

ANNEX C2: SCOPING STATEMENT AND RECORD OF PUBLIC CONSULTATION

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1 INTRODUCTION

The construction of the Disi-Mudawarra water conveyance system will affect all of the current and future population in the project area and to a certain extent the natural and the built up environment as well as the status of water resources in Jordan. For elaborating on the environmental and social assessment study, the following main objectives were identified:

- To have a two-way discussion of substantive issues with stakeholders from national and local government, residents of the project area of influence, academic and applied research institutes, non-governmental organizations and interested individual citizens.
- To identify the substantive issues of specific concern to related stakeholders and get input from the public on the environmental and social assessment process.
- To take into account the views of women.
- To disseminate information to the various segments of the public (mainly through presentations, handouts, and focus groups).

2 SCOPING METHODOLOGY

The Consultant was supposed to hold three scoping sessions- one in Amman, one in Ma'an and one in Aqaba. The aim of having three scoping sessions was to insure that the community representatives of the areas influenced by the Disi-Mudawarra to Amman water conveyance project would have the chance to participate in the scoping sessions. However, upon the Client's request and in order to have a higher number of stakeholders and individuals participating in each scoping session, only two scoping sessions were conducted- one in Amman and one in Aqaba. Amman scoping session targeted Amman, Madaba and Al Jiza areas. Aqaba scoping session hosted the target population of Disi, Aqaba, Tafileh, Ma'an and Al-Qatraneh areas.

The preparations for the scoping sessions involved activities that assist in formulating a comprehensive framework for developing the scope of the Environmental and Social Assessment (ESA). These activities included site visits and meetings with associated municipalities and community representatives, determination of the list of participants in the scoping sessions, preparation of a description of the project and its related environmental and social issues as well as a questionnaire to summarize the initial perception of the participants regarding the project.

The Project Manager and the project's team members made several site visits to the project area in order to develop familiarity with the involved communities and conveyor route. The meetings between the project team members and representatives from the Client side were conducted to obtain information and perspective concerning the environmental and social issues related to the project and to identify the stakeholders to be invited to the scoping session.

Several studies prepared between the time period 1995 and 2002, along with the site visits and informal meetings, provided the necessary information for describing the project, its background, areas potentially affected by it, and the preliminary related environmental and social issues (see **Appendix 1**). Formal invitation letters from the Client to attend the Scoping Sessions at 8:30 A.M. on Thursday, March 27th, 2003 in Amman and at 9:00 A.M. on Thursday, April 3rd, 2003 at Aqaba were circulated to the potentially concerned agencies, NGOs, and community representatives (see **Appendix 1**). For the purpose of the sessions, background material to the project was presented and described in a handout prepared in Arabic and distributed at the scoping sessions.

As scheduled, the scoping sessions were held on March 27th and April 3rd. Both sessions started with an opening statement from the MWI representative, Eng. Fayez Bataineh. Following the opening statement, the Project Manager presented a description of present conditions and the proposed project. After the presentation, the participants were asked to complete a questionnaire that summarizes their initial perceptions regarding significant potential environmental and social issues (see **Appendix 1**). Then, the participants were divided into six focus groups in Amman and three focus groups in Aqaba representing the issues to be discussed. **Table 1** reflects the distribution of the focus groups.

Table 1: Focus groups distribution at Amman and Aqaba scoping sessions

Amman Scoping Sessions	Aqaba Scoping Session
Group 1: Water Resources Focus Group	Group 1: Water Resources Focus Group
Group 2: Agricultural Resources Focus Group	Group 2: Social Assessment Focus Group
Group 3: Archaeological and Cultural Heritage Focus Group	Group 3: A-biotic Environment, Biotic Environment, Agricultural Resources and Archaeological and Cultural Heritage Focus Group
Group 4: A-biotic Environment Focus Group	
Group 5: Biotic Environment Focus Group	
Group 6: Social Assessment Focus Group	

In each focus group, discussions started with a brief explanation from the participating team member about the project and its related potential issues expected during the construction and operation periods followed by discussions within the focus group in order to reach conclusions regarding the issues of concern. Then, a representative from each focus group did a 10 minutes presentation about the conclusions and recommendations of the concerned focus group.

