3 APPROACH AND METHODOLOGY

3.1 BRIEF TO ARCHAEOLOGISTS

The field work for this study was carried out in Jordan. In accordance with national law it had to be led by members of the Jordanian Department of Antiquities. Their work was facilitated by a team of local and international archaeologists provided by ERM operating on the following instructions.

Make use of the following existing work inter alia to provide a starting point for the baseline:

- Southeast Araba Archaeological Survey (foothills of the eastern Wadi Araba)
- Southeast Araba Archaeological Reconnaissance (as above)
- Southern Ghors and Northern Araba Survey (north of Dana Reserve to the desalination plant - the Feifa area)
- Ghor es-Safi project (desalination plant to Dead Sea)
- Archaeological Survey of Israel Project and Wadi Araba Project (western pipeline route)
- Archaeological Survey of the Kerak Plateau and Limes Arabicus project (eastern pipeline route).

Review the coverage and detail of findings from these and other studies to identify additional field work required to allow appraisal of alternatives and detailed assessment of the preferred scheme.

Assess requirement for the tunneled sections for archaeological survey particularly where outlet (including vents etc) and maintenance stations and access routes are planned.

In other locations that have not previously been systematically surveyed or where data is partial, non-intrusive and possibly some intrusive survey work will be required. Systematically walk the study area and record (using GPS equipment) any surface finds. Existing data and satellite imagery should be used to focus work on areas of archaeological potential. Areas highlighted as of particular importance will be the section of about 20 km west of Petra, and south of Wadi Feinan. These have seen intensive occupation in various periods and have not been subject to previous systematic study.

The results of the non-intrusive survey should be analyzed, mapped and evaluated in terms of their archaeological, historic and cultural significance (and any finds will be brought to the attention of the appropriate authorities in accordance with local legislation).

On completion of the baseline surveys prepare an assessment of impact on these resources. This will involve predicting the effect of each Project component on known and inferred buried archaeology, and on buildings, structures and sites of historic or cultural importance. Impacts may include complete or partial loss, physical damage, fragmentation of assemblies of sites, or change in setting and context. Each site or feature will be described in terms of its current condition and significance to local, regional and global heritage. The impact on each site or feature should then be described and evaluated taking into account its local, regional and international significance. Account should be taken of relevant protective designations where these are in place.
Devise a scheme for mitigation involving prior evaluation, excavation and recording of known resources, an archaeological watching brief during construction, and a chance finds procedure involving a hierarchy of responses depending on the nature and significance of the find.

ERM managed and reviewed the work of the archaeologists and made sure it was conducted with “due diligence”.

3.2 SOURCES OF INFORMATION

The information and data presented in this report were collected from previously published (and in some cases unpublished) field surveys, supplemented and verified by a field survey undertaken in Jordan between December 2009 and March 2010.

Each of the beneficiaries involved has their own approach to the storage of archaeological information. Most of it is available in various databases, controlled and managed by the Departments of Antiquities and is accessible to the public for consultation.

The main databases obtained from these sources have been integrated into one (see Archaeology Field Survey Database Report, August 2010). However, additional, more extensive information about individual sites and survey regions is provided for many sites by the original researchers, in published reports. Therefore, additional information about sites, and additional sites not in the databases provided, have been added to our master database and used as the basis of the present study.

The various sources of information used for the study are described in the following sections.

3.2.1 Jordan

For Jordan the JADIS database contains basic information about most recorded archaeological sites in the country. The information is coded and compiled from published and unpublished survey and excavation reports. Its reliability varies (according to the original data supplied and to the accuracy of the data entry). Amongst other things, it provides location co-ordinates, site size and a presence/absence list of archaeological remains, mostly with no indication as to number of items present. Additional sources used are the published reports of relevant surveys:

Barker G.W., D. Mattingly and D. Gilberston (eds),

Glueck, N.,
1934 Explorations in Eastern Palestine I. Annual of the American School of Oriental Research 14:1–114
1935 Explorations in Eastern Palestine II. Annual of the American School of Oriental Research 15
1939 Explorations in Eastern Palestine III. Annual of the American School of Oriental Research 18–19

