways will impede the movement of inhabitants?	Y	Same as (b).
		(f) Is there any possibility that structures associated with railways (such as bridges) will cause a sun shading and radio interference?	N	(f) Since major facilities such as tracks and stations will be constructed underground, no possibility of sun shading or radio interference is expected.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(2) Living and Livelihood	(g) Is there any possibility that the project cause physical community division?		(g) Since most of the project alignment will be underground, and the depot area which is the only section constructed at-grade is located in a desert, no impact of physical community division is expected.
		(h) Is there any possibility that the project will bring misdistribution of benefit and damage among the local communities?	Y	(h) Although project implementation will cause PAPs. They will be compensated intimacy manner. Negative impact due to construction is temporary and limited area, but such negative impact will be reduced by implementing mitigation measures described in 5.(1) (a) On the other hand, the project produces the local communities the convenience of transportation and enhances inter-regional exchange widely. Therefore the possibility of bringing misdistribution of benefit and damage among the local communities due to the project is minimized.
		(i) Is there any possibility that local conflict will be caused because of the project?	N	(i) Since the possibility of bringing misdistribution of benefit and damage among the local communities due to the project is limited, the possibility of local conflict will be minor.
	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	N	(a) This project is designed to avoid existing archaeological properties. During the feasibility study, archaeological asset study has been conducted, and the conceivable countermeasures and the actions have been prepared. Moreover based on the literature study and interview with SCA staff, criteria for Risk Assessment has been done. In the Risk Assessment the buried archaeological properties could be categorized into three levels which are evaluated according to the criteria. The results of Risk Assessment suppose that there are some areas where archaeological properties could be buried underground. Among them, it is most likely to be found at area around Al Remayah Square and El Malek El Saleh Station. Therefore further investigation will be planned at the Al Remayah Square station and El Malek El Saleh Station by non-destructive method and/ or borings before construction stage. According to a literature survey, the nearest archeological site is 145m far from the metro line 4 and it is enough to damp the vibration level from the project.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	N	(a) Negligible impact on landscape is expected due to the Project, since the major facilities such as tracks and stations will be constructed underground.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Is there any ethnic minorities and indigenous people at the project site?	N	(a) There is no ethnic minority and indigenous people in the project area.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(5) Ethnic Minorities and Indigenous Peoples	(b) If there are, are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?	N/A	N/A
		(c) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	N/A	N/A
		(d) Have Indigenous People Plan (IPP) been already prepared and disclosed?	N/A	N/A
		(e) Have agreements reached with Indigenous Peoples' communities?	N/A	N/A
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project?	N	(a) The Project proponent will fulfill the requirements to protect working conditions according to Law 4/1994.
		(b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials?	Y	(b) The HSE unit of ECM will provide the safety considerations to prevent the individuals, such as first-aid kit, emergency light, fire fighting system, etc.
		(c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.?	Y	(c) Staff training will be provided by HSE unit in ECM, regarding emergency response, fire protection, sanitary, etc.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(6) Working Conditions	(d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	Y	(d) Traffic police for the stations and the specific security for depot will be arranged appropriately.
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?	Y	<p>Adequate measures will be planned and provided to reduce the negative impacts of environmental pollution during construction stage as described below.</p> <p><u>Noise & vibration</u>: All generators and pumps will be positioned so as to minimize noise and vibration disturbance, and where necessary, acoustic enclosures will be provided. Localized noise barriers which are usually movable wall for enclosing the points of generators or high duty compressors will be erected as necessary. A 2m high solid site hoarding along the site boundaries will be erected where practical and feasible.</p> <p><u>Turbid water</u>: Turbid water will be generated by shielding and cut-and-cover works. Treatment plants for turbid water will be installed as countermeasures similarly to Metro Line 3 project to reduce likely impacts.</p> <p><u>Dust, exhaust gases</u>: Installing a safety fence along the site boundaries and spraying water during cut-and-cover works will mitigate dust diffusing. In addition, regular maintenance of construction machines will reduce exhaust gases.