When the focus groups finished their presentations, the project manager presented the results of a sample of the filled questionnaires. This was followed by questions and comments on potential issues along with a clarification on the description of the project and its potential environmental and social effects. A list of the focus groups and their members along with the discussions and conclusions of each group in each session are presented in **Appendix 2**.

The participants commented on the various aspects of the project and the likely areas of impact. The questionnaire responses were then compiled and a summary of the results was produced (see **Appendix 2**). The generated results identified the significant and non-significant issues and the extent to which those issues would be addressed in the ESA.

3 RESULTS OF SCOPING ACTIVITIES

The environmental and social issues that need to be assessed were identified from the results of the scoping activities. This was mainly through the focus group discussions, scoping session questionnaire results and the issues raised during the questions and comments.

3.1 Issues Identified within the Focus Groups Discussions

The environmental and social issues of concern identified during the focus groups discussions are as follows:

A. Water Resources

- Justification of the need and necessity for conveying the Disi water.
- Verification of the abstraction and quality problem by modelling.

- Protection of watershed boundaries if needed.
- Possibility of mixing Disi water with other sources for optimisation, such as Disi with Zai.
- Studying the quality and quantity of water resources in Jordan taking the following into consideration:
 - Water is insufficient and incompatible with consumption, for example, Yarmouk Basin.
 - Jordan has to take advantage of all water resources (for example, desalination of ground water in different regions) and develop them to be available technically and economically.
 - Desalination of water in Jordan exceeds 5 MCM.
 - Taking advantage of surface water, implementing laws to encourage collection of rainwater, and increasing dam construction.
 - Public awareness in terms of water-use enlightenment for local societies.
 - Dealing with water losses in water systems with dependable maintained lines.
 - Studying industrial water-use.
- Studying the Disi Aquifer in relation to:
 - Quality and quantity;
 - Present and future consumption;
 - Water budget;
 - Giving a chance for aquifers affected by oppressive pumping or water abstraction to regain their quality due to water compensation from Disi; and
 - Having future plans for speedy water resources for the region (Disi and Aqaba) for the coming 40 or 50 years.
- Implications of the enhancement of the effluent to Jordan Valley due to improvement of the consumed water quality.
- Distribution of the water according to water needs.

More details on these discussions and results of this focus group are presented in **Appendix 2**.

B. Agricultural Resources

- Disi farm companies.
- Employment status of the local people currently working in the farms in Disi areas.
- Animal production along the desert path.
- Dust levels in the area extending from Jiza to Amman.
- Cutting trees in the area extending from Jiza to Amman.
- Reduction of soil fertility due to new imported soil in the area extending from Jiza to Amman.
- Reduction of the agricultural areas or removing olive trees along the conveyor route.
- Obstruction of the entrances of the farms due to construction activities.
- Definition of non-sustainable agriculture according to the concept of the use of Disi non-renewable water and with respect to cost return, economical value, and social value.

More details on these discussions and results of this focus group are presented in **Appendix 2**.

C. Archaeological and Cultural Heritage

- Two sites of main concern located at Segment A. These are:
 - Cave of Seven Sleepers
 - Khirbet Es-Suq Mausoleum
- Activities regarded as sources of impacts on the archaeological sites include:
 - Destruction during digging
 - Vibration
 - Pollution
 - Movement of vehicles
 - Camping areas
 - Solid waste material
 - Borrowing areas
 - Pipe explosion / seepage
 - Cavities

More details on these discussions and results of this focus group are presented in **Appendix 2**.