Henry D.O., K. Kerry, H. Brauer, J. Beaver and J. White,

King G.R.D., et al.,

MacDonald B.,

MacDonald, B. et al,

Niemi T. and A.M. Smith II,
1999 Initial Results of the Southeastern Wadi Araba, Jordan Geoarchaeological Study: Implications for Shifts in Late Quaternary Aridity. Geoarchaeology 14:791–82

Raikes T.D.,
1976 Ancient Sites in the Wadi Araba and Nearby. Unpublished list of sites deposited by the author in the library of the British School at Amman for Archaeology and History, Amman

Ruben I, R. H. Barnes and R. Kana’an,
1997 Mapping and Preliminary Survey in Wadi Faynan South Jordan. Annual of the Department of Antiquities of Jordan 41:433–452

Smith A.M. and T. Niemi,
1994 Results of the Southeast Arabah Archaeological Reconnaissance. Annual of the Department of Antiquities of Jordan 38:469–484

Waheeb M.,
1993 Archaeological Rescue Survey of the Tafieh-Ghawr Feifeh Road Alignment, Sections I + II. *Annual of the Department of Antiquities of Jordan* 37:135–46

Walmsley A.,


Additional information was obtained through personal communication with Z. Fiema (Tuwana survey), C. Tuttle (Qa es-Sa’idiyin), G. Clarke (Wadi Hasa North Bank Survey) and R. Adams (Wadi Finan) and from the website of the Wadi Arabah Project: [http://www.wadiarabahproject.man.ac.uk/](http://www.wadiarabahproject.man.ac.uk/)

### 3.2.2 Palestinian Authority

The main source of information for the presumed corridor of the desalinated water pipeline in the PA is *Israeli Archaeological Activity in the West Bank, 1967–2007: A Sourcebook*, by R. Greenberg and A. Keinan. For information before 1967 and after 2007 the Palestinian Department of Antiquities has been contacted and some additional information is still pending. Any additional information received will be incorporated into the ESA report, due to be finalised in July 2011.

### 3.2.3 Israel

The Israel Antiquities Authority (IAA) control the database of archaeological excavations and surveys in Israel and have made this available to the study. This information is basic, and consists of site names with mapped areas (2 coordinate points for each site), and a short description. Dating information is sometimes provided. Our assessment of site mitigation measures is based on this information, and has been checked for consistency by the representative of the Israel Antiquities Authority.

### 3.3 Field Survey of Potentially Affected Areas

#### 3.3.1 Introduction

Large areas of Jordan have been the subject of archaeological surveys in the past, but the coverage of these varies considerably. The aim of the present field survey was to inspect those areas that have not been previously surveyed, and to fill in some gaps in previously surveyed areas within the area impacted by the RSDSC. Roughly 40% of the project area falls within areas that have been included in previous surveys. However, it should be made clear that not all the land within the areas claimed by those surveys has
actually been walked. Therefore, in reality, far less of the project area has been surveyed than the coverage of survey areas suggests. In general random or stratified random surveys tend to target random squares or transects, and rarely cover more than 10% of the overall survey area, usually less. In order to compensate for this, a field survey was carried out to determine the presence of archaeological remains in most of the accessible project areas. By combining the results of this field survey with the study of previous and published fieldwork, a sufficiently clear picture emerges of what sites lie within the areas that might be affected by the currently proposed configurations of the various project components.

Survey methods for each affected area were adjusted according to terrain; the existence and findings of previous research; the likelihood of finding archaeological remains; and, the likely requirements of the RSDSC in the vicinity (either a 100 metre linear corridor, or a block of land).

