RAND WATER

ENVIRONMENTAL MANAGEMENT SERVICES

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EMP APPENDIX 1

FOSSIL FINDS PROCEDURE

G14 PIPELINE REPLACEMENT

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1) DEFINITIONS

In the context of this document/report, the following expressions apply namely:

Basic Assessment (BA)

means a process contemplated in regulation 22.

Scoping/EIA

in relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application;.

Contractor

The person or persons appointed to undertake the work specified herein, and shall include the heirs, executors and administrators of the Contractor.

Environmental Rehabilitation Manager

shall mean the manager Environmental rehabilitation within EMS.

Environmental Management Services Manager

shall mean the Manager of the Rand Water's Environmental Management Services Section.

Environmental Assessor

Environmental Assessor appointed by the Environmental Management Services.

Environmental Control Officer (ECO)

Control officer on site to ensure contractors/, subcontractor /employees are fully aware of their environmental responsibilities and are complying in terms of EMP and EA Environmental Authorisation appointed by Rand Water EMS department.

Environmental Assessment Practitioner (EAP)

means an environmental assessment practitioner as defined in section 1 of NEMA; an EAP may conduct Basic Assessment process, identify I&AP, relevant authorities, environmental legislation assess the environmental impact of the project throughout its life cycle and provide mitigations/alternatives

Interested and affected parties (I&AP)

Interested and affected party may comment or raise issues regarding the proposed project, they must be involved throughout the project life's span.

Rand Water (RW)

Rand Water Board, a body corporate duly constituted in terms of Section 4 of the Rand Water Board Statutes (Private) Act, 17 of 1950.

Environmental Management Plan (EMP)

A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts mitigations are implemented during the life-cycle of a project.

EA as per NEMA EIA Regulations

Department of Environmental Affairs (DEA)

Government department that issues environmental authority for BA / EIA projects subjected to certain conditions

Gauteng Department of Agriculture and Rural Development (GDARD)

Government department that evaluate scoping reports and issue EA for EIA/BA within the Gauteng province

Department of Water Affairs (DWA)

Government organization that evaluate Water Use License Applications (WULA) and issue permits for water use

Site

The places on, over, under, in or through which the work is to be executed or carried out and any other places provided by Rand Water for the purposes of the Contract.

Work

All the materials, articles, matters and things which are to be manufactured, delivered, constructed and/or erected and completed and which are described in the Specification and Schedules and shown upon any Drawings therein referred to, and all other materials, articles, matters and things which may be ordered as additions to the contract

Environment

The surroundings (biophysical, social and economic) within which humans exist and that are made up of

I. the land, water and atmosphere of the earth;
II. micro organisms, plant and animal life;
III. any part or combination of (i) and (ii) and the interrelationships among and between them; and
IV. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Aspects

Elements of an organisation's activities, products or services that can interact with the environment.

Environmental Degradation

Refers to pollution, disturbance, resource depletion, loss of biodiversity, and other kinds of environmental damage; usually refers to damage occurring accidentally or intentionally because of human activities.

Environmental Impacts

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

Environmental Impact Assessment

A study of the environmental consequences of a proposed course of action.

Environmental Impact Report

A report assessing the potential significant impacts as identified during the environmental impact assessment.

Land use

The various ways in which land may be employed or occupied. Planners compile, classify, study in addition, analyse land use data for many purposes, including the identification of trends, the forecasting of space and infrastructure requirements, the provision of adequate land area for necessary types of land use, and the development or revision of comprehensive plans and land use regulations.

Pollution Prevention

Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

Public Participation Process

A process of involving the public in order to identify needs, address concerns, in order to contribute to more informed decision making relating to a proposed project, programme or development.

Topography

Topography, a term in geography, refers to the "lay of the land" or the physio-geographic characteristics of land in terms of elevation, slope and orientation.

Vegetation

All of the plants growing in and characterising a specific area or region; the combination of different plant communities found there.