</p> <p><u>Wastes</u>: The excavated soil from station construction is loaded to trucks, which transfer it to the assigned disposal areas. The excavated soil amount is estimated approximately 3,000,000m³. The constructor will ensure efficient implementation of soil waste management plan. The generated soil waste resulting from TBM operation will be treated in the mud treatment station to separate the bentonite from the soil before being disposed in the assigned disposal area. Solid and hazardous waste will be treated according to Egyptian regulation and standard:</p> <ol style="list-style-type: none"> Materials containing hazardous materials which pollute air, water, soil, and groundwater will not be used. In addition, materials which generate hazardous residue will not be used. (e.g., asbestos, materials containing organic benzene, etc) Incineration and landfill of waste will not be done at the site.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5 Others	(1) Impacts during Construction	(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?	Y	(b) The Project area is located in metropolitan city with high urbanization. Therefore, there are no issues of ecosystem to be cautioned on construction activities. However, some areas include developed trees (commonly called centenary trees, although their age is not determined). These trees are not protected species; however, due to the time needed to obtain their size, they should be protected to the extent possible. Such measures will be taken as the following, i) limit of clearance directly interfered by the construction works to reduce tree removal; and ii) temporary transplantation of trees before construction works with proper protection from damage and replanting after construction.
		(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	Y	(c) Adequate measures will be planned and provided to reduce the negative impacts of social environment during construction stage, such as road decking to reduce traffic jam at stations' construction sites, temporary pedestrian paths, etc.
		(d) If the construction activities might cause traffic congestion, are adequate measures considered to reduce such impacts?	Y	(d) There will be possibility to affect the road traffic near the construction sites of stations where cut and cover method will be applied during the construction stage. Road decking at the construction sites of stations will be applied to reduce the negative impacts on traffic conditions. Moreover, negative impacts on roads and traffic conditions during the construction phase will be mitigated through i) minimizing the scale and duration of the temporary lane occupation of the road, and ii) using alternative routes to bypass affected section to reduce the traffic volume load at the construction sites.
		(e) Are adequate measures considered to reduce accidents during construction?	Y	(e) There is a possibility of accident due to the operation of heavy equipment and heavy vehicles during the construction stage. Constructors provide a safety training to workers in order to avoid any risks caused by operational mistakes as well as to promote consciousness of importance about the role of safety equipments such as safety helmets. The geological survey will be conducted before construction, and the constructor can know any risks such as collapse during construction. As for the construction stage, appropriate safety control will be performed
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?	Y	(a) Environmental monitoring plan is proposed for pre-construction, construction and OM stages of the Project, based on the impact prediction and mitigation measures proposed.
		(b) What are the items, methods and frequencies of the monitoring program?	Y	(b) Items, methods and frequencies of the monitoring is summarized in Attachment D.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5 Others	(2) Monitoring	(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?	Y	(c) Institutional arrangement to carry out the monitoring plan is proposed including entities concerned and roles of each entity.
		(d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	N	(d) There is no regulatory requirement in Egypt such as reporting system of monitoring results.
		(e) Will the results of monitoring be disclosed to local stakeholders?		Ditto
	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation).	N	(a) The Project does not have relevance to forest or forestry since the Project locates in the urban area where any primal nature is not observed.
		(b) Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric distribution facilities).	Y	(b) High Voltage Station will be located next to the existing high voltage line. Therefore incremental electromagnetic field impacts are considered to be negligible.
6 Note	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, if necessary (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	N	(a) Although, there is a possibility increased Greenhouse Gas (GHG) emission due to the operation of heavy vehicles as well as traffic jams incidental to the construction works, this impact will be temporary. On the other hand, it is expected that the GHG emission will be reduced due to the modal shift of transportation from passenger cars/buses to the new metro. Therefore, no impacts are expected on transboundary or global issues, considering the Project characteristics and scale comprehensively.