**Table 2.1 Archaeological Periods in the Study Area**

<table>
<thead>
<tr>
<th>Period</th>
<th>Abbreviation</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palaeolithic</td>
<td>Paleo</td>
<td>~1.7m-21,000 BCE</td>
</tr>
<tr>
<td></td>
<td>Upper Pal</td>
<td></td>
</tr>
<tr>
<td>Epi-Palaeolithic</td>
<td>Epipal</td>
<td>~21,000–10,100 BCE</td>
</tr>
<tr>
<td>Neolithic</td>
<td>Neo</td>
<td>10,100–5000 BCE</td>
</tr>
<tr>
<td>Pre-pottery Neolithic A</td>
<td>PPNeo</td>
<td></td>
</tr>
<tr>
<td>Pre-pottery Neolithic B</td>
<td>PPNB</td>
<td></td>
</tr>
<tr>
<td>Pottery Neolithic</td>
<td>PN</td>
<td></td>
</tr>
<tr>
<td>Pottery Neolithic A</td>
<td>PNA</td>
<td></td>
</tr>
<tr>
<td>Pottery Neolithic B</td>
<td>PNB</td>
<td></td>
</tr>
<tr>
<td>Chalcolithic</td>
<td>Chalco</td>
<td>5000–3600 BCE</td>
</tr>
<tr>
<td>Early Bronze Age</td>
<td>EB I</td>
<td>3600–3000 BCE</td>
</tr>
<tr>
<td></td>
<td>EB II</td>
<td>3000–2700 BCE</td>
</tr>
<tr>
<td></td>
<td>EB III</td>
<td>2700–2300 BCE</td>
</tr>
<tr>
<td></td>
<td>EB IV</td>
<td>2300–2000 BCE</td>
</tr>
<tr>
<td>Middle Bronze Age</td>
<td>MB</td>
<td>2000–1550 BCE</td>
</tr>
<tr>
<td></td>
<td>MB I</td>
<td>2000–1800 BCE</td>
</tr>
<tr>
<td></td>
<td>MB II</td>
<td>1800–1550 BCE</td>
</tr>
<tr>
<td>Late Bronze Age</td>
<td>LB</td>
<td>1550–1200 BCE</td>
</tr>
<tr>
<td></td>
<td>LB I</td>
<td>1550–1400 BCE</td>
</tr>
<tr>
<td></td>
<td>LB II</td>
<td>1400–1200 BCE</td>
</tr>
<tr>
<td>Iron Age</td>
<td>IA</td>
<td>1200–539 BCE</td>
</tr>
<tr>
<td></td>
<td>IA I</td>
<td>1200–1000 BCE</td>
</tr>
</tbody>
</table>
Period | Abbreviation | Dates
--- | --- | ---
IA II | | 1000–539 BCE
Persian Period | Per | 539–323 BCE
Hellenistic Period | Hel | 332–63 BCE
Nabataean | Nab | 330 BCE–200 CE
Roman | Rom | 63 BCE–324 CE
Byzantine | Byz | 324–640 CE
Islamic | Isl | 640 CE–today

Note: years Before the Common Era (BCE) are equivalent to years BC, and years Common Era (CE) to years AD

3.3.2 Nature of the Terrain

The study area is sparsely populated with very limited temporary Bedouin camp sites and, apart from the Bedouin village of Gweibah, (north of Finan), there are virtually no permanent dwellings visible in or around the sites at the time of the survey.

Figure 3.1 Bedouin tent at the north end of Zone C, looking northwest.

On the eastern side of the Wadi Araba/Arava Valley, the landscape consists of foothills and mountains (generally granitic rocks with some sandstone), dissected by many wadis, some very large, with correspondingly large alluvial fans spreading westwards. In this landscape, most sites apart from cemeteries (e.g. settlement, agricultural, hunting sites etc) tend to be near wadi mouths. This is also where the adits or portals are located for the tunnel options of the RSDSC. The bottom of the Valley, to the west, consists of flat
desert, some of which is covered by large dune fields, the rest mostly by stony desert pavement. The seawater pipeline route passes through this landscape. Any archaeological remains that are buried under the dunes and layers of wind-blown sand are, therefore, not visible. The only visible remains are those of relatively recent and/or large structures and sites in areas where the dunes do not cover the original ground surface. Systematic walkovers of targeted areas were undertaken to provide the best sample coverage of these areas.