2) **ABBREVIATIONS**

DWS	Department of Water and Sanitation
DEA	Department of Environmental Affairs.
EA	Environmental Authorization
EMP	Environmental Management Plan
WUL/A	Water Use License/ application
EMS	Environmental Management Services
ECO	Environmental Control Officer
BID	Background Information Document
CRR	Comments Response Report
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act of 1989
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
I&AP	Interested and Affected Party
NEMA	National Environmental Management Act, Act 107 of 1998 as amended
S&EIR	Scoping and Environmental Impact Reporting

3) INTRODUCTION

The purpose of this document is to provide the Rand Water construction team and their appointed contractors with appropriate response actions in relation to the chance findings of "heritage resources".

The procedure details the actions to be undertaken in the event that previously unknown heritage resources including burial grounds or graves inclusive of fossilised remains are exposed or found during the construction phase of the project. The procedure below is extracted and adapted from the National Resource Heritage Act (1999), Regulations 6820; GN 548.

The term "heritage resources" includes structures, archaeology, meteors and public monuments as defined by in the South African Heritage Resources Act (Act No. 25 of 1999).

In the context under consideration, it is unlikely that fossil finds will require declarations of permanent "no go" zones. At most, a temporary pause in activity at a limited locale may be required. The strategy is to rescue the material as quickly as possible. The procedures suggested below are in general terms, to be adapted as per the specific find.

This procedure must be read and implemented in conjunction with the Rand Water Construction EMP, with specific reference to section 2.5 – Archaeological artefacts

The importance of heritage resources and actions and reporting structure to be followed shall be communicated to the Rand Water construction team and appointed contractors during the Environmental Induction.

Heritage resources or burial grounds and graves may be identified during construction or accidentally exposed. The initial procedure when such sites are found is to avoid any further damage.

The following actions and reporting structure must be followed in all instances of initial identification and/or exposure:

Action 1: The person or group who identified or exposed the heritage resource must cease all activity in the immediate vicinity of the site;

Action 2: The identifier must immediately inform his/her supervisor of the discovery;

Action 3: The supervisor must clearly mark the area and secure the site and restrict access;

Action 4: The supervisor must then inform the Environmental Control Officer.

Action 5: The ECO will follow the undertake the appropriate actions as detailed in this procedure.

a) **Heritage Resources: structures, archaeology, palaeontology, meteors, public monuments**

i) In the event that possible heritage resources were accidently exposed, the Rand Water Project Manager and/or Environmental Management Services Department must immediately be notified of the discovery in order to take the required further steps:
ii) The heritage resource must be avoided and all activities in the immediate vicinity temporarily ceased;
iii) Rand Water shall then consult with a qualified specialist to consider the heritage resource;
iv) Appropriate mitigation measures will then be presented to Rand Water for implementation;
v) Should the specialist conclude that the find is a heritage resource protected in terms of the NRHA (1999) Sections 34, 36, 37 and NHRA (1999) Regulations (Regulation 38, 39, 40),
vi) Rand Water will notify SAHRA and/or PHRAG; and SAHRA/PHRAG may require that a HIA in terms of NHRA Section 38 must take place that may include rescue excavations and other assessments and reports.

b) **Burial grounds and graves**

i) In the event that human remains were accidently exposed, the Rand Water project manager and/or Environmental Management Services Department must immediately be notified of the discovery in order to take the required further steps:
(1) The local SAPS must be notified;
ii) Rand Water will deploy a suitably qualified specialist to inspect the exposed burial and determine in consultation with the SAPS whether:
(1) The temporal context of the remains, i.e.: forensic, authentic burial grave (informal or older than 60 years, NHRA (1999) Section 36); or archaeological (older than 100 years, NHRA (1999) Section 38).
(2) Any additional graves may exist in the vicinity.
(3) Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA (1999) Section 35 and NHRA (1999) Regulations (Regulation 38, 39, 40), Rand Water will notify SAHRA and/or PHRAG ;
iii) SAHRA/PHRAG may require that an identification of interested parties, consultation and /or grave relocation take place;
iv) Consultation must take place in terms of NHRA (1999) Regulations 39, 40, 42;
v) Grave relocation must take place in terms of NHRA (1999) Regulations 34