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.

Attachment A: Correspondence to Approval Conditions

The approval for original EIA includes some conditions to conduct scoped environmental studies for the following works prior to the initiation of any part of the project.

Conditions	Correspondence
1.Coordination with the agencies responsible for infrastructure (Water networks – Wastewater – Electricity – Communications – Natural Gas) along the project route and taking all the necessary procedures and precautions to preserve it during the construction process.	In the pre-construction phase, NAT coordinate with relevant authorities to get accurate maps along the project route and set procedure for utility diversion.
2.Obligation to provide scoped environmental studies for the following works prior to the initiation of any part of the project: i) Hydraulic study of the deposition of the area to be crossed under the Nile River ii) Groundwater movement and the expected scenarios of rising groundwater levels along the route by using a mathematical model iii) Study on the impact of vibrations and drilling.	The plan and schedule of these studies will be developed in the detail design stage based on more detail information. And these studies will be completed before construction. The plan and schedule of these studies will be discussed with EEAA based on the current and detail data.
3. Take necessary precautions to reduce the ambient air pollutants during the construction phases.	Mitigation to reduce the ambient air pollutants, which is planned in EIA, is carrying out during the construction phase.
4. Proper and safe disposal of drilling waste through collection and delivery to a certified contractor	The disposal of drilling waste is collected and delivered by a certified contractor.
5. Follow-up and periodic monitoring of noise and air quality in sites during the construction phase.	Monitoring plan of noise and air quality in sites, which is based on EIA, is carrying out during the construction phase.
6. Commitment to disposal of stations' sewage on the main network. Sewage should match the criteria set by Law 93 of 1962, decree 44 of 2000 and other ministerial decisions before disposal on the main network.	The disposal sewage from the station should match the criteria set by Law 93 of 1962, decree 44 of 2000 and other ministerial decisions before disposal on the main network.
7. Coordination with traffic departments with regard to parking areas for buses and cars near the stations in order to facilitate traffic in the stations' areas.	Parking areas for buses and cars near stations is planned through the coordination with relevant authorities (Ministry of Interior, Governorate, etc).
8. The noise level should not exceed the limits of Annex 7 of the executive regulations for Law 4/1994	The noise from implementing the project is managed to be under the limits of Annex 7 of the executive regulations for Law 4/1994. However, there is an area which exceeds the standard value of the noise already. The negative impact of noise is reduced by mitigation measures based on EIA at such place.
9. Compliance with the workplace health and safety as per Annex 9 of the executive regulations of Law 4/1994.	The workplace health and safety is managed under the condition as per Annex 9 of the executive regulations of Law 4/1994.
10. Compliance with the Environmental Management Plan included in the study.	The Environmental Management Plan is carried out based on EIA report.
11. Commitment to prepare a emergency and evacuation plan, and training of workers on implementation.	An emergency and evacuation plan, and training of workers on implementation is prepared, which are based on EIA.
12. Formulate an environment register for the project. It should be available for environmental inspection.	Based on the environmental monitoring plan in EIA, the result of monitoring is recorded.
13.The need to obtain the approval of other concerned authorities on the project. This approval is only environmental and should not contradict with any other laws, principles or decrees related to this project. In case of non compliance with any provision of the requirements described above, this approval is canceled.	The above-mentioned conditions are executed certainly for implementing the project.

Attachment B: The Key Issues Raised During Public Disclosure Meeting and Interviews