D. A-biotic Environment

- Noise levels at nearby local communities and workers at the project construction site.
- Increased dust levels in the area and the potential impact on:
 - Public safety for workers and local communities;
 - Nearby farms in the project and nearby areas.
- Changing the geomorphological system of the area to a large extent.
- Fluid and Solid wastes resulting from the project, including:
 - Cutting and demolition wastes;
 - Construction material wastes;
 - Oil and grease residues; and
 - Human wastes of the workers (affected by the number of employees and distance from concerned areas).
- Tectonic activity in the area and its impact on the project.
- Increase in traffic due to vehicles related to the project especially heavy vehicles and the traffic problems associated with them and the need to coordinate with the Ministry of Transport and the Phosphate company as well as for the Rashidiye road till the Disi triangle.
- Opening temporary access roads haphazardly in order to reach to the construction sites.
- Soil stability.
- Air quality:
 - Silica and its impact on air quality;
 - Vehicles emissions (though it was mentioned that the Badia area has more severe and urgent problems than the potential impact from the vehicles emissions. These impacts relate to the phosphate companies and hence the impacts due to vehicles emissions during the construction phase of the project is considered not significant by the local community. However, a limit should be set for vehicles' age in order to enhance safety conditions); and
 - Age of the vehicles.

- Public safety for the workers and the local communities.
- Transportation from Aqaba Port and the need to coordinate with the Port Institute.
- Corrosion of the water conveyor due to effect of the soil type and the need to take precautionary measures for protection and maintenance of the conveyor.

More details on these discussions and results of this focus group are presented in **Appendix 2**.

E. Biotic Environment

- Issues of concern at the species level:
 - Destruction of vegetative cover: Acacia at Batn El-Ghoul
 - Impact on desert inhabitants
 - Disturbance
 - Accessibility
 - Increase in hunting of flora, fauna and birds by the workers on the project;
 - Potential impact on wildlife that exist in the desert (especially desert deer);
 - Accumulation of solid waste; and
 - Potential impact on the project of reintroduction of the Oryx.
- Issues of concern at the ecosystem level:
 - Disturbance
 - Alteration and Damage to natural water flow
 - Disturbance of natural habitats (Hammad, Sand Dunes, Qeea'an, and wadis);
 - Disruption of natural habitat organization;
 - Potential impact and disturbance to wildlife;
 - Increase in dust levels and potential impact on air quality; and
 - Potential impact on important bird areas and important natural habitats.

Two issues were mentioned to be of high concern; these are the reintroduction of the Oryx and the fact that there are only 40 Ghazal in the Batn El-Ghoul area and these might be threatened by hunting activity by the employees.

More details on these discussions and results of this focus group are presented in **Appendix 2**.

F. Social Assessment

- Employment and allocation of a certain percentage of required labour for the local residents alongside the pipeline and in Disi.
- Consideration of the rules for public safety during digging and construction by coordinating efforts with the Ministry of Housing and Public Works, the Municipality of Greater Amman, and the Department of Traffic.
- Public awareness campaign explaining the benefits of the project before and during work.
- Studying the available services and obstacles at the path of the pipeline before offering tender for the project.
- Keeping away from crossroads as much as possible.
- Coordinating with the various service establishments.
- Public Health in terms of improving water quality which is a positive impact.

- Economic considerations and individuals ability to pay for the water (minimal impact and the lower social groups will not be affected).
- Disrupting traffic movement for residents and large vehicles. This impact is expected to be along the Desert Highway and the last third of the conveyor route.
- The temporary disruption of energy sources and this is considered to be a temporary and partial impact.
- Temporary disruption of water sources in terms of stopping the water pipelines and this is considered to be a temporary and partial impact.
- Business shops (Qatraneh, Al Jiza, and Abu-Alanda) and taking into account the affected commercial shops owners alongside the pipeline as a result of the project, by compensating their expected financial losses.
- Indigenous people (Badia area and the tribes available there)
- Land acquisition (no impacts since lands were acquired in a previous stage)

More details on these discussions and results of this focus group are presented in **Appendix 2**.

3.2 Scoping Questionnaire Responses

The responses of the participants to the distributed questionnaires were compiled and presented in **Appendix 2** in tables showing the frequency and percentage of responses to each question.

3.2.1 General Analysis of the Scoping Questionnaire Responses According to the Location of the Scoping Session

The participants in the session were mainly engineers and administrative personnel representing various institutions from governmental authorities, nongovernmental organizations, universities and private sector. The results reflected that there was a good participation of in the sessions (20-25.5 percent of the participants were women).

98 percent of the participants at Amman session and 93.3 percent of the participants at Aqaba session agree that Jordan suffers from water shortage. The higher percentage at Amman session is expectable since Amman residents have a great feel of the extent of the water shortage problem.