4) FOSSIL FIND PROCEDURES

a) Isolated Bone Finds

i) In the process of digging excavations, isolated bones may be spotted in the hole sides or bottom, or as they appear on the spoil heap. By this is meant bones that occur singly, in different parts of the excavation. If the number of distinct bones exceeds six pieces, the finds must be treated as a bone cluster (bone cluster procedure is described below).

ii) The following actions should be undertaken in the event of isolated bone finds:

(1) Action 1: An isolated bone exposed in an excavation or spoil heap must be retrieved before it is covered by further spoil from the excavation and set aside;

(2) Action 2: The Environmental Control Officer (ECO) and/or Project Manager and must be informed immediately;

(3) Action 3: The Environmental Control Officer (ECO) must take custody of the fossil. The following information is to be recorded:

(a) Position (excavation position);

(b) Depth of find in hole;

(c) Photographic imagery of the hole showing vertical section (side); and of the fossil.

(4) Action 4: The fossil should be placed in a bag (e.g. a Ziploc bag), along with any detached fragments. A label must be included with the date of the find, position information, and depth; and

(5) Action 5: The ECO is to inform RW EMS who will then contact an archaeologist and/or palaeontologist for further guidance. The ECO shall provide a written description of the occurrence with the inclusion of photographic images.

(a) The Rand Water appointed palaeontologist will assess the information and liaise with RW EMS and a suitable response and mitigation measures shall be established and implemented.

b) Bone Cluster Finds

i) In the process of digging excavations, bones clusters may be spotted in the hole sides or bottom, or as they appear on the spoil heap. A bone cluster is a major find of bones (e.g. several bones in close proximity or bones resembling parts of a skeleton).

ii) The following actions should be undertaken in the event of bone cluster finds:

(1) Action 1: Immediately stop excavation in the vicinity of the potential material, marking or flagging the position as well as the spoil heap that may contain fossils shall be undertaken;

(2) Action 2: The Environmental Control Officer (ECO) and/or Project Manager and must be informed immediately;

(3) Action 3: The ECO is to inform RW EMS who will then contact an archaeologist and/or palaeontologist for further guidance. The ECO shall provide a written description of the occurrence with the inclusion of photographic images.

(i) The Rand Water appointed palaeontologist will assess the information and liaise with RW EMS and a suitable response will be established.
(ii) Dependent on the preliminary assessment by the palaeontologist /archaeologist the feasible action will be to avoid the find and continue construction farther along the line, thus minimally disrupting the works schedule
(iii) It is likely that a Field Assessment by the palaeontologist /archaeologist will be required. The Field Assessment could have the following outcomes:
1. If a human burial, the appropriate authority is to be contacted. The find must be evaluated by a human burial specialist to decide if Rescue Excavation is feasible, or if it is a Major Find.
a. If the fossils are in an archaeological context, an archaeologist must be contacted to evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.
b. If the fossils are in a palaeontological context, the palaeontologist must evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.

c) **Rescue Excavation**

i) Rescue Excavation refers to the removal of the material from the excavation site (route alignment).. This would apply if the amount or significance of the exposed material appears to be relatively restricted and it is feasible to remove it without compromising contextual data. The time span for Rescue Excavation should be reasonably rapid to avoid any undue delays.
ii) In principle, the strategy during the mitigation is to “rescue” the fossil material as quickly as possible. The strategy to be adopted depends on the nature of the occurrence, particularly the density of the fossils. The methods of collection would depend on the preservation or fragility of the fossil and whether in loose or in lithified sediment. These could include:
(1) On-site selection and sieving in the case of robust material in sand; and
(2) Fragile material in loose sediment would be encased in blocks using Plaster-of-Paris or reinforced mortar.
iii) If the fossil occurrence is dense and is assessed to be a “Major Find”, a carefully controlled excavation is required.

d) **Major Finds**

i) A Major Find is the occurrence of material that, by virtue of quantity, importance and time constraints, cannot be feasibly rescued without compromise of detailed material recovery and contextual observations.
(1) Management Options for Major Finds
(a) In consultation with the Project Manager and the ECO the following options should be considered when deciding on how to proceed in the event of a Major Find.
(i) <u>Option 1</u>: Avoidance
1. Avoidance of the Major Find through project redesign or relocation (re alignment). This ensures minimal impact to the site and is the

preferred option from a heritage resource management perspective. When feasible, it can also be the least expensive option from a construction perspective. The find site will require site protection measures, such as erecting fencing or barricades.