In mountainous areas crossed by the eastern freshwater pipeline, the bedrock at the western, bottom end is sandstone, and becomes mostly limestone higher up to the east. In these areas, wadi terraces and gentle slopes are the most likely places to find habitation remains, and hilltops often have burials, hill forts or watch towers, while the hillsides are usually devoid of major remains. There may also be some natural or manmade caves in the limestone landscapes and rock shelters in the sandstone landscapes. The targeted walking survey in these landscapes therefore focused mainly on wadi bottoms, gentle slopes and hilltops.

Figure 3.2 View of steep sandstone cliffs at the western end of the eastern freshwater pipeline, looking westwards

Some of these mountainous landscapes are defined by sheer cliffs and therefore are unlikely to have archaeological remains. They are also difficult and dangerous to access and therefore these areas have not been surveyed by previous surveys, nor by the present survey.

Other areas that were extremely difficult of access included deeply dissected hilly areas and those that take unreasonable amounts of time to reach (i.e. very far from the nearest point accessible by vehicle). The few such locations within the study area were mostly associated with the eastern freshwater pipeline,
within the westernmost 10–15 kilometres – the stretch beginning near the proposed site of the high level desalination plants (Wadi Telah) and rising eastwards, and the section where the pipeline crosses the Wadi Hasa. These areas have not been surveyed by the present project, even though they may have archaeological remains. It should be noted that some have been covered by previous surveys. These areas are particularly recommended for monitoring directly prior to and/or during construction. It should be clearly understood that the present survey was an initial survey of an inexact ‘concept’ route, and it was unintrusive (that is to say no pick-ups of any artefacts were made). However, the survey served the purpose of demonstrating that the landscape is far from empty of archaeological sites. An archaeological site is either present or absent from a specific location and therefore, if the line deviates at all from the one that was walked it will need to be resurveyed. Preferably at the time when the surveyors are pegging out the line, in order to know exactly where it will be, and at that point, certain sites could perhaps be avoided by a slight change of the line.

3.3.3 Survey Methodology

The techniques used in the field were:

• Systematic walkover survey
• Drive-over survey
• Targeted sample survey

The survey areas subject to systematic walkovers were the proposed component areas demarcated on the plans provided by the Feasibility Study comprising:

• Long narrow right of way for the proposed high level tunnel canal sections and the seawater and eastern freshwater pipelines;

• Rectangular blocks of land proposed as alternative desalination and hydropower plant sites, pumping station and intake;

• Blocks of land around the surface entrances of proposed tunnel portals.

The long narrow stretches were walked lengthwise with three to five people spaced, on average, 20 metre apart, thus covering a corridor of 80–100 m. This method ensures finding most sites, including structures, graves and sherd/flint scatters.
The blocks of land, for tunnel portals and factory sites were sampled either by systematic walkover (when flat) or by targeted walkovers, depending on the terrain, as described above.

Some stretches, primarily the linear right of way proposed for the seawater pipeline route, with a low likelihood of sites but accessible via tracks, were surveyed from a 4x4 vehicle. Such areas were traversed very slowly (maximum 20 km/h) while the terrain was scanned by at least two independent observers. Some sample stretches were walked and any suspected archaeological remains sighted were investigated on foot. All sites found were recorded in the normal way (see following section on site recording).

Certain stretches of the seawater pipeline route were not surveyed at all because they are either crossing a mud flat, a dune field (which would obscure any sites present) or the route crossed an area where there is still a possibility of encountering live land mines (Annex C, Maps A-E).

### 3.3.4 Site Recording

Any sites found were rapidly, but systematically recorded and photographed. Each site was located using a Trimble and a Garmin GPS; the site size was estimated, its topographic location, present condition and, of course, details of the site type and what it contained were all recorded in the field. An on-site assessment of the mitigation measures that might apply to it (according to our categories, see Section 3.5) was also made. No artefacts were collected, but where possible field identification of the pottery or flints was made in order to date them. Some items were photographed, and the photographs later shown to experts in the appropriate field, in order to confirm these field identifications.