Subject	Issue Raised	Response
Public Consultation	<ul style="list-style-type: none"> List of entities involved in the scoping meetings and a summary of the concerns raised The book vendors were asked to evacuate their location with only a one -week notice to clear the way for the Metro station of Line 2. 	<ul style="list-style-type: none"> Summary of Scoping Meetings provided in Chapter 8, Interagency Coordination and Public Consultation The additional stakeholder meeting was held on 16th October, 2010. NGOs which support kiosk owners were invited into the meeting.
Alignment Alternatives	<ul style="list-style-type: none"> Metro line 4 will pass in Pyramids (Haram) street which is mainly touristic and recreational more than being residential and so this should be taken into account The proposed line passes through Giza Square which already accommodates El Haram Tunnel, Railway Bridge and metro Bridge. Therefore it is a very sensitive spot and can be avoided through by passing Giza square rightwards to El Monib district. The choice of Haram Street instead of Faisal for location of the metro line 4 	<ul style="list-style-type: none"> Investigated alternatives for Metro Line 4 are included in Chapter 5, Project Alternatives Hard points are identified in Chapter 4, Project Description
Planning Issues	<ul style="list-style-type: none"> Carrying out cumulative impact assessment for all projects established in the same area Consider making a unified ticket for all public transportation modes Phase 2 of the project and why it was not included in the present EIA Parking spaces should be planned for next to the metro stations even if this entails land and property acquisition. If there is space in Pyramids (Haram) street to locate parking spaces next to the metro stations If the population growth is taken into account during the design of metro line 4 as the present stations of metro 1 and 2 get very congested with time. The area outside the Faisal Station became chaotic due to the activities of the illegal vendors Stations should contain all services required by the users Proposal for the establishment of escalators like the one in Sidi Gaber Station in Alexandria to help the metro users to cross the street especially senior citizens 	<ul style="list-style-type: none"> NAT Planning issues in coordination with other entities as mentioned in Chapter 6, impact Assessment and Mitigation Measures
Noise	<ul style="list-style-type: none"> Whether a mathematical model was prepared to correlate the expected reduction in traffic with impact on pollution such as noise reduction 	<ul style="list-style-type: none"> Noise impacts are discussed in Chapter 6, Impact Assessment and Mitigation Measures
Waste Management	<ul style="list-style-type: none"> The method of ensuring the solid waste management contractors is disposing the excavated soil in the assigned place Solid waste disposal plans during construction and operation. 	<ul style="list-style-type: none"> Waste management is discussed in Chapter 7, Environmental Management and Monitoring Plan (EMMP)

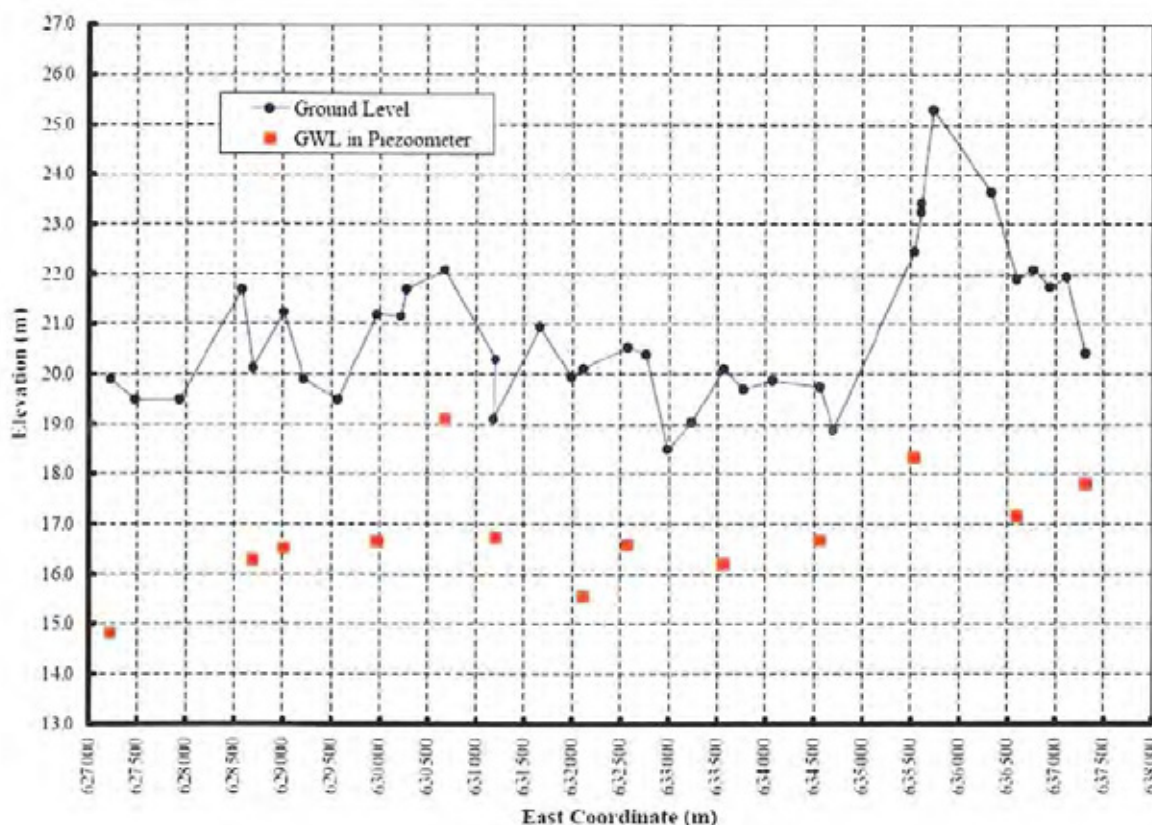
Subject	Issue Raised	Response
Traffic	<ul style="list-style-type: none"> • Haram street is already suffering for traffic congestion and therefore the situation will get worse during construction of the metro stations. • An integrated plan is needed to solve the problem of traffic in Cairo to beyond 2050 	<ul style="list-style-type: none"> • Traffic impacts are discussed in Chapter 6, Impact Assessment and Mitigation Measures
Vibrations	<ul style="list-style-type: none"> • The possibility of vibrations impacts on the artefacts and archaeological sites due to the construction of the metro and its stations in the area of the Egyptian Museum. 	<ul style="list-style-type: none"> • Impacts on structural integrity of buildings and archeological sites are discussed in Chapter 6, Impact Assessment and Mitigation Measures
Health Impacts	<ul style="list-style-type: none"> • The impacts of the electricity transformers linked to the metro on the public • Users of Metro line 2 have been complaining from the ventilation and the ventilation of EL Azhar Tunnel is also bad 	<ul style="list-style-type: none"> • Impacts on public health and safety is discussed in Chapter 6, Impact Assessment and Mitigation Measures
Economic Impacts	<ul style="list-style-type: none"> • Besides the environmental factors, were the financial and operation factors included in the feasibility study 	<ul style="list-style-type: none"> • Socio-economic impacts are discussed in Chapter 6, Impact Assessment and Mitigation Measures
Impacts on Groundwater	<ul style="list-style-type: none"> • If groundwater rise will affect the construction of stations and tunnels • Recommendation for a system of wells to be drilled to monitor the fluctuation of groundwater levels (at varying depths) in some areas where the metro passes through especially in Masr El Kadima / Ahrām/ El Malek El Saleh. • The construction of the project in these areas may lead to change the hydraulic borders of existing reservoirs, as well as lock the groundwater flow paths and accordingly higher groundwater levels in the surrounding areas. And the consequent negative impacts on the facilities and residential buildings in these areas. • There is a need to prepare a detailed hydrological study along the route of phase 1 of the Metro line which includes a numerical model to represent the conditions groundwater presence in these areas, the expected scenarios of rising groundwater water levels and the extent of the negative impacts on facilities and residential buildings as well as propose engineering solutions to avert such problems. 	<ul style="list-style-type: none"> • Groundwater issues are discussed in Chapter 6, Impact Assessment and Mitigation Measures and Chapter 7, Environmental Management and Monitoring Plan (EMMP) • Groundwater movement and the expected scenarios of rising groundwater levels along the route by using a mathematical model will be provided prior to the initiation of any part of the project.
Impacts on Archaeological Sites	<ul style="list-style-type: none"> • The impact of the metro project on the Pyramids and the Sphinx • Inquiry about NAT's procedure for ensuring that no archaeological monuments will be encountered during tunnel boring as not to reach a situation like that encountered in Metro line 3 and the latest incident of land collapse • The impact on archaeological sites such as the Citadel and Sultan 	<ul style="list-style-type: none"> • Impacts on Archeology is discussed in Chapter 6, Impact Assessment and Mitigation Measures

Subject	Issue Raised	Response
	Hassan Mosque and the buried ones that could stop the work of NAT and a recommendation for the use of radar or electromagnetic investigations.	
Management Plans	<ul style="list-style-type: none"> • Encouraging the design of proper emergency response plan as this metro will be a single line. • Emergency response plan in case of electricity/power failure. • Rodent fighting plans within tunnels as some were observed in some stations. • Coordination with the other entities that could make use of the proposed line 	<ul style="list-style-type: none"> • Emergency plans framework are part of the EMMP detailed in Chapter 7

Attachment C: Geotechnical Investigation Report

1) Ground water level

Piezometers were installed inside some of the boreholes after the end of boring to allow observation of groundwater levels. Based on observations in the piezometers, the ground water depth ranged between 2.63m and 5.1m below ground surface, with an average around 4.0m depth. Considering ground elevations, the ground water elevations ranged between +14.8m and +19.09m with an average around +16.8m.

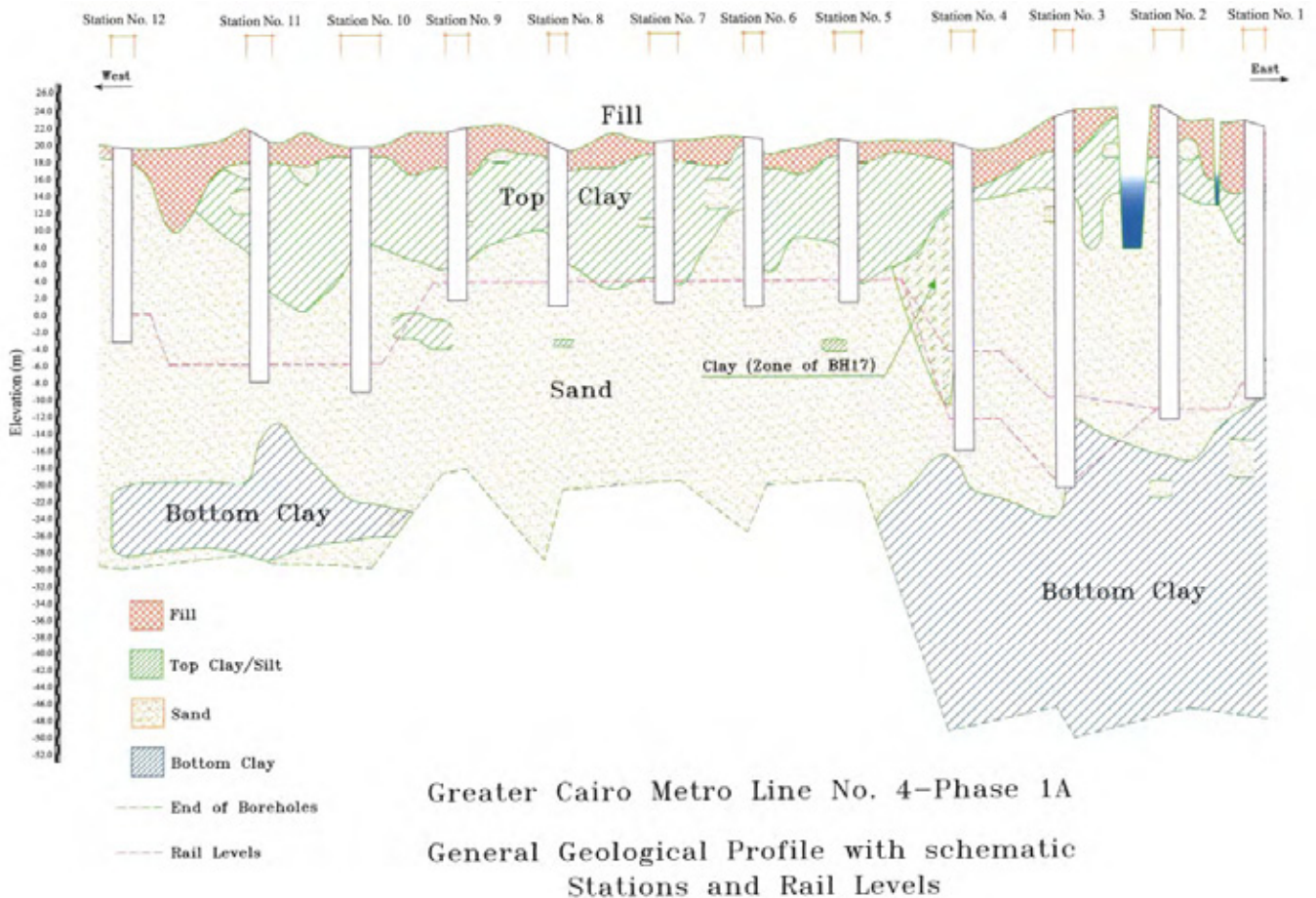


Source: JICA Study Team

FigureC-1 : Groundwater Elavation Recorded in Piezometer

2) Geological Profile

FigureC-2 shows an interpreted generated geological section based on the executed bore holes. Along the Metro Line 4 phase 1 El Remayah Station to El Malek El Saleh station, four main distinctive soil layers are encountered. Metro Line 4 is planned to pass through the sand layer for the most part in a tunnel. Generally the Sand of this layer contains trace to some of silt. The sand layer represents the main aquifer.



Source: JICA Study Team

FigureC-2 Generalized Geological Profile with Station and Rail Levels

Attachment D: The summary of Environmental Monitoring Plan in EIA

1) Construction stage

Monitoring Parameters	Monitoring location	Monitoring duration /Frequency	Party implementing the measure
Air Quality TSP, PM10, CO, NOx, SOx	Next to Construction site for Station / Facilities	24 hours /Every Month	Construction Contractor, supervised by NAT
Noise intensity	Next to Construction site for Station / Facilities	24 hours /Every Month	Construction Contractor, supervised by NAT
Vibrations	Next to Construction site for Station / Facilities	24 hours /Every Month	Construction Contractor, supervised by NAT
Groundwater Levels	All monitoring wells	Before construction Monthly	Construction Contractor, supervised by NAT
	Group one (G1) wells	During Construction	
	Group two (G2) wells	Monthly	
Groundwater Quality BOD, COD, TDS, Chlorides, Nitrates, total Phosphate, Oil & Grease, Bacteriological parameters	All monitoring wells	Annually	Construction Contractor, supervised by NAT
	Group one (G1) and Group three (G3)	Monthly during construction	
Soil conservation measures	Construction site	During Construction / periodical check	Construction Contractor, supervised by NAT
Flora and Fauna - visual inspection	Construction site	During Construction / periodical check	Construction Contractor, supervised by NAT
Workplace Health and Safety	Construction site	During Construction / periodical check	Construction Contractor, supervised by NAT

Monitoring of groundwater levels and quality after construction, should be done until the movement of water has been stabilized.

2) Operation stage

Monitoring Measures	Monitoring location	Monitoring duration /Frequency	Party implementing the measure
Air Quality CO, CO ₂ , NO _x , PM ₁₀ , TSP, SO _x	Near the station locations / In working place / Under ground stations (CO ₂)	24h or 1hr /Every 6 months	- HSE Department - Third party (e.g. Research Centers or Universities)
Noise Intensity	Near the station locations / In working place	24h /Every months	- HSE Department - Third party (e.g. Research Centers or Universities)
Heat Stress -Temperature	Station and Depot	Monthly / periodic check	Third party (Research Centers or Universities)
Solid and hazardous waste - Volumes of waste for re-use, recycle and/or final disposal - Treatment procedures and final fate of solid wastes	Station and Depot	Periodic check	HSE Department (Environment Unit)
Terrestrial life - visual inspection	Station and Depot	Periodic check	HSE Department
Workforce Health and Safety -Inspection on use of health and safety gear - Medical treatment of workers in case of Injuries and/or illnesses - Checking first aid kits and safety gear.	Station and Depot	Periodic check	HSE Department