2. Alternatively, the exposed finds can be stabilised and the site refilled or capped. The latter is preferred if excavation of the find will be delayed substantially or indefinitely. Appropriate protection measures should be identified on a site-specific basis and in wider consultation with the heritage and scientific communities. This option is preferred as it will allow the later excavation of the finds with due scientific care and diligence.

(ii) Option 2: Emergency Excavation

1. Emergency excavation refers to the "no option" situation where avoidance is not feasible due to design, financial and time constraints. It can delay construction and emergency excavation itself will take place under tight time constraints, with the potential for irrevocable compromise of scientific quality. It could involve the removal of a large, disturbed sample by an excavator and conveying this by truck from the immediate site to a suitable place for "stockpiling". This material could then be processed later. Consequently, the emergency excavation is not the preferred option for a Major Find.

e) **Exposure of Fossil Shell Beds**

i) In the process of digging excavations, fossil shell beds may be spotted in the hole sides or bottom, or as they appear on the spoil heap.

ii) The following actions should be undertaken in the event of fossil shell bed finds:

(1) Action 1: The Environmental Control Officer (ECO) and/or Project Manager and must be informed immediately;

(2) Action 2: The Environmental Control Officer (ECO) must record the following information:

(a) Position (excavation position);

(b) Depth of find in hole;

(c) Photographic imagery of the hole showing vertical section (side); and of the fossil.

(3) Action 3: A generous quantity of the excavated material containing the fossils should be stockpiled near the site, for later examination and sampling

(4) Action 4: The ECO is to inform RW EMS who will then contact an archaeologist and/or palaeontologist for further guidance. The ECO shall provide a written description of the occurrence with the inclusion of photographic images.

(a) The Rand Water appointed palaeontologist/archaeologist will assess the information and liaise with RW EMS and a suitable response and mitigation measures shall be established and implemented.

(i) This will most likely be a site visit to document and sample the exposure in detail, before it is covered up.

f) **Exposure of Fossil Wood and Peats**

i) In the process of digging excavations, fossil shell beds may be spotted in the hole sides or bottom, or as they appear on the spoil heap.
ii) The following actions should be undertaken in the event of fossil shell bed finds:
    (1) Action 1: The Environmental Control Officer (ECO) and/or Project Manager and must be informed immediately;
    (2) Action 2: The Environmental Control Officer (ECO) must record the following information:
        (a) Position (excavation position);
        (b) Depth of find in hole;
        (c) Photographic imagery of the hole showing vertical section (side); and of the fossil.
    (3) Action 3: A generous quantity of the excavated material containing the fossils should be stockpiled near the site, for later examination and sampling
    (4) Action 4: The ECO is to inform RW EMS who will then contact an archaeologist and/or palaeontologist for further guidance. The ECO shall provide a written description of the occurrence with the inclusion of photographic images.
        (a) The Rand Water appointed palaeontologist/archaeologist will assess the information and liaise with RW EMS and a suitable response and mitigation measures shall be established and implemented.
            (i) This will most likely be a site visit to document and sample the exposure in detail, before it is covered up.

5) **MONITORING FOR FOSSILS**

i) A regular monitoring presence over the period during which excavations are made, by either an archaeologist or palaeontologist, is generally not practical.
ii) The ECO and workers involved in construction activities must be encouraged and informed of the need to be aware of the potential fossil and buried archaeological material. Workers seeing potential objects are to report to the onsite Project Manager who, in turn, will report to the ECO.
iii) The ECO is to inform RW EMS who will then contact an archaeologist and/or palaeontologist for further guidance. The ECO shall provide a written description of the occurrence with the inclusion of photographic images.
iv) The Rand Water appointed palaeontologist/archaeologist will assess the information and liaise with RW EMS and a suitable response and mitigation measures shall be established and implemented.