100 percent of the participants at both sessions mentioned that they depend on the main water supply network as the source of water at their houses. About 55 and 76 percent of the participants in Amman and Aqaba sessions, respectively, believe that the supplied water is of very good to good quality and only about 5 to 10 percent believe that it is be of poor quality. This difference in belief may be explained by the fact that Aqaba area depends on Disi water and on the plenty of water supply in the southern regions as compared to Amman.

About 94 and 90 percent of the participants in Amman and Aqaba sessions, respectively, believe that the supplied water is of more than a medium quality and, hence, they do not depend on other sources for drinking water. In Amman, those who use other sources for drinking water depend on household treatment and filtration devices and bottled water and those in Aqaba depend on bottled water.

About 80 percent of the participants at both sessions had an idea about the Disi-Mudawarra Water Conveyance System prior to attending the scoping sessions. The majority of those participants (40

and 58 percent in Amman and Aqaba, respectively) knew about his project from official reports, leaflet, newspapers and magazines.

In Aqaba about 73 percent of the participants believed that they have sufficient quantities of water supplied to their houses, whereas in Amman about 59 percent of the participants mentioned that the quantity of water supplied to their houses is not sufficient.

Regarding the current water tariff, 68.6 percent of Amman participants believe that it is acceptable and only 23.5 percent perceive that it is high. A similar pattern of response was observed at Aqaba's session where 76.7 percent of the participants responded that the water tariff is acceptable and only 20 percent responded that it is high.

About 70 to 75 percent of the participants at both sessions believed that this water conveyance is important for solving the water shortage problem in Amman in spite of the high cost as opposed to about 13 percent who do not consider this project to be important in solving Amman's water shortage problem.

51 and 63.3 percent of the participants in Amman and Aqaba sessions, respectively, consider that the current water quality is one of the reasons behind the diseases affecting the family members as opposed to about 14 and 36 percent who do not believe the water quality to be among the reasons behind the diseases.

At Amman's session, 72.5 percent mentioned that they notice impurities in their water as opposed to about 24 percent who do not. Also, at Aqaba's session, 50 percent mentioned that they notice impurities in their water as opposed to about 47 percent who do not.

About 53 percent of the participants at both sessions mentioned that they do not clean their water storage tanks in a regular pattern. About 31 and 23 percent at Amman and Aqaba, respectively, clean the water tank once per year and about 12 and 17 percent once every six months. The rest (i.e., about 4 and 7 percent) reported that they never clean their water storage tanks.

About 86 and 97 percent of the participants at Amman and Aqaba sessions, respectively, believe that water of better quality should be supplied to protect the health of the community.

45 percent of Amman's session participants answered that they would accept raising the current water tariff in return for having a better water quality supplied by the Water Authority whereas 49 percent did not agree to such a raise. At Aqaba, about 63 percent agreed to raising the current water tariff if a better water quality were to be supplied by the Water Authority and 33 percent said they would not agree to such a raise.

About 41 percent of the participants at Amman session responded that Jordan has a good water resources management compared to about 33 percent who responded that Jordan should improve its management of water resources. At Aqaba, about 33 percent believed that water resources management is good, about 33 percent said that it is acceptable, and 30 percent answered that it should be improved.

At Amman's session, about 24 percent answered that all of the recommended measures for improving water resources management in Jordan (i.e., public awareness and encouragement of guidance, secure proper planning regarding determination of water usage priorities, rehabilitation of the damaged water supply networks, and finding new water sources, such as seawater desalination) should be adopted; of Aqaba's session participants, about 17 percent recommended considering all the mentioned improvements.

The majority of Amman's session participants (about 82 percent) knew that there are agricultural practices at Disi area that depend upon the Disi Basin groundwater and about 33 percent of the participants responded that these agricultural practices are of no economic importance to the national economy and that there are no rare crops that assist in reducing the budget deficit.

At Aqaba's session, all of the participants (100 percent) knew that there are agricultural practices at Disi area that depend upon the Disi Basin groundwater and 40 percent of the participants responded that these agricultural practices are of no economic importance to the national economy and that there are no rare crops that assist in reducing the budget deficit.

At Amman session, about 48 percent responded that agricultural activities would be moderately or highly affected by this water conveyance project. At Aqaba, 50 percent of the participants responded that the agricultural activities would be highly affected.

Only about 4 and 17 percent of the participants at Amman and Aqaba sessions, respectively, responded that this project would have a limited effect in reducing the water shortage problems in Jordan.

At Amman session, about 45 percent responded that the priority of supplying water from the Disi Basin should be to all the kingdom and 49 percent responded that it should be for the areas of the Kingdom that suffer from water shortage. Only 2 percent answered that the priority should be given to the Disi farms and nearby industries.

At Aqaba session, 40 percent responded that the priority of supplying water from the Disi Basin should be to all the kingdom and about 37 percent responded that it should be for the areas of the Kingdom that suffer from water shortage. Only 2 percent answered that the priority should be given to the Disi farms and nearby industries and 13 percent answered that the priority should be for the inhabitants of Aqaba and Disi areas.

About 73 and 67 percent of the participants at Amman and Aqaba sessions, respectively, responded that the construction of the conveyor will not affect archaeological or cultural sites. Of those who answered that such sites will be affected mentioned the concern regarding the Cave of Seven Sleepers, Zizia pool, Qatraneh Castle, Khirbet Es-Suq Mausoleum, Wadi Rum and the train railway.

About 75 and 73 percent of the participants at Amman and Aqaba sessions, respectively, responded that the construction of the conveyor would not affect the natural habitat along the conveyor route. Of those who expected impacts to natural habitat, answered that Batn El-Ghoul, Tarma and Wadi Rum are the areas of concern.

About 70 percent of the participants at both sessions responded that the construction of the conveyor would not affect the grazing areas along the conveyor route. Of those who expected impacts to grazing areas, answered that Disi, southern areas of the Kingdom, Batn El-Ghoul, and Jafr are the areas of concern.

About 83 percent of the participants at both sessions responded that the construction of the conveyor would not affect plants, animals or birds that are rare or of special importance. Only the participants of Aqaba session named the following as plants, animals or birds that could be impacted:

- Ghazal at Disi and Rum areas

- Medicinal plants at Rum
- Certain bird species at Disi area
- Wild rabbits

About 75 and 70 percent of the participants at Amman and Aqaba sessions, respectively, responded that the construction of the conveyor would not affect the air quality in the areas that it will pass through. Those who expected air quality impacts expressed that it would be in all areas of the project.

About 53 and 57 percent of the participants at Amman and Aqaba sessions, respectively, responded that the conveyor would affect the noise levels in the areas that it will pass through during the construction phase. Those who expected the increase in noise levels during that phase expressed that it would be in all areas of the project.

Finally, about 65 and 60 percent of the participants at Amman and Aqaba sessions, respectively, responded that the conveyor would affect the noise levels in the areas that it will pass through during the operation phase. Those who expected the increase in noise levels during that phase expressed that it would be in the areas near the pumping stations.

3.2.2 Analysis of the Scoping Questionnaire Responses According to the Sex of the Participant

Almost all of the participants from both sexes agreed that Jordan suffers from water shortage where all of the female participants mentioned that whereas 95.2 percent of the male participants indicated that Jordan suffers from water shortage.

73.7 percent of the participating females indicated that they believe the potable water quality in their residential areas is good and more than good whereas 59.7 percent of the male participants indicated that it is good to more than good.

The results indicated that male participants have more information about the Disi project than female participants do where 87.1 percent of the males had an idea about the project prior to the distribution of the project handout during the session and 63.2 percent of the female women had previous idea about the project.

Both female and male participants agreed that the current water tariff is acceptable for all with the females indicating greater acceptance of that tariff. 84.2 percent of the female participants indicated acceptance of the current tariff as compared to 66.1 percent of the male participants. This may be due to the fact that in most cases men are the ones responsible for paying the tariff.

Most of the female and male participants (71 and 78.9 percent of the female and male participants, respectively) agreed that in spite of the high cost of this project, it is important for solving the current and future water problems for the city of Amman.

More than half of the participants from both sexes (57.9 and 54.8 of the female and male participants, respectively) agreed that the current water quality is one of the reasons of the diseases affecting family members.

The results revealed that the males notice more the presence of any unacceptable sediments or suspended material in their domestic water supply. 69.4 percent of the males indicated the presence of material whereas only 47.4 percent of the females indicated that. The females opinion

varied where the same percent (47.4 percent) that indicated no presence of any unacceptable sediments or suspended material in their domestic water supply indicated that there is such material in their water.

Though the majority of the participants believe that this project is important, only 36.8 percent of the females and 46.8 percent of the males believe that the project will only result in a reduction of the severity of the water shortage problem. Only 26.3 percent of the females and 46.8 percent of the males believe that the project may greatly reduce the water shortage problem in Jordan.

3.2.3 Analysis of the Scoping Questionnaire Responses According to the Type of Work of the Participant

The majority of the participants at both scoping sessions agreed that Jordan suffers from water shortage. 100 percent of the academic people, 96.8 percent workers at non-governmental organizations, and 94.9 percent of employees in the governmental sector indicated the water shortage. The reason behind having the lower percentage of those who indicated the water shortage problem being from the governmental sector is that they do not want to exaggerate the water problem or it may be that they have a clearer picture of the water situation in Jordan.

The participants' opinions regarding the quality of drinking water varied according to work type. 54.5 percent of the academics indicated that the drinking water quality is good, 41.9 percent of workers at non-governmental organizations and private sector indicated that it is of medium quality, and 41 percent of employees in the governmental sector indicated that the drinking water is of very good quality.

The results indicated that both workers in the governmental and non-governmental sectors had a previous idea about the project. 82.1 percent of the participants from the governmental sector and 83.9 of the participants from the non-governmental sector indicated having a previous idea about the project. A lower percentage (72.7 percent) of the academics had such a previous knowledge of the project.

It was mostly the academics who responded that the current water tariff is acceptable for everyone where 81.8 percent of them indicated this, whereas 69.2 and 67.7 percent of the workers in the governmental and non-governmental sectors, respectively, indicated that it is acceptable. This maybe due to the fact that workers in the governmental and non-governmental sectors get paid less than academics do.

The results revealed that the academics are the ones mostly aware of the importance of this project in solving the severe water shortage problem for Amman city where 81.8 percent of them indicated the importance of this project in spite of its high cost. On the other hand, 74.2 percent of the workers at the non-governmental organizations and the private sector and 69.2 percent of the workers at the governmental sector indicated the importance of the project.

Mainly the workers in non-governmental organizations (64.5 percent) believed that the current water quality is one of the reasons for the diseases affecting their family members. Of the governmental sector and academics, 51.3 and 45.5 percent, respectively, indicated that the water quality is one of the reasons.

90.9 percent of the academics notice the presence of sediments and suspended material in their domestic water supply whereas only 64.5 and 56.4 percent of those in the non-governmental organizations and governmental sector, respectively, noticed this.

Although the majority of the participants believe that this project is important for reducing the water shortage problem in Jordan, they have indicated that this reduction would be to a good degree and not to an excellent extent. This was indicated by 63.6 percent of the academics, 48.7 percent of the employees in the governmental sector, and by 48.7 percent of the workers in the non-governmental originations.

3.3 Questions and Comments During the Scoping Session

From the participants' questions and comments, the following emerged as issues of concern:

- Possibility of contamination of the Disi groundwater and the need for protection of the Disi Basin watershed.
- Impact on quality of the Disi groundwater due to mixing it with other sources of water.
- Need to study the frequency and return periods for the 50 and 100 years floods in the project area.
- Increase in water prices.
- Efforts made towards finding other sources of water in order to reduce Jordan's water shortage.
- Responsibility for monitoring the implementation of the water conveyance project.
- Potential impacts of increase in dust levels and drilling activities on traffic movement.
- Compensation for land acquisition and damage incurred to commercial institutions.
- The high voltage lines and towers bases along the route from Aqaba to Amman.
- The train railway.
- Pumping the Disi groundwater to the farms.
- Concern for archaeological sites namely, the Cave of Seven Sleepers.
- Hiring employees from the local inhabitants of the project area to work on the project construction.
- Economic returns from the project to the Disi area.
- Development of the Disi villages and possibility of adding a fils to the water bill to help the Disi villages.

It should be noted that several participants passed comments that the project is a national priority and that it's negative impacts do not match up to the level of its importance. Also, it was commented that the use of groundwater for agricultural purposes is not profitable economically.

3.4 Significant Issues Identified Based on Focus Groups Discussions, Questionnaire Responses and Participants Comments

The following were identified as significant issues and would be addressed in the ESA.

A. Significant Issues for Water Resources

- Justification of the project need; and
- Contribution of the Disi project to Jordan's water budget and other alternatives considered for facing the water shortage problem.

B. Significant Issues for Agricultural Resources

- Impacts of the increase in dust levels on the farms within Segment A of the project area.
- Sustainability of agricultural activities in the Disi area in terms of cost return, economical value and social value.
- Reduction of soil fertility due to new imported soil in the area extending from Jiza to Amman.
- Reduction of the agricultural areas or removal of olive trees along the conveyor route.

C. Significant Issues for Archaeological and Cultural Heritage

- Impact on archaeological sites at Segment C mainly the Cave of Seven Sleepers and the Khirbet Es-Suq Mausoleum.

D. Significant Issues for A-biotic Environment

- Potential impact of noise on nearby local communities and workers at the project construction site at Segment C of the project and at Segments A and C of the project during operation the operation phase due to the pump stations.
- Potential impact of increased dust levels in all segment of the project area on only during the construction phase. The concern is mainly for:
 - Public safety for workers and local communities; and
 - Nearby farms in the project and nearby areas.
- Changing the geomorphological system of the Segment A area to a large extent.
- Fluid and Solid wastes resulting from the construction phase at all three segments of the project, including:
 - Cutting and demolition wastes;
 - Construction material wastes;
 - Oil and grease residues; and
 - Human wastes of the workers.
- Tectonic activity in the Segment A area and its impact on the project during both construction and operation phases.
- Increase in traffic during construction phase along the three segments of the project area due to vehicles related to the project especially heavy vehicles and the traffic problems associated with them.
- Opening temporary access roads haphazardly in order to reach to the construction sites at Segment A.
- Potential impact on soil stability at Segment C of the project area.
- Potential impact on air quality during the construction phase and along the three segments of the project with consideration to effects of silica and vehicles emissions.
- Public safety for the workers and the local communities at all segments of the project during the construction phase.
- Transportation from Aqaba Port and the need to coordinate with the Port Institute.

E. Significant Issues for Biotic Environment

- Destruction of vegetative cover (especially acacia at Batn El-Ghoul area).
- Increase in hunting of flora, fauna and birds by the workers on the project.
- Hunting of the Oryx that will be reintroduced and of the Ghazal by the workers on the project construction.
- Accumulation of solid waste.
- Disturbance of natural habitats (Hammad, Sand Dunes, Qeea'an, and wadis).
- Potential impact on important bird areas and important natural habitats.

F. Significant Issues for Social Assessment

- Allocation of percentage of required labour for the local residents alongside the pipeline and in Disi.
- Consideration of the rules for public safety during digging and construction by coordinating efforts with the Ministry of Public Works and Housing, the Municipality of Greater Amman, and the Department of Traffic.
- Launching public awareness campaign explaining the benefits of the project before and during work.
- Compensation for damage incurred to commercial institutions (especially at Qatraneh, Al Jiza, and Abu-Alanda).
- Studying of the available services (especially high voltage lines and towers bases) and obstacles at the path of the pipeline before offering tender for the project.
- Keeping away from cross-roads as much as possible.
- Coordination with the various service establishments.
- Improvement of public health due to improvement of the water quality which is a positive impact.
- Disruption of traffic movement for residents and large vehicles. This impact is expected to be along the Desert Highway and the last third of the conveyor route.
- Public health and safety considerations during the construction phase.
- Indigenous Peoples (Badia area and the tribes available there).

Of significant importance is also the coordination with the army in order to identify possible mine areas along the route of the conveyor.