All across the landscape are many individual and small groups of stone piles that usually represent graves, and it was decided that groups of one to three graves would be recorded simply as a grave location, with minimal details (GPS location, and some further details), whereas groups of four or more graves would be recorded as a site. This methodology was developed during the course of the survey, so that for the first two weeks (that is along the eastern and western ends of the eastern freshwater pipeline, between Ghor Fifa and Hasa) these individual graves were not recorded.

### 3.3.5 Areas Surveyed

In Jordan, some stretches of the project areas have been the subject of research in the past, and sites were recorded in various databases, most of which have
been collected in the JADIS database, property of the Department of Antiquities of Jordan (DoAJ). Because of this previous research, these areas were given a lower priority. Where the previous survey has been thorough, (that is to say covering a high percentage of land within the survey area) the area has not been walked again, even though there is still the possibility of finding (minor) sites. In the case of the current scheme, the only areas that were subject to a thorough archaeological survey were the one at the headwaters of the Wadi Hasa, at the eastern end of the freshwater pipeline route, before it joins the Disi pipeline and the area of Wadi Finan/Fidan at the northern end of the northern canal section of the high level tunnel conveyance. These areas were therefore not walked over by the present survey. In areas where the previous survey has not been thorough (as deduced from the reports or from communication with the researcher) the line has been resurveyed and all accessible areas that were not actually covered in the previous survey were surveyed, subject to the constraints outlined above.

Once the final alignment of the RSDSC is known, any sites recorded during this survey that are nearby should be revisited, prior to the construction phase, and their exact position relative to the final route alignment recorded. If they are to be removed as a result of any construction associated with the RSDSC, the Department of Antiquities of the relevant beneficiary party can then make the final decision as to whether they need to be excavated (see mitigation in Section 7).

3.4 METHODS OF IMPACT PREDICTION AND EVALUATION CRITERIA

With regard to archaeological remains, the potential impacts of the RSDSC are the same for all its stages. If a site occurs within the right of way (the peripheral access needed around the actual construction site) of the RSDSC, the impact upon it is total, permanent and irreversible; in other words, unless this site is avoided by re-alignment of the relevant RSDSC component (see mitigation below), it will be subject to destruction during the construction of the RSDSC.

If a site occurs near to the project area, it may not be impacted directly but there is a temporary impact for the duration of the project due to the possibility of incidental (deliberate) damage to visible sites or accidental damage because of construction or workers’ activities in the vicinity of sites. Areas adjacent to, or on a route between sites, therefore, need some protection which can be provided through the construction management plans of the contractors.

Thus the impact on sites is either total (within the project area) or potential
(nearby the project area), and the chance of the impact occurring is largely based on its geographical location relative to the project area.

3.5 **CONSULTATION**

During ESA scoping and during phases 1 and 2 of the RSDSC Public Participation and Communication Plan the issues associated with archaeology were presented to the public. Specific consultations were also carried out with the Department of Antiquities of Jordan, who were partners in the archaeological field survey undertaken, and have been consulted on the evaluation of the importance of the sites that have been recorded by the survey. The results of this are presented below.

The Israel Antiquities Authority has given access to its archaeological archives. The Palestinian Department of Antiquities has been contacted but a review of the information held by them is still pending. A summary of any information received will be included in the final version of this assessment that will be part of the ESA report due to be published in 2011).

Many individual researchers and institutions have been approached and almost all have been cooperative. A list of institutions and scholars consulted during the course of the study is provided in \textit{Annex A}.

The annex also lists NGOs in the region dealing with archaeological issues and other interest groups, notably the foreign archaeological institutes, that were contacted and given the opportunity to comment. Any comments made were taken into account. A list of comments made and responses from the ESA team will be included in the Annexes of the ESA report due to be published in 2011. All groups were aware of the valuable heritage of the area, and also conscious that the specific route corridors being examined contain only a few major archaeological sites.

3.6 **EVALUATION AND ASSESSMENT OF ARCHAEOLOGICAL SITES**

The evaluation of the importance of archaeological sites has been determined by considering a combination of the following impact assessment criteria:

- Type of remains present
- Period of site
- Site size
- Site condition
- Site context (both local and regional)
• Legal status in the relevant jurisdiction (i.e., whether protected by law or not, and the level of protection given by law)

The academic and heritage value of each site was evaluated based on these criteria. Each site was independently assessed by each member of the field team (at least 2 employees of DoA and 1 international expert). The field team assigned a consensus impact assessment value on a scale from 1 to 4, (taking into account the distribution and abundance of this type of site, the condition, inherent value, policy and legal status in the region etc). When consensus could not be reached on a lower assessment level, a higher value was given. Each number on the scale corresponds to the value of the site and is linked to commensurate measures recommended to mitigate any potential damage from the RSDSC. The categories are as follows:

1. A site of no practical academic or heritage value: Mitigation: No further work necessary; Impact category = Slight/None

2. A site of some interest, but relatively common in the region, not in good condition, apparently single period and limited in area. Not protected by relevant law, of no interest to stakeholders: Mitigation: Mapping of structures present, collecting of surface materials; Impact category = Minor

3. A site of considerable interest due to its comparative rarity, condition, area, or the number of periods covered. Either protected by relevant law, or of interest to one or more stakeholder groups. Mitigation: Such sites should be avoided where feasible alternatives are available at reasonable cost or there should be mapping and test trenches to determine dating for multi-period sites with some structures; mapping and excavation of sample graves for cemeteries; or mapping and full excavation of important sites. Impact category = Major

4. A major site of exceptional and significant academic and heritage value and interest within the locality, region and international community; protected by relevant law, and of interest to one or more stakeholder groups. Mitigation: The design should be amended to avoid damage to such sites, or to preserve them in situ. Impact category = Critical

The proximity of the works to any site, the type of works and, therefore, the consequent risk will ultimately affect what mitigation measures will need to be applied, particularly in category 3. In accordance with the relevant legislation and guidance (see below) the distance from proposed works at which mitigation should be invoked will be a default value of 100 metres, with the on-site archaeologist making assessments on a case-by-case basis if there is uncertainty.
The level of mitigation measure for each specific site is included in the *Archaeology Field Survey Database Report* (and reproduced on the maps shown in *Annex C*). However, there are a number of sites in the Palestinian Authority, that could not be assigned a category number because insufficient information is available at present (that is, the only information is that a ‘site’ is present, with no details as to what that site might be, nor its size). At the time of this study it was not practicable to carry out field work in the area as no alignment had been identified. If the RSDSC design does eventually include the provision of freshwater to areas of the PA, by means of a pipe along the western coast of the Dead Sea, this route will need to be surveyed prior to finalization of the design.
LEGAL AND POLICY CONTEXT

Each government has its own approach to the legal framework regarding archaeological remains, as does the World Bank. The policy for each government and the World Bank is outlined below.

4.1 JORDAN

There is a legal framework, but the functions of the institutions involved is subject to interpretation by those institutions (principally the Department of Antiquities).

The Department of Antiquities of Jordan states that: The principal policy of the Department of Antiquities is the protection of antiquities, preferring conservation measures that do not require physical intervention to the remains as the first choice where possible.

Cultural heritage in Jordan is protected under the Antiquities Law of 1988, No. 21, amended by Law No. 23 of 2004.

The articles relevant to projects that might affect any archaeological sites are the following:

According to Article 13a of this law: It is prohibited to license the establishment of any structure, including buildings and walls, unless it is more than 25 meters away from any antiquities, against fair compensation. In addition, in case of construction contrary to the provisions of this law, it shall be removed at the expense of the aggressor including cost of repair to antiquity.

Under Article 13b: It is permissible, by a decision of the Minister [of Tourism and Antiquities] on the recommendation of the Director [of the Department of Antiquities], to increase the distance mentioned in Paragraph ‘a’ of this article if necessity requires in any of the following cases:

- The protection or maintenance of the antique site
- The expansion of the antique site
- To secure that the antique site is not obscured by any construction.

Under Article 13c: It is prohibited to set up any heavy or dangerous industries, lime furnaces or stone quarries at a distance less than one kilometre from the
location of the antique sites. In all cases, prior approval of the Department of Antiquities shall be given before inviting offers or awarding tenders for engineering services, designs and sketches and preparing the documents of public and private project tenders.

Article 15a covers the finding of antiquities by chance: Any person not having an excavation permit who discovers, finds or knows of the discovery of any antiquities shall announce the discovery to the Director or the nearest Public Security Centre during ten days from the date of discovery, finding or knowing of the discovery of such antiquities.

Article 16a states that: The Department alone will have the right to carry out the work of surveying or excavating antiquities in the Kingdom. However, it may, with the approval of the Minister, allow scientific institutions, commissions and societies as well as archaeological expeditions to survey or excavate antiquities under a special license, after ascertaining their ability and efficiency, provided that the work will proceed pursuant to the conditions specified by the Director.

Furthermore, Article 21 states that: The state shall be the proprietor of all the antiquities found during any work carried out by any entity or person in the Kingdom.

4.2

**ISRAEL**

The Antiquities Law of Israel dates from 1978. (excerpt)

28.(a) The Director of the Antiquities Authority may declare a particular place to be an antiquity site.

(b) When the director declares as aforesaid, a note to such effect shall be entered in the Land Register and notice shall be given to the owner and the occupier of the place, if their identity or addresses are known, and to the District Planning and Building Commission.

Prohibition of operations on antiquity site:

29.(a) A person shall not carry out, or allow to be carried out, any of the following on an antiquity site, save with the written approval of the Director and in accordance with the conditions thereof:

(1) building, paving, the erection of installations, quarrying, mining, drilling, flooding, the clearing away of stones, ploughing, planting, or interment;

(2) the dumping of earth, manure, waste or refuse, including the dumping
thereof on adjoining property;
(3) any alteration, repair or addition to an antiquity located on the site;
(4) the dismantling of an antiquity, the removal of part thereof or the shifting thereof;
(5) writing, carving or painting;
(6) the erection of buildings or walls on adjoining property;
(7) any other operation designated by the Director in respect of a particular site.

(b) Notice of the designation of an operation under paragraph (7) of subsection (a) shall be published in Reshumot.

c) When an antiquity site is used for religious requirements or devoted to a religious purpose, the Director shall not approve digging or any of the operations enumerated in subsection (a) save with the approval of a Committee of Ministers consisting of the Minister as chairman, the Minister of Religious Affairs and the Minister of Justice

Restoration to previous condition:

31. A person who has carried out one of the operations specified in section 29 without approval or in contravention of the conditions of the approval, shall take action, in accordance with the directions of the Director, to restore the antiquity site of the antiquities situated thereon to its or their former condition; but the Director may, after giving the person written notice, himself take all the steps required for that purpose and recover from him the expenses incurred.

The IAA policy for dealing with salvage excavations states: If plans can not be changed or canceled ... a salvage excavation will be conducted. At its conclusion, another consultation is held in light of the remains from the excavation. If these are exceptional and significant, the IAA will oblige the contractor to alter his plans and preserve the remains beneath the new construction. This is a radical and expensive solution for the developer, which is quite rare. In most cases, and depending on the character of the site, the IAA will permit work to continue, with the exception of the section destined for rebuilding, which will be completely excavated, documented and finds removed from the site, prior to its destruction.
4.3 **PALESTINIAN AUTHORITY**

Under the Palestinian Authority, the Ministry of Tourism and Antiquities, and the Ministry of Culture share the responsibility for the protection of archaeological sites, but there is no unified legal code for the Palestinian Authority. Different laws are applicable in different areas. In the area that may be affected by aspects of the RSDSC, the basis of the law is the Jordanian Law of Antiquities of 1966. The Palestinian Basic Law of 2003 contained a paragraph relevant to Heritage Protection; the President swears, “[...] to be faithful to the homeland and holy places, to the people and its national heritage [...]” This is currently the only reference to heritage, limited as it is, in the draft constitution. Since there is not yet an approved Palestinian constitution, the protection of cultural and natural heritage remains, until today, without a solid constitutional basis.

In the absence of a settled policy, developers in the PA are encouraged to use international guidelines of the EU or international funding organisations. In the case of RSDSC the framework set out in the World Bank guidelines for the treatment of cultural heritage and archaeological remains will be followed.

4.4 **WORLD BANK GUIDELINES**

In addition to complying with the laws and regulations of the governments above, the project will be carried out in compliance with World Bank guidelines for safeguarding physical cultural resources; more specifically the *Operational Policy/Bank Procedure 4.11: Physical Cultural Resources (2006).*

The document defines physical cultural resources as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. It states that:

- The Bank assists countries achieve this aim for development projects that it finances.

- When the project is likely to have adverse impacts on physical cultural resources, the borrower identifies appropriate measures for avoiding or mitigating these impacts as part of the EA process. These measures may range from full site protection to selective mitigation, including salvage and documentation, in cases where a portion or all of the physical cultural resources may be lost.
• As an integral part of the EA process, the borrower develops a physical cultural resources management plan that includes measures for avoiding or mitigating any adverse impacts on physical cultural resources, provisions for managing chance finds, any necessary measures for strengthening institutional capacity, and a monitoring system to track the progress of these activities. The physical cultural resources management plan is consistent with the country’s overall policy framework and national legislation and takes into account institutional capabilities with regard to physical cultural resources.

4.5 SUMMARY

In summary, interpreting the legislative intent of current law, and expanding this with the guidance from OP 4.11, a procedure has been developed which is in compliance with the legislation of all three beneficiary parties and meets the standard expected by the World Bank guidelines. In respect of archaeology (other elements of physical cultural resources are addressed in the ESA Report), the following procedures either have already been undertaken or will apply:

4.5.1 Scoping

• An initial assessment based on the review and mapping of over 540 published sites
• Discussions with relevant ministries and individual scholars
• Identification of clusters of human occupation
• Identification of early water-harvesting installations and associated ancient roads and tracks
• Mapping of cemeteries
• Design of the survey and impact identification and assessment phases

4.5.2 Surveying and Impact Identification and Assessment

• Assembly of a team of local and international experts plus a regional representative from the DoA Jordan
• Systematic walkover survey
• Drive-over survey
• Targeted sample survey
• Systematic recording and photographing of each site
• Further development and refinement of the survey methodology
• Assessment of the academic and heritage value of each site
• Consensus impact assessment and recommendation of mitigation measures
4.5.3 Consultation

- Inclusion of archaeology into the ESA Public Participation and Communication Plan and public meetings
- Detailed specific consultations with the DoA Jordan
- Communication and information sharing with the Israel Antiquities Authority and the Palestinian Department of Antiquities
- Communication and information sharing with individual researchers and academic institutions
- Communication and information sharing with NGOs in the region dealing with archaeological issues and other interest groups

4.5.4 Capacity Development of Relevant Institutions

- Identification of institutions involved in undertaking, monitoring or supervision of management and mitigation measures
- Assessment of the capacity to undertake the assigned tasks
- Development of a costed capacity development plan to strengthen the institutions, as necessary, to carry out the allotted role

4.5.5 Environmental Management During Construction

- Notification of the relevant authority if an archaeological site is on or near the work;
- Authorisation from the body in charge of antiquities to proceed with construction activities within the vicinity of a known site;
- Measures put in place to ensure that damage to any antiquities is avoided where possible and where not, that the value of the site is not lost before proper investigation can be undertaken.

4.5.6 Monitoring of Effectiveness of Protective Measures

Monitoring and spot checks of performance of construction supervisors
  - Regular assessment of cost, effectiveness and timeliness of interventions
  - Annual reporting of findings of performance